

APPENDIX A
Leachability Bench Scale Testing



Technical Memorandum

Date: 18 December 2017

To: Nelson Walter, Amec Foster Wheeler, Portland, ME

From: Eugene Shephard, Amec Foster Wheeler, Portland, ME

Ref: Penobscot River Phase III Engineering Study

Re: **Leachability Bench-Scale Testing**

PURPOSE AND BACKGROUND

In January 2016, the United States (U.S.) District Court for the District of Maine (the Court) selected Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) to conduct the Phase III Engineering Study to identify and evaluate potential and cost-effective measures to remediate mercury in the Penobscot River and estuary. The geographic area to be addressed within the Phase III Engineering Study is described by the Court as follows: “The Evaluation will focus in particular on the region from the site of the former Veazie Dam south to Upper Penobscot Bay, including Mendall Marsh and the Orland River.

Treatability studies have been conducted as part of the Phase III Engineering Study to collect site – specific data on the Penobscot River and estuary. Results of the treatability studies will be used in the Alternatives Evaluation Report in the evaluation of remedial technologies that were identified in the Technology Screening Report (Amec 2017) as potentially applicable for the Penobscot River and estuary.

This technical memorandum, including tables, figures and attachments, presents the results of bench-scale leachability tests on sediment/wood waste mixtures collected from three general locations in the estuary. The purpose of the leachability bench-scale study was to evaluate leachability of mercury and methyl mercury from sediment and sediment/wood waste mixtures containing elevated organic carbon content and to assess whether salinity influences the leachability of mercury and methyl mercury. A discussion of the results of this study and their applicability to remedial design will be presented in the Alternatives Evaluation Report.

SEDIMENT SAMPLE COLLECTION PROCEDURES

Amec Foster Wheeler collected bulk sediment from three areas on September 11 and 12, 2017 (**Figure 1**). The bulk sediment collection locations in Verona Northeast (Verona NE) intertidal, Frankfort Flats/Bucksport intertidal, and Bucksport subtidal were chosen to represent a range of organic carbon concentrations (two samples had organic carbon content between 5% and 10% and the third had organic carbon content of approximately 45%). The wood waste content also appeared visually similarly to the organic carbon content. Bulk sediment collection narratives, work plans, daily activity summaries, and Field Daily Report (FDRs) for each bulk sediment collection location are presented in **Attachment A**.

Bulk sediment of approximately 100 percent woodchip material was collected from a single subtidal location in the Bucksport reach (BU_100WCH), homogenized, and aliquoted into a single laboratory sample designated as BU_100WCH. At the two intertidal areas, bulk sediment was collected at discrete locations and composited to create a bulk sediment composite. Bulk sediment was collected at four discrete locations from the Verona NE area (VN-BULK1, VN-BULK2, VN-BULK3 and VN-BULK4), composited, homogenized, and aliquoted into a single laboratory sample designated VN_25WCH. For the Frankfort Flats and Bucksport areas, bulk sediment was collected at four discrete locations (FF52A, FF52B, BU51A and BU51B), composited, homogenized, and aliquoted into a single laboratory sample designated FFBU_60WCH. Sample locations are shown in **Figure 1**.

An aliquot of each of the three bulk sediment composite samples was analyzed for total mercury by Method 1631 using hot aqua regia digestion, methyl mercury by Method 1630 with methanolic KOH extraction, percent solids by Method 2540G, and total organic carbon (TOC) by the Lloyd Kahn Method.

Sediment sampling was conducted in accordance with SOP S-6 of the Quality Assurance Project Plan (QAPP) (Amec 2016). Decontamination of equipment between samples was consistent with SOP S-17 of the QAPP. Sample labeling was conducted in accordance with SOP S-2 of the QAPP and sample packaging, shipping and tracking were conducted in accordance with SOP S-20 of the QAPP.

SURFACE WATER SAMPLE COLLECTION PROCEDURES

Surface water samples were collected from two locations: near Fort Point at high tide for higher salinity conditions (measured 24 parts per thousand [ppt] salinity) and near Hampden at low tide for low salinity conditions (measured 0 ppt salinity) (**Figure 1**). Work plans, daily activity summaries, and FDRs including each surface water sample are presented in **Attachment A**. Water samples were analyzed for total mercury by Method 1631E and methyl mercury by Method 1630.

Surface water sampling was conducted in accordance with SOP S-4 of the QAPP. Surface water was collected at a depth of approximately 1 foot below the water surface with a pre-cleaned plastic bucket.

LEACHABILITY BENCH-SCALE TESTING PROCEDURES

Leachability testing was conducted to evaluate the extent of mercury leaching from three field-collected and composited samples of wood waste/sediment. Low salinity and higher salinity estuary water samples were used in the leachability tests. The leachability testing procedure

followed a modified elutriate testing procedure as described below and was performed by and at the Eurofins analytical laboratory.

Step 1: Collect aliquots from each of the three composited and homogenized field samples and analyze for total mercury, methyl mercury, percent solids, and TOC.

Step 2: Analyze low and higher salinity surface water samples for total mercury and methyl mercury.

Step 3: Create six test procedure aliquots (a through f, below) that represent the 3 field sediment composites for each of the 2 surface waters of low versus higher salinity. For each test aliquot, mix 50 grams of wood waste/sediment with 200 milliliters of surface water and shake for 30 minutes using a Glas-Col Model 099ARD50 rotator. Conduct each test with 6 replicates (i.e., 6 replicate tests for each wood waste/sediment for each surface water mixture scenario). Test scenarios were performed as follows:

- a) FFBU_60WCH_091317_SED_05 with higher salinity water (6 replicate vials)
- b) FFBU_60WCH_091317_SED_05 with low salinity water (6 replicate vials)
- c) VN_25WCH_091317_SED_05 with higher salinity water (6 replicate vials)
- d) VN_25WCH_091317_SED_05 with low salinity water (6 replicate vials)
- e) BU_100WCH_091217_SED_03 with higher salinity water (6 replicate vials)
- f) BU_100WCH_091217_SED_03 with low salinity water (6 replicate vials)

Step 4: Allow the mixture to settle for 60 minutes.

Step 5: For each test scenario (n = 6), decant and filter (using a verified trace clean 0.45 micron filter) the elutriate supernatant from three of the replicate vials (18 vials total) and analyze the elutriate supernatant for total mercury and methyl mercury.

For the procedure described in Step 5, the vials were labeled as:

- a) FFBU_60WCH_091317_Leach_EHS (high salinity) with 3 replicates (_R1; _R2; _R3)
- b) FFBU_60WCH_091317_Leach_ELS (low salinity) with 3 replicates (_R1; _R2; _R3)
- c) VN_25WCH_091317_Leach_EHS (high salinity) with 3 replicates (_R1; _R2; _R3)
- d) VN_25WCH_091317_Leach_ELS (low salinity) with 3 replicates (_R1; _R2; _R3)
- e) BU_100WCH_091217_Leach_EHS (high salinity) with 3 replicates (_R1; _R2; _R3)
- f) BU_100WCH_091217_Leach_ELS (low salinity) with 3 replicates (_R1; _R2; _R3)

Step 6: For the remaining three replicate vials for each of the 6 test scenarios described in Steps 3 and 4, centrifuge (10,395 x g) the contents of the vial for 10 minutes (18 vials total) and decant the (unfiltered) elutriate.

For the procedure described in Step 6, the vials were labeled as:

- a) FFBU_60WCH_091317_Leach_EHS_Cent (high salinity) with 3 replicates (_R1; _R2; _R3)
- b) FFBU_60WCH_091317_Leach_ELS_Cent (low salinity) with 3 replicates (_R1; _R2; _R3)
- c) VN_25WCH_091317_Leach_EHS_Cent (high salinity) with 3 replicates (_R1; _R2; _R3)
- d) VN_25WCH_091317_Leach_ELS_Cent (low salinity) with 3 replicates (_R1; _R2; _R3)

- e) BU_100WCH_091217_Leach_EHS_Cent (high salinity) with 3 replicates (_R1; _R2; _R3)
- f) BU_100WCH_091217_Leach_ELS_Cent (low salinity) with 3 replicates (_R1; _R2; _R3)

Step 7: Following the decanting of the elutriate supernatant, press the settled solids (remaining wood waste/sediment) and recover the leachate from the pressing. Add the press leachate to the unfiltered elutriate and analyze for total mercury and methyl mercury.

Recover the pressed solids and analyze the solids for total mercury, methyl mercury, percent solids and TOC.

For this procedure, the sediment samples were labeled as:

- a) FFBU_60WCH_091317_Leach_HS_WCH (high salinity) with 3 replicates (_R1; _R2; _R3)
- b) FFBU_60WCH_091317_Leach_LS_WCH (low salinity) with 3 replicates (_R1; _R2; _R3)
- c) VN_25WCH_091317_Leach_HS_WCH (high salinity) with 3 replicates (_R1; _R2; _R3)
- d) VN_25WCH_091317_Leach_LS_WCH (low salinity) with 3 replicates (_R1; _R2; _R3)
- e) BU_100WCH_091217_Leach_HS_WCH (high salinity) with 3 replicates (_R1; _R2; _R3)
- f) BU_100WCH_091217_Leach_LS_WCH (low salinity) with 3 replicates (_R1; _R2; _R3)

FINDINGS

The analytical data collected for the leachability bench-scale study are presented in **Table 1** through **Table 4** and laboratory analytical reports are presented in **Attachment B**. **Table 1** presents the preliminary surface water and sediment results (procedural steps 1 and 2 from above). **Tables 2, 3 and 4** present results for the leachability testing (procedural steps 3 through 7) for bulk material collected from the three areas: Bucksport reach (BU_100WCH) representative of approximately 100 percent woodchip material, Frankfort Flats/Bucksport reaches (FFBU_60WCH), and Verona NE (VN_25WCH).

Initial sediment concentrations for the three samples and their replicates ranges from 694 to 1000 nanograms per gram (ng/g) total mercury and 9.2 to 17.5 ng/g methyl mercury. For the low salinity water sample, the initial unfiltered total mercury concentration is 1.76 nanograms per liter (ng/L) and the initial unfiltered methyl mercury concentration is 0.093 ng/L. For the higher salinity water sample, the initial unfiltered total mercury concentration is 1.02 ng/L and the initial unfiltered methyl mercury concentration is non-detect.

For surface water and leachability test elutriate, laboratory results were compared to the Maine ambient freshwater chronic water quality criterion of 0.91 micrograms per liter ($\mu\text{g/L}$) [or 910 nanogram per liter (ng/L)] for total mercury. As context, the Maine freshwater chronic criterion is the lowest of the four Maine mercury water quality criteria that include: freshwater chronic [0.91 $\mu\text{g/L}$]; freshwater acute [1.7 $\mu\text{g/L}$]; saltwater chronic [1.1 $\mu\text{g/L}$]; and saltwater acute [2.1 $\mu\text{g/L}$].¹ For the monthly average and daily maximum discharge concentrations, the HoltraChem site wastewater discharge limits are the same as the Maine freshwater acute and chronic water quality criteria.

Total mercury concentrations in the leachate samples from Step 5 (water shaken/mixed with sediments, allowed to settle and then filtered) ranged from non-detect (less than 0.5 ng/L) to

¹<http://www.mainelegislature.org/legis/statutes/38/title38sec420.html>

6.56 ng/L, and methyl mercury results were between non-detect (less than 0.05 ng/L) to 1.0 ng/L. The high salinity and low salinity Bucksport woodchip and Frankford Flats/Bucksport samples, and the Verona NE high salinity sample all had mercury concentrations less than 2.5 ng/L and methyl mercury concentrations less than 0.11 ng/L. The Verona NE low salinity sample had mercury concentrations greater than 5.4 ng/L and methyl mercury concentrations greater than 0.96 ng/L. While some of these concentrations are higher than the initial unfiltered mercury and methyl mercury concentrations (1.02 ng/L and 1.76 ng/L for total mercury, and less than 0.05 ng/L and 0.093 ng/L for methyl mercury), they are significantly lower than the Maine freshwater chronic water quality criterion of 910 ng/L, and do not indicate significant rapid transfer of dissolved mercury from the particulate phase to the aqueous phase, even with aggressive shaking/mixing.

Total mercury concentrations in the leachate from Steps 6 and 7 (water removed by centrifuging and pressing after shaking/mixing), ranged from 12.1 ng/L to 421 ng/L, and methyl mercury results ranged from 0.034 ng/L to 7.83 ng/L. The leachate from both the high and low salinity samples from the Bucksport woodchips had significantly higher concentrations of mercury and methyl mercury than the samples from the other two field locations. For the Bucksport woodchip sample, the leachate had mercury and methyl mercury concentrations greater than 250 ng/L and 0.85 ng/L, respectively, while samples from the other two areas had leachate mercury and methyl mercury concentrations less than 55 ng/L and 0.46 ng/L, respectively. Maximum concentrations of both mercury and methyl mercury in the leachate from this test were below than the Maine freshwater chronic water quality criterion of 910 ng/L.

The difference in aqueous phase concentrations of total mercury following centrifugation and pressing versus following filtration suggests that, in these samples, mercury is likely sorbed or attached to particles that either do not settle during centrifugation or are pressed from the wood waste/sediment during the press step. The difference between results for centrifugation and pressing versus filtration is most significant for the Bucksport wood waste sample which suggests that the particles remaining in solution after centrifugation/pressing are a fine particulate phase of wood waste (**Figure 2**).

In assessing the impact of surface water salinity on leachability of total mercury and methyl mercury, it appears that leachate concentrations of total mercury and methyl mercury were consistently higher following treatment with low salinity water versus treatment with higher salinity water.

REFERENCES

- Amec Foster Wheeler, 2016. Draft Quality Assurance Project Plan (QAPP), Penobscot River Phase III Engineering Study, Penobscot River, Maine. July.
- Amec Foster Wheeler, 2017. Technology Screening Report, Penobscot River Phase III Engineering Study, Penobscot River, Maine. March.
- Kahn, Lloyd. 1988. Determination of Total Organic Carbon in Sediment (Lloyd Khan Method), Edison, New Jersey. July.
- Maine Department of Environmental Protection (MEDEP). 2008. Compliance Order In The Matter of United States Surgical Corporation Mallinckrodt Concerning a ChlorAlkali Manufacturing Facility in Orrington, Penobscot County, Maine Formerly Owned and Operated By Mallinckrodt Inc.

Penobscot River Mercury Study Panel (PRMSP), 2013. Final Report: Mercury Contamination of the Penobscot River Estuary: Current Situation, Remediation Targets, and Possible Remediation Procedures. Penobscot River Mercury Study. April 2013.

Standard Methods for the Examination of Water and Wastewater (SM). 1997. Method SM 2540G: Total, Fixed, and Volatile Solids in Solid and Semisolid Samples. American Public Health Association, American Water Works Association, Water Environment Federation.

Tables

- 1 Preliminary Surface Water and Sediment Analysis
- 2 BU_100WCH Leachability Data
- 3 FFBU_60WCH Leachability Data
- 4 VN_25WCH Leachability Data

Figures

- 1 Bulk Sample Collection Locations
- 2 Comparison of Total Mercury Results by Different Leachability Test Processing Methods

Attachments

- Attachment A Bulk sample collection narrative, issued work plans, daily activity summaries, and Field Daily Report (FDRs)
- Attachment B Laboratory Reports

TABLES

**TABLE 1
 PRELIMINARY SURFACE WATER AND SEDIMENT ANALYSIS**

Penobscot River Phase III Engineering Study

Media	Location	Sample Date	Sample ID	QC Code	Mercury		Methyl Mercury		% Solids		% Solids		Total Organic Carbon		Mercury		Methyl Mercury	
					Method Code	1631 ¹	KOH_1630	% Solids	2540G	LLOYD_KAHN	E1631	EPA 1630						
					Units	ng/g	ng/g	% by weight	%	%	ng/L	ng/L						
					Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Surface Water	FPCPIER_HIGH	09/11/17	FPCPIER_HIGH_091117_SW ²	FS											1.02		0.05	U
	ONHAMLIN_LOW	09/11/17	ONHAMLIN_LOW_091117_SW ²	FS											1.76		0.093	
Sediment	BU_100WCH	09/12/17	BU_100WCH_091217_SED_03_R1	FS	1000		14.8		17.2	J	13.5		44.85					
	BU_100WCH	09/12/17	BU_100WCH_091217_SED_03_R2	FS	855		11	J	17.5	J	11.4		44.75					
	BU_100WCH	09/12/17	BU_100WCH_091217_SED_03_R3	FS	829		12.7		16.6	J	11.8		45.1					
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_SED_05_R1	FS	756		9.7		33.3	J	34.2		6.62	J				
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_SED_05_R2	FS	757		9.4		32.5	J	34.9		9.935	J				
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_SED_05_R3	FS	694		9.2		32.4	J	35.7		9.76	J				
	VN_25WCH	09/13/17	VN_25WCH_091317_SED_05_R1	FS	771		15.4		33.3	J	32.8		6.36	J				
	VN_25WCH	09/13/17	VN_25WCH_091317_SED_05_R2	FS	738		15		33.8	J	35.3		6.025	J				
VN_25WCH	09/13/17	VN_25WCH_091317_SED_05_R3	FS	780		17.5		32.4	J	35.5		6.16	J					

Notes:

- (1) Method 1631 with hot aqua regia digestion
- (2) Aqueous samples not filtered prior to analysis
- FS = Field Sample
- ng/g = nanograms per gram
- ng/L = nanograms per liter
- % = percent

Flags:

- U = Value not detected above reporting limit
- J = Estimated value

Exceeds the Maine ambient freshwater chronic water quality criterion of 910 nanograms per liter (ng/L) for total mercury

Prepared/Date: DF 11/22/2017
 Checked/Date: JPP 11/27/2017

TABLE 2
BU_100WCH LEACHABILITY DATA

Penobscot River Phase III Engineering Study

Media	Location	Sample Date	Sample ID	Filtered (F) / Not Filtered (NF) ²	QC Code	Mercury		Methyl Mercury		Mercury		Methyl Mercury		Percent Solids		Percent Solids, Residual		Total Organic Carbon	
						Method Code	E1631	EPA 1630	1631 ¹	KOH_1630	% Solids	2540G	LLOYD_KAHN						
						Units	ng/L	ng/L	ng/g	ng/g	% by weight	%	%						
						Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Surface Water	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_EHS_R1	F	FS	0.66		0.05	U										
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_EHS_R2	F	FS	0.83		0.05	U										
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_EHS_R3	F	FS	0.83		0.05	U										
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_EHS_Cent_R1	NF	FS	364		0.851	J										
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_EHS_Cent_R2	NF	FS	310		3.98	J										
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_EHS_Cent_R3	NF	FS	357		2.06	J										
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_ELS_R1	F	FS	1.93		0.108											
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_ELS_R2	F	FS	2.27		0.102											
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_ELS_R3	F	FS	2.35		0.101											
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_ELS_Cent_R1	NF	FS	259		4.63											
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_ELS_Cent_R2	NF	FS	421		7.83											
BU_100WCH	09/12/17	BU_100WCH_091217_Leach_ELS_Cent_R3	NF	FS	369		7.26												
Sediment	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_HS_WCH_R1	-	FS					1320	J	19.3		24.7	J	23.8		47.35	
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_HS_WCH_R2	-	FS					1030	J	17.4		25.9	J	24.8		43.55	
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_HS_WCH_R3	-	FS					3810	J ³	15.9		28.2	J	27.7		45.7	
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_LS_WCH_R1	-	FS					1080		20.1		17.8	J	18.9		51.7	
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_LS_WCH_R2	-	FS					1160		15.6		21.4	J	24.1		58.05	
	BU_100WCH	09/12/17	BU_100WCH_091217_Leach_LS_WCH_R3	-	FS					1330		17		21.1	J	22.2		49.3	

Notes:

- (1) Method 1631 with hot aqua regia digestion
 - (2) Filtered = sample filtered with a 0.45 micron filter prior to analysis; Not Filtered = sample centrifuged and pressed prior to analysis
 - (3) Sample assigned a "LR" validation qualifier by analytical laboratory
- FS = Field Sample
 ng/g = nanograms per gram
 ng/L = nanograms per liter
 % = percent

Flags:

- U = Value not detected above reporting limit
- J = Estimated value

Prepared/Date: DF 11/22/2017
 Checked/Date: JPP 11/27/2017

 Exceeds the Maine ambient freshwater chronic water quality criterion of 910 nanograms per liter (ng/L) for total mercury

TABLE 3
FFBU_60WCH LEACHABILITY DATA

Penobscot River Phase III Engineering Study

Media	Location	Sample Date	Sample ID	Filtered (F) / Not Filtered (NF) ²	QC Code	Mercury		Methyl Mercury		Mercury		Methyl Mercury		% Solids		% Solids, Residual		Total Organic Carbon	
						Method Code	E1631	EPA 1630	1631 ¹	KOH_1630	% Solids	2540G	LLOYD_KAHN						
						Units	ng/L	ng/L	ng/g	ng/g	% by weight	%	%						
						Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Surface Water	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_EHS_R1	F	FS	0.5	U	0.05	U										
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_EHS_R2	F	FS	0.5	U	0.05	U										
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_EHS_R3	F	FS	0.5	U	0.05	U										
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_EHS_Cent_R1	NF	FS	13.1		0.057											
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_EHS_Cent_R2	NF	FS	13		0.064											
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_EHS_Cent_R3	NF	FS	14.8		0.034											
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_ELS_R1	F	FS	1.16		0.05	U										
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_ELS_R2	F	FS	1.14		0.035	J										
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_ELS_R3	F	FS	1.17		0.05	U										
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_ELS_Cent_R1	NF	FS	38.4		0.074	J										
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_ELS_Cent_R2	NF	FS	39.5		0.161	J										
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_ELS_Cent_R3	NF	FS	46.7		0.152	J										
Sediment	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_HS_WCH_R1	-	FS					760		9.3		45.6	J	45.4		9.495	
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_HS_WCH_R2	-	FS					773		8.8		41.5	J	42		7.01	
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_HS_WCH_R3	-	FS					911		9.1		38.5	J	36.4		7.315	
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_LS_WCH_R1	-	FS					715		10		44.1	J	42		8.55	
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_LS_WCH_R2	-	FS					900		11.9		39.4	J	39.4		6.485	
	FFBU_60WCH	09/13/17	FFBU_60WCH_091317_Leach_LS_WCH_R3	-	FS					918		8.6		36.4	J	40		8.875	

Notes:

- (1) Method 1631 with hot aqua regia digestion
- (2) Filtered = sample filtered with a 0.45 micron filter prior to analysis; Not Filtered = sample centrifuged and pressed prior to analysis

Flags:

- U = Value not detected above reporting limit
- J = Estimated value

FS = Field Sample
 ng/g = nanograms per gram
 ng/L = nanograms per liter
 % = percent

Prepared/Date: DF 11/22/2017
 Checked/Date: JPP 11/27/2017

Exceeds the Maine ambient freshwater chronic water quality criterion of 910 nanograms per liter (ng/L) for total mercury

TABLE 4
VN_25WCH LEACHABILITY DATA

Penobscot River Phase III Engineering Study

Media	Location	Sample Date	Sample ID	Filtered (F) / Not Filtered (NF) ²	QC Code	Mercury		Methyl Mercury		Mercury		Methyl Mercury		% Solids		% Solids, Residual		Total Organic Carbon	
						Method Code	E1631	EPA 1630	1631 ¹	KOH_1630	% Solids	2540G	LLOYD_KAHN						
						Units	ng/L	ng/L	ng/g	ng/g	% by weight	%	%						
						Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Surface Water	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_EHS_R1	F	FS	1.69		0.05	U										
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_EHS_R2	F	FS	1.68		0.039	J										
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_EHS_R3	F	FS	1.48		0.034	J										
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_EHS_Cent_R1	NF	FS	14.4	J	0.089											
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_EHS_Cent_R2	NF	FS	5.44	J	0.126											
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_EHS_Cent_R3	NF	FS	12.1	J	0.112											
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_ELS_R1	F	FS	6.56		1.6	J										
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_ELS_R2	F	FS	5.47		0.964	J										
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_ELS_R3	F	FS	5.88		1	J										
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_ELS_Cent_R1	NF	FS	54.1		0.135	J										
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_ELS_Cent_R2	NF	FS	42.5		0.451	J										
VN_25WCH	09/13/17	VN_25WCH_091317_Leach_ELS_Cent_R3	NF	FS	47.8		0.095	J											
Sediment	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_HS_WCH_R1	-	FS					733		20		36.5	J	55.1		4.43	J
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_HS_WCH_R2	-	FS					988		21.1		42.3	J	44.2		6.91	J
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_HS_WCH_R3	-	FS					877		18.6		40.6	J	38.7		7.895	J
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_LS_WCH_R1	-	FS					863		18.5		40.1	J	40.4		7.635	
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_LS_WCH_R2	-	FS					826		23		43.6	J	38.2		7.215	
	VN_25WCH	09/13/17	VN_25WCH_091317_Leach_LS_WCH_R3	-	FS					852		21.1		38.8	J	43.9		8.175	

Notes:

(1) Method 1631 with hot aqua regia digestion
 (2) Filtered = sample filtered with a 0.45 micron filter prior to analysis; Not Filtered = sample centrifuged and pressed prior to analysis

Flags:

U = Value not detected above reporting limit
 J = Estimated value

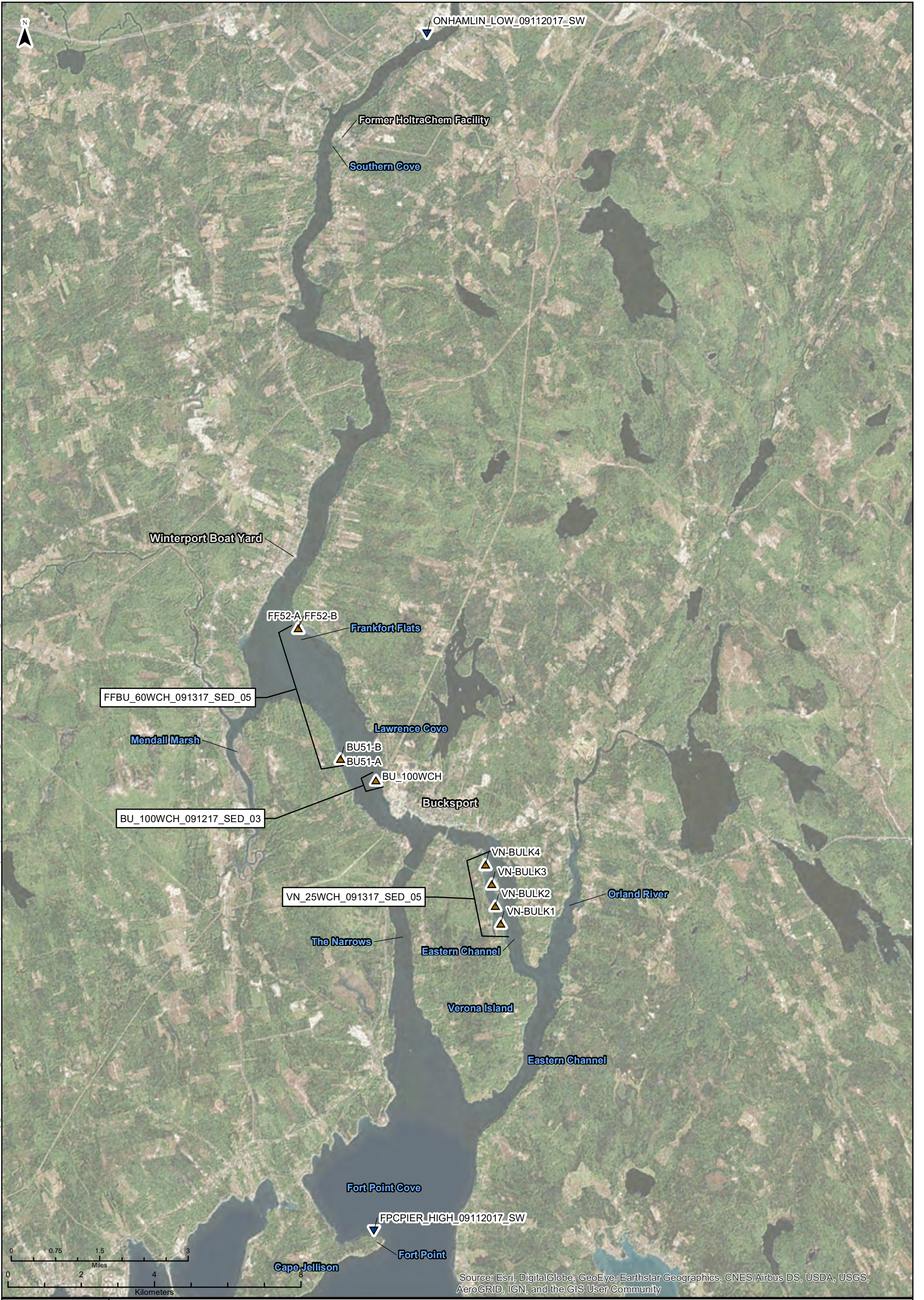
FS = Field Sample
 ng/g = nanograms per gram
 ng/L = nanograms per liter
 % = percent

Prepared/Date: DF 11/22/2017
 Checked/Date: JPP 11/27/2017

 Exceeds the Maine ambient freshwater chronic water quality criterion of 910 nanograms per liter (ng/L) for total mercury

FIGURES

Document: P:\Projects\USDC - Penobscot GIS Control 8 - AER WORKSPACE\W2\AWO-2\A0531\MXD\Fig1_LeachboxLocations_11x17P.mxd 12/5/2017 1:42:15 PM ian.desjarlais@afw.com



Symbol Key

- ▲ Sediment Sampling Location
- ▼ Surface Water Sampling Location

Figure 1
Sample Collection Locations

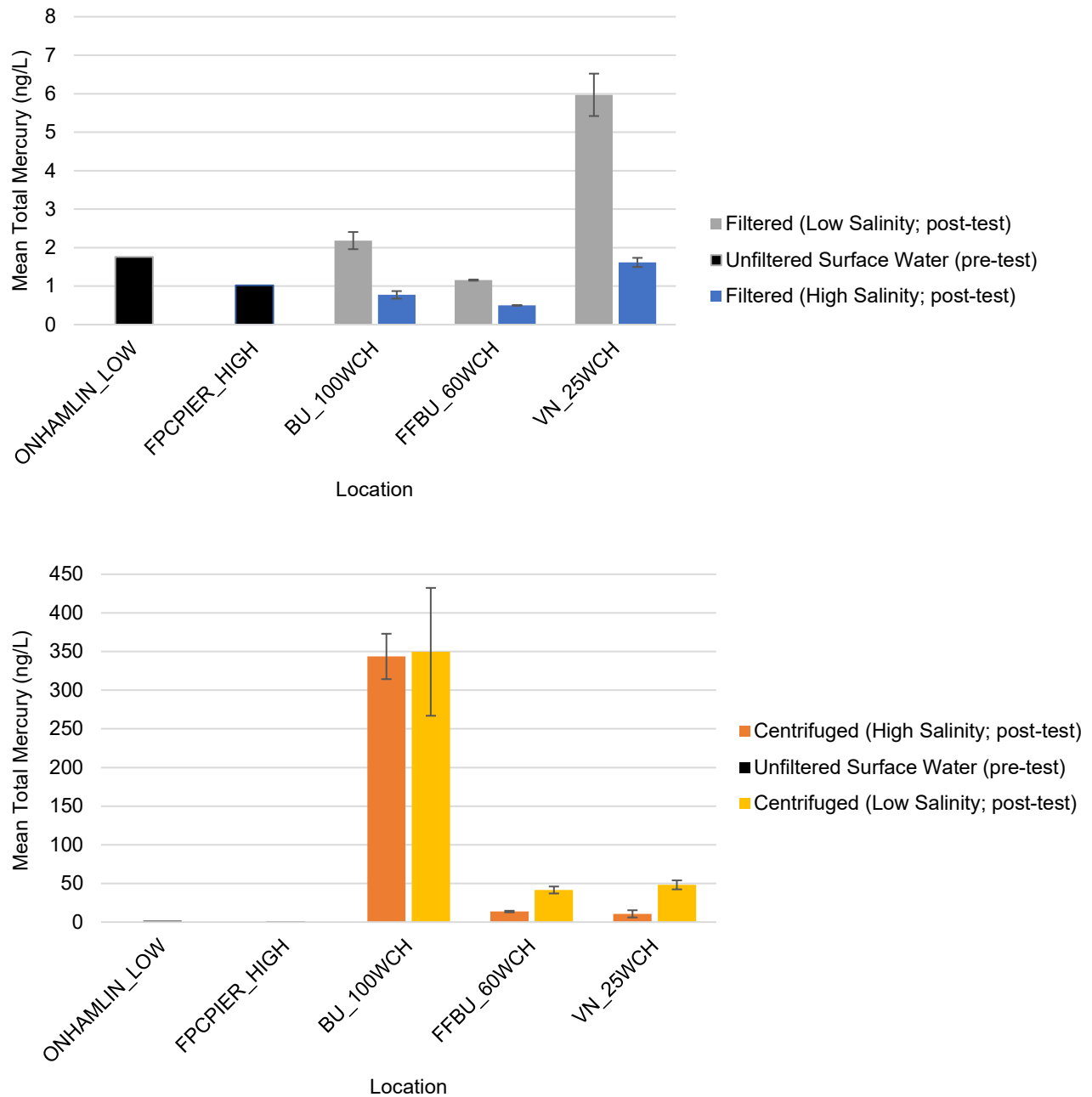
Leachability Bench-Scale Report
Penobscot River
Phase III Engineering Study

Project: 3616166052

Prepared: ICD 11/27/2017

Checked: DF 11/27/2017





Comparisons for total mercury on leachate samples following filtration with a 0.45 micron filter (top) and leachate samples following centrifugation/pressing without filtration (bottom). Error bars show one standard deviation (n=3).

Figure 2
Comparison of Total Mercury Results by Different Leachability Test Processing Methods

Leachability Bench-Scale Testing
 Penobscot River Phase III Engineering Study

ATTACHMENT A
BULK SAMPLE COLLECTION NARRATIVE, ISSUED WORK PLANS,
DAILY ACTIVITY SUMMARIES, AND FIELD DAILY REPORT (FDRS)



DATE: 15 November 2017

TO: Eugene Shephard, P.E. - Associate Project Manager, Portland
[207.775.5401]

FROM: Brian Weyer, P.E. – Technical Professional 3 - Geotechnical, Raleigh/Durham
[919.765.0015]

SUBJECT: Dewatering and Leachability Bulk Material Collection - September 2017

AmecFW Project No. 36166052.02A.0531

NOTE: SEE PAGES 5 AND 6 FOR FLOW CHARTS FOR A CONCISE EXPLANATION OF THIS MEMO. FLOW CHARTS DETAIL THE PROCESS FROM FIELD COLLECTION TO LAB DELIVERY.

This memo details the collection of bulk sediment and bulk water from multiple locations along the Penobscot River for use in Dewatering and Leachability testing. Bulk sediment were collected in three different reaches of the river: Frankfort Flats, Bucksport and Verona North. There were multiple collection locations within each reach. Tabulated below are the coordinates for each of the sampling locations. A single, 5-gallon bucket of sediment was collected at each of the locations, with the exception of BU_100WCH. At BU_100WCH, a 2-gallon bucket of material was collected.

Location	Coordinates		
	GPS ID	Latitude	Longitude
BU51-A ¹	BU51	44.586871	-68.824900
BU51-B ¹	BU51	44.586871	-68.824900
FF52-A ¹	FF52	44.618951	-68.839600
FF52-B ¹	FF52	44.618951	-68.839600
VN-BULK1	VN-BULK1	44.546620	-68.769646
VN-BULK2	VN-BULK2	44.550897	-68.771460
VN-BULK3 ²	-	44.556296	-68.772717
VN-BULK4	VN-BULK4	44.561049	-68.774977
BU_100WCH	BU_100WCH	44.581641	-68.812673

¹ indicates that the A and B sampling locations were at the same vessel location. A and B represent bulk sediment collection from opposite sides of the vessel. One from port side, one from starboard.

² indicates a location where coordinates are assumed. A GPS point was not collected in the field for this location.

Collection Narrative

Bucksport and Frankfort Flats Locations

At locations BU51 and FF52 the Pamola II was beached, during a rising tide, at a location where the sediment was exposed at low tide. Reaching off the bow of the boat, two staff would shovel the sediment into new 5 gallon buckets filling until the required volume was achieved. One staff member would man the helm at all times to ensure the vessel stayed on location. Shovels were decontaminated between stations in accordance with SOP S-17. In the Bucksport and Frankfort Flats reaches, the A and B locations were collected at a single location where the vessel was beached. The difference in the A and B designations is that the bulk sediment were collected on different sides of the vessel; one sample on the port side of the bow and one on the starboard side of the bow. Only a single GPS point was recorded for these sample locations. The intent of obtaining bulk sediment from both sides of the vessel was to obtain the required volume of bulk sediment from a depth of mudline to no greater than 6 inches below mudline. If the required volume of material was obtained only on one side of the vessel, the collection depth would have been greater than 6 inches below mudline. The buckets of bulk sediment were placed in the refrigerated storage in Winterport after collection. The FDRs that apply to this collection are as follows:

- FF52A – 9/11/2017 @ 1144
- FF52B – 9/11/2017 @ 1150
- BU51A – 9/11/2017 @ 1215
- BU51B – 9/11/2017 @ 1220

Verona North Locations³

At three of the locations in Verona North, bulk sediment were collected while the boat was floating. Water depths at the sampling locations ranged from 2 to 3 feet. At one location the vessel was beached as it was at sampling locations in the Bucksport and Frankfort Flats reaches. Bulk sediment were collected in the same manner as those in the other reaches. The buckets of material were placed in refrigerated storage in Winterport after collection. The FDRs that apply to this collection are as follows:

- VN-BULK1 – 9/12/2017 @ 1245
- VN-BULK2 – 9/12/2017 @ 1305
- VN-BULK3 – 9/12/2017 @ 1340
- VN-BULK4 – 9/12/2017 @ 1400

³ As shown on the daily activity summary for 09/12/2017, the field crew encountered inconsistent material during sampling at the first visited location in Verona North. A call was placed to project leadership to determine a method for collecting a representative bulk sediment from the intertidal mudflat located between Porcupina Island and Verona Island. Project leadership advised the field staff that a transect of 4 locations, running in a north-south orientation, should be sampled between Porcupina Island and Verona Island to capture a representative sample of the sediment-wood waste mix in this intertidal area. A total of 4 locations designed VN-BULK1 through VN-BULK4 were sampled. A single 5-gallon bucket of bulk sediment was collected at each of the 4 locations.

Bucksport 100% Woodchip Location

A sample of 100% woodchip material was collected from a single location in the Bucksport reach of the river on 9/12/2017. The location where the sample was obtained is often referred to as the "23-ft hole". The sample was collected using the petite ponar deployed from the Pamola II. The FDR that applies to this collection is as follows:

- BU-WCH – 9/12/2017 @ 1100

Compositing of Bulk Sediment – FF, BU and VN Locations

On 9/12/2017 and 9/13/2017, bulk sediment from FF, BU and VN locations were composited to create bulk sediment samples for transport to analytical labs for testing. Bulk sediment from the FF and BU locations (a total of 4 locations) were composited together and the VN locations (a total of 4 locations) were composited together. The following procedures, as detailed on the Work Plan for 9/12/2017, were completed to create composite samples of the bulk sediment.

Compositing Procedures – FF and BU

- Decontaminate mixing tub
- Combine bulk sediment from FF and BU locations (FF52A, FF52B, BU51A, BU51B; 4 5-gallon buckets; FDRs = FF52A, FF52B, BU51A and BU51B) together in the mixing tub. Composite sample will be 4 5-gallon buckets of bulk sediment.
- Mix composite sample for 3 minutes per gallon using drill and paddle wheel.
- After mixing is complete, place composited bulk sediment in 5-gallon buckets and store in refrigerated storage. Buckets labeled as follows:
 - FFBU_60WCH_091317_SED_05_1 of 4
 - FFBU_60WCH_091317_SED_05_2 of 4
 - FFBU_60WCH_091317_SED_05_3 of 4
 - FFBU_60WCH_091317_SED_05_4 of 4⁴
- Following compositing of the bulk sediment, the buckets are to be stored in refrigerated storage until they are ready for transport to the analytical lab.

Compositing Procedures – VN

- Decontaminate mixing tub
- Combine bulk sediment from VN locations (VN-BULK1, VN-BULK2, VN-BULK3, VN-BULK4; 4 5-gallon buckets; FDRs = VN-BULK1, VN-BULK2, VN-BULK3, VN-BULK4) together in the mixing tub. Composite sample will be 4 5-gallon buckets of bulk sediment.
- Mix composite sample for 3 minutes per gallon using drill and paddle wheel.

⁴ After compositing of the FF and BU locations, a bucket was not re-labeled per the work instructions. The bucket was left marked as FF25B. Due to the mislabeling error, the 4th bucket of bulk sediment was left in the Winterport refrigerated storage and not shipped to an analytical lab. A total of 3 buckets for FFBU_60WCH were shipped for dewatering bench tests.

- After mixing is complete, place composited bulk sediment in 5-gallon buckets and store in refrigerated storage. Buckets labeled as follows:
- VN_25WCH_091317_SED_05_1 of 4
- VN_25WCH_091317_SED_05_2 of 4
- VN_25WCH_091317_SED_05_3 of 4
- VN_25WCH_091317_SED_05_4 of 4

Sample ID for Leachability Testing

After the bulk sediment was composited into the two bulk composite samples (FFBU_60WCH and VN_25WCH) a portion of each was aliquoted to create a 2-gallon sample that was shipped to Eurofins on 9/13/2017. 4 ounces of each bulk composite was also aliquoted to be delivered to Alpha on 9/13/2017. The following are the sample IDs of the aliquots shipped to Eurofins and Alpha:

- FFBU_60WCH_091317_SED_05⁵
- VN_25WCH_091317_SED_05⁵

Sample ID for Dewatering Testing

The FFBU_60WCH and VN_25WCH bucket lids were replaced and the buckets relabelled prior to sending them to the dewatering laboratory. The FFBU_60WCH buckets were relabelled as **FFBU_60WCH_BULKSEDIMENT_092817** and the VN_25WCH buckets were relabelled as **VN_25WCH_BULKSEDIMENT_092818**.

Bulk Sediment Transport to Dewatering Lab

The bulk sediment buckets departed from the Winterport field station on 9/30/2017. The buckets were packed in a box on wet ice inside a box truck for transport. They arrived at the AmecFW RDU office on 10/1/2017. The buckets were kept in refrigerated storage at the AmecFW RDU office until 10/5/2017 when they were transported to Kemron in Atlanta, GA. The buckets again were transported in a box on wet ice inside a box truck from RDU to ATL. The delivery arrived in Atlanta on 10/6/2017 and the samples were relinquished to Kemron.

Composite Sample GPS Locations

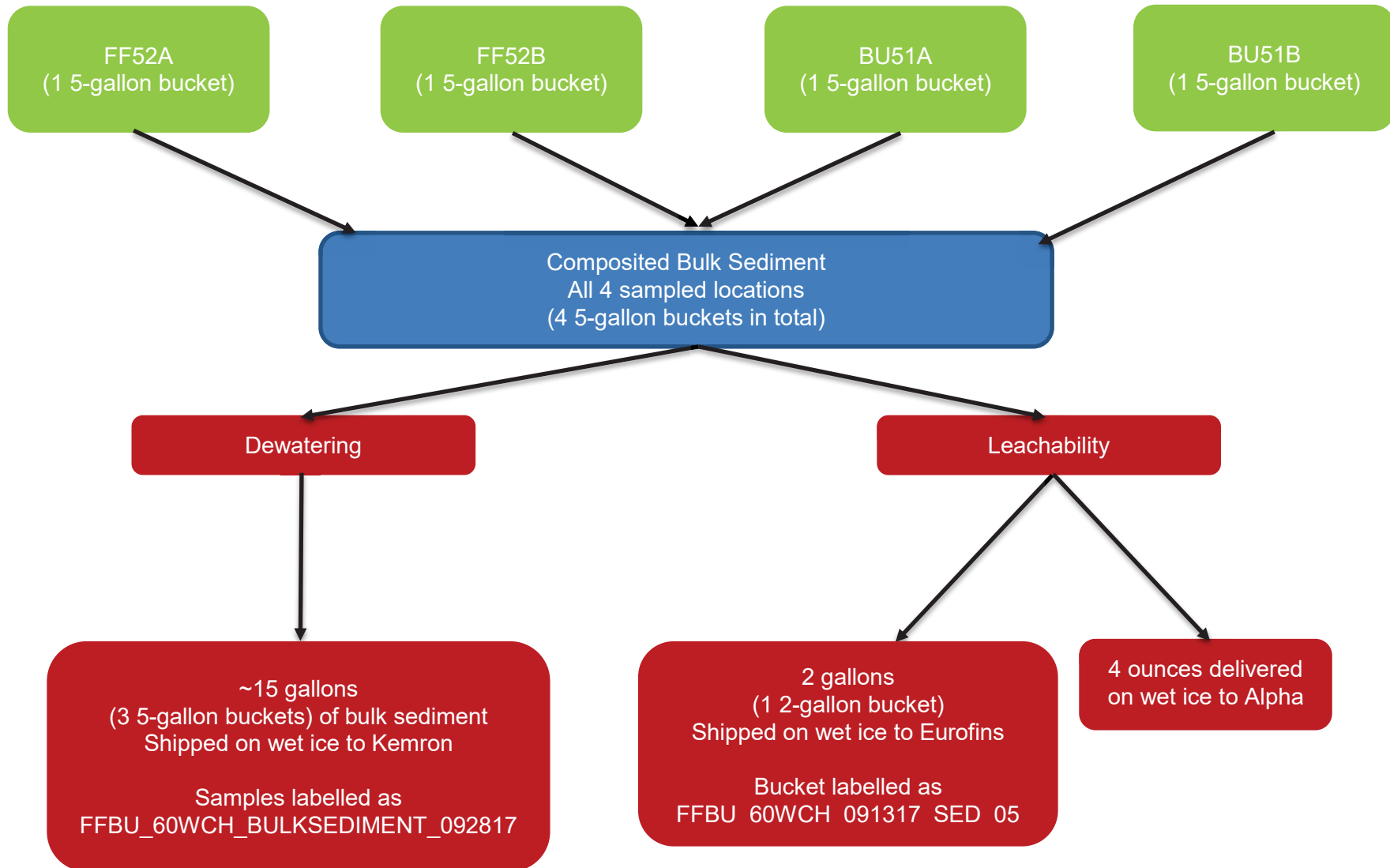
A GPS location was provided on 11/14/2017 by C. Platt to R. Pendleton for the two composites (FFBU_60WCH and VN_25WCH) for input into the TED system. The coordinates are listed below:

Location	Coordinates	
	Latitude	Longitude
FFBU_60WCH	44.618951	-68.839600
VN_25WCH	44.550897	-68.771460

⁵ Note: for laboratory triplicate testing, each aliquoted sample was subdivided into R1, R2 and R3.

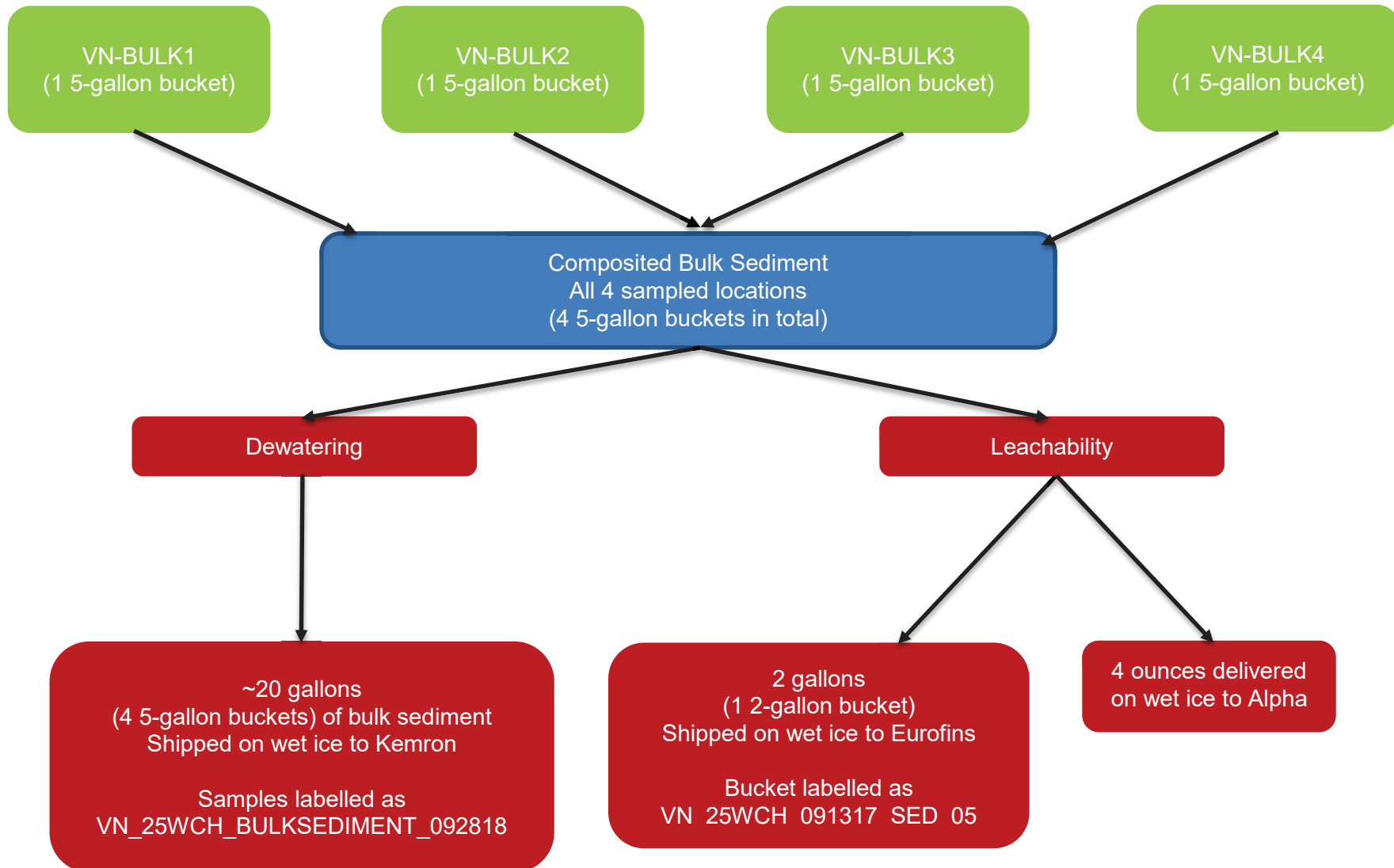
Dewatering and Leachability Bulk Material – FF and BU Locations

Process Flow Diagram from Collection to Relinquishment of Samples to Analytical and Dewatering Labs



Dewatering and Leachability Bulk Material – VN Locations

Process Flow Diagram from Collection to Relinquishment of Samples to Analytical and Dewatering Labs



Attachments

- Issued Work Plans
 - o 09/11/2017
 - o 09/12/2017
- Daily Activity Summary
 - o 09/11/2017
 - o 09/12/2017
- Field Daily Records for Bulk Sediment Collection

ATTACHMENTS

BULK SEDIMENT COLLECTION – WATERSIDE WORK

FIELD WORK PLAN

PENOBSCOT RIVER PHASE III ENGINEERING STUDY
 AMEC FOSTER WHEELER

Monday September 11

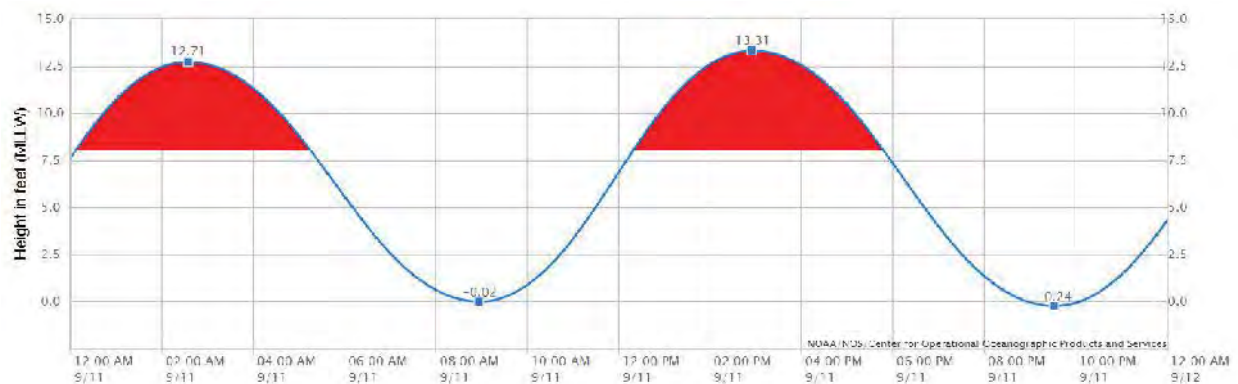
Vessel	Amec Foster Wheeler Pontoon
Crew Leader	Matt Martin, Amec Foster Wheeler (Durham)
Crew Members	Shaun Weaver, Amec Foster Wheeler (Richmond) John Cousins, Amec Foster Wheeler (Portland); Arrives 0930 hrs Tom Gerhard, Amec Foster Wheeler (Portland); Arrives 0930 hrs
Deltak Charge Numbers	3616166052.02A.2A0531; WP#5: 3616166052.02A.2A0511
Equipment Required	TWO 2-gallon buckets, FOUR 5-gallon buckets. All buckets must have lids.

Marine Forecast (as of 9/7/2017)

Wind Direction	Wind Speed (knots)	Seas (feet)
Northwest	5 to 10	1 or less

Weather Forecast (as of 9/7/2017)

Conditions	High Temp (°F)	Low Temp (°F)	Precipitation %	Sunrise	Sunset
Sunny	78	54	10	0610	1851



Work Priority	Location Name	Tide Conditions @ Location	Buckets Required	Method	Penetration / Recovery	Work Order	Arrival Time @ Location	Estimated Water Level @ Arrival Time (ft MLLW))	Drop Dead Departure Time from Location
			Bucket Size						
ACQUIRE COOLER WITH TWO 2-GALLON PAILS FROM KARINA AND JULIA. LEAVE HOTEL @ 0730.									
STOP AND GET WET ICE AT CLOSEST GAS STATION. DRIVE TO HAMLIN'S MARINA AND COLLECT ONE 2-GALLON PAIL OF RIVER WATER AROUND 0800 HRS. CAP AND LABEL AS ONHAMLIN_MMDDYYYY_SW.									
PLACE SAMPLE IN COOLER ON ICE AND LEAVE IN VEHICLE. DO NOT PLACE IN REFRIDGERATOR UPON ARRIVAL AT FIELD STATION.									
LEAVE DOCK @ 1000 hrs									
1	FF52A	Moderate Intertidal	1 5 gal	Clam Rake or Ponar	0 – 6 inch scrape / greater than 50% wood chips	2A0513	1015	+1.5	NA
2	FF52B	Moderate Intertidal	1 5 gal	Clam Rake or Ponar	0 – 6 inch scrape / greater than 50% wood chips	2A0513	1030	+2	NA
3	BU51A	Moderate Intertidal	1 5 gal	Clam Rake or Ponar	0 – 6 inch scrape / greater than 50% wood chips	2A0513	1100	+3	NA
4	BU51B	Moderate Intertidal	1 5 gal	Clam Rake or Ponar	0 – 6 inch scrape / greater than 50% wood chips	2A0513	1115	+3.5	NA
5	BU23ft Hole	Subtidal	1 2 gal	Ponar	Almost 100% Wood Chips	2A0511	1200	+7.5	NA
6	BU-08-02	Extreme Intertidal	1 2 gal	Ponar	-	4A071	1300	+10	NA
RETURN TO DOCK @ 1345									
PLACE SAMPLES FROM WORK ITEMS 1 THROUGH 4 AND 6 IN REFRIDGERATOR									
PLACE SAMPLE FROM WORK ITEM 5 IN COOLER WITH WET ICE TO BE SHIPPED TO EUROFINs. COMPLETE COC. PLACE IN VEHICLE WITH WATER SAMPLE COOLER FOR SHIPMENT AT END OF DAY.									
DRIVE TO FORT POINT COVE PARK PIER WITH COOLER FROM HAMLIN WATER SAMPLE AND EMPTY 2-GALLON PAIL. ENSURE SECOND COOLER WITH SAMPLE FROM WORK ITEM 5 IS ALSO IN VEHICLE. BRING 50-FT OF ROPE.									
COLLECT ONE 2-GALLON PAIL OF RIVER WATER AT PIER. CAP AND LABEL AS FPCPIER_MMDDYYYY_SW. PLACE IN COOLER ON ICE FOR TRANSPORT ALONG WITH SAMPLE FROM HAMLINs. COOLER SHOULD HAVE TWO BUCKETS OF WATER SAMPLES ON WET ICE. COMPLETE COC FOR THE TWO SAMPLES.									
DRIVE TO FEDEX AND SHIP TWO COOLERS OF SAMPLES (1 OF RIVER WATER SAMPLES AND 1 OF WOOD WASTE SAMPLE) TO EUROFINs. DELIVER SAMPLES NO LATER THAN 1800 HRS.									

BULK SEDIMENT COLLECTION – WATERSIDE WORK

FIELD WORK PLAN

PENOBSCOT RIVER PHASE III ENGINEERING STUDY
 AMEC FOSTER WHEELER

Tuesday September 12

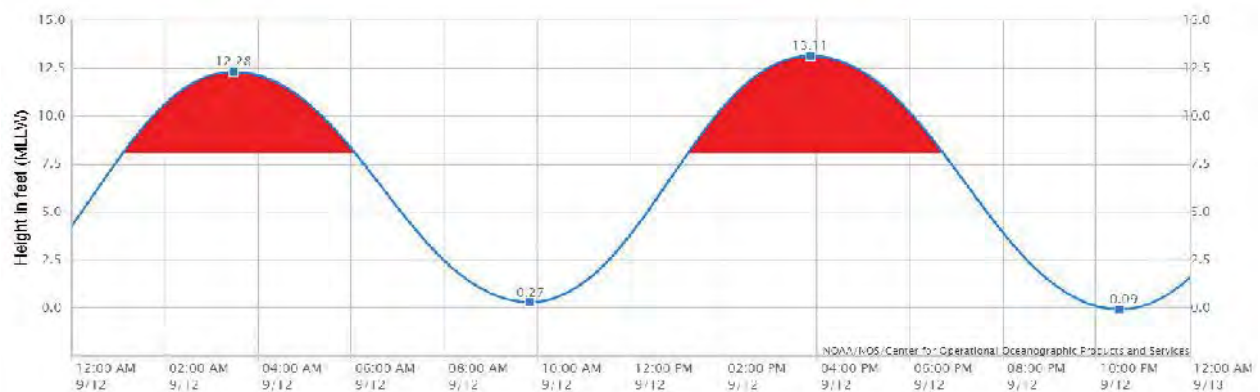
Vessel	Amec Foster Wheeler Pontoon
Crew Leader	Matt Martin, Amec Foster Wheeler (Durham)
Crew Members	Shaun Weaver, Amec Foster Wheeler (Richmond) John Cousins, Amec Foster Wheeler (Portland) Tom Gerhard, Amec Foster Wheeler (Portland)
Deltak Charge Numbers	3616166052.02A.2A0531
Equipment Required	

Marine Forecast (as of 9/7/2017)

Wind Direction	Wind Speed (knots)	Seas (feet)
West	5 to 10	1 -2

Weather Forecast (as of 9/7/2017)

Conditions	High Temp (°F)	Low Temp (°F)	Precipitation %	Sunrise	Sunset
Sunny	78	54	10	0610	1851

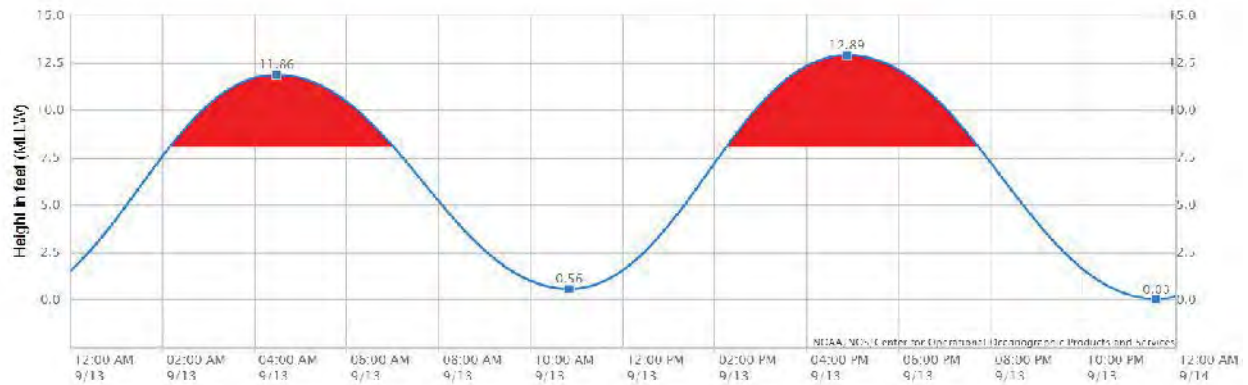


Work Priority	Location Name	Tide Conditions @ Location	Buckets Required	Method	Penetration / Recovery	Work Order	Arrival Time @ Location	Estimated Water Level @ Arrival Time (ft MLLW))	Drop Dead Departure Time from Location
			Bucket Size						
LEAVE DOCK @ 0830									
1	NEAR FF52	Moderate Intertidal	4	Bucket Dip	Full bucket of water	2A0513	0900	+3	NA
			5 gal						
2	NEAR BU51	Moderate Intertidal	4	Bucket Dip	Full bucket of water	2A0513	0945	+4	NA
			5 gal						
RETURN TO DOCK @ 1015									
WATER SAMPLE BUCKETS FROM WORK ITEMS 1 AND 2 PLACED INTO REFRIDGERATOR.									
JOHN AND TOM TRANSFER TO MARSH TEAM A. MATT AND SHAUN TO COMPLETE WORK ITEMS ___ THROUGH ___									
LEAVE DOCK @ 1100									
3	VN81A	Moderate Intertidal	1	Clam Rake or Ponar	0 – 6 inch scrape / greater than 50% wood chips	2A0513	1230	+3	NA
			5 gal						
4	VN81B	Moderate Intertidal	1	Clam Rake or Ponar	0 – 6 inch scrape / greater than 50% wood chips	2A0513	1300	+5	NA
			5 gal						
5	NEAR VN81	Subtidal	4	Bucket Dip	Full Bucket of Water	2A0513	1330	+7.5	NA
			5 gal						
RETURN TO DOCK @ 1500									
PLACE SAMPLES FROM WORK ITEM 5 IN REFRIDGERATOR.									
DECONTAMINATE MIXING TUB. CREATE COMPOSITE SAMPLE OF WORK ITEMS 3 AND 4 PLUS ITEMS 1 THROUGH 4 FROM MONDAY 9/11/17 WORK PLAN (A TOTAL OF 6 5-GALLON BUCKETS OF SAMPLE).									
MIX COMPOSITE SAMPLE AT 3 MINS/GALLON – 90 MINUTES OF MIXING									
PLACE COMPOSITED SAMPLE INTO 5-GALLON BUCKETS AND LABEL AS DEWATERBULKSED_MMDDYYYY AND PLACE IN REFRIDGERATOR.									
DECONTAMINATE EQUIPMENT AND CLEANUP.									
END OF DAY @ 1730									

FIELD WORK PLAN
 PENOBSCOT RIVER PHASE III ENGINEERING STUDY
 AMEC FOSTER WHEELER

Wednesday September 13

MATT DELIVERS JOHN AND SHAUN TO UHAUL TO RENT TWO LONG BED PICKUP TRUCKS.
LOAD TRUCKS IN WINTERPORT. SHAUN'S TRUCK GOES TO HAMPTON, NH WITH MARSH SOIL BUCKETS FROM TUESDAY (FROM MENDALL MARSH). JOHN'S TRUCK GOES TO PORTLAND, ME WITH 50 GALLONS OF WATER SAMPLE AND 25 GALLONS OF MUD SAMPLES FROM VN, FF AND BU.
MATT DELIVERS MARSH CREWS TO MENDALL MARSH EAST.
BOTH MARSH CREWS LEAVE ON SAME VESSEL @ 1315 HRS



SUMMARY OF DAILY ACTIVITIES



Project Name: USDC Penobscot River

Project Number: 3616166052

Task: Sediment

Date and Time on Site: 09/11/2017 08:30

Personnel Onsite:

M. MARTIN
T. GERHARD
J. COUSINS
D. Young
S. Weaver

Weather Conditions:

(Temp range, wind speed & direction, sea state, cloud conditions)

60s- mid 70s , 5-10 knots from north, calm in morning heavy chop in PM, little cloud cover.

Description of Daily Activities and Events:

(Time (24 hr), major events, locations, mob times, important communications, critical photos)

0830- M. Martin Arrive on site meets up with T. Gerhard and J. Cousins. Review HASP for new crew. M. Martin sets up GPS.
1000- Crew has safety meeting and float plan also goes over document standards.
1120- on water; D. Young and S. Weaver collect water bulk material from land.
1144- collected FF52A with shovel
1150- collected FF52B with shovel
1215- collected BU51A with shovel
1220- collected BU51B with shovel
1350- collected BU-08-01 with piete ponar
1410- water is very choppy, to choppy for pontoon to go to 23ft hole. Crew is returning to dock.
1445- crew back at dock, crew puts bulk material in fridge
1630- D young to fedex with bulk water
1700- M. Martin off site

List All Sample IDs Collected:

(loc ID_MMDDYY_media_depth or #)

Bulk material collected:

FF52A
FF52B
BU51A
BU51B

WO-70 bulk
BU-08-01

Deviation from Plans:

(Changed collection methods, location, damages to sample containers or equipment, calibration issues)

23 ft hole not collected today due to choppy waters. Plan to try early tomorrow.

Visitors on Site:

(Name, Organization)

Biota crew, AMECFW

Technician name (Print): Matt Martin

QA/QC by: _____

Technician Signature: 

Date: _____

SUMMARY OF DAILY ACTIVITIES



Project Name: USDC Penobscot River

Project Number: 3616166052

Task: Sediment

Date and Time on Site: 09/12/2017 08:30

Personnel Onsite: M. MARTIN

Weather Conditions:

(Temp range, wind speed & direction, sea state, cloud conditions)

60s- mid 70s , 5-10 knots from north, calm in morning heavy chop in PM, little cloud cover.

Description of Daily Activities and Events:

(Time (24 hr), major events, locations, mob times, important communications, critical photos)

0900- on Pamola 2 in route to 23 ft hole
0930- arrive at 23 ft hole, attempted ponaring inconsistent wood chip and sand mix. Switched to north Lawrence cove, same issue. South end of Lawrence cove found consistency in wood chip, collected 2 gallon.
1100- finished at bucksport location, i route to Verona north.
1145- arrive at Verona north. Area in less than 50 percent woodchip.
1200- transact is taken across the porcupine island management unit
1400- finished at Verona north
1530- back at dock
1600- homogenized BU-08-01 and sampled. Also compositing VN-BULK1234.
1700- M. Martin to FedEx. S. Weaver composites and homogenizes then places buckets back in fridge.
1900- Team leaves site

List All Sample IDs Collected:

(loc ID_MMDDYY_media_depth or #)

Bulk material collected:

VN-BULK1
VN-BULK2
VN-BULK3
VN-BULK4

Composited into
VN-BULK1234

Bulk.
BU-WCH

Sent to lab
BU-08-01_SED_09122017_03
BU-WCH_SED_09122017_03

Deviation from Plans:

(Changed collection methods, location, damages to sample containers or equipment, calibration issues)

After call with C Platt.
"transact is taken across the porcupine island management unit"

Visitors on Site:

(Name, Organization)

NA

Technician name (Print): Matt Martin

QA/QC by: _____

Technician Signature: 

Date: _____



Penobscot River Mercury Study - Phase III Engineering Study

SEDIMENT GRAB LOG

Owner: USDC, District of Maine	Project No.: 3616166052	Plan Volume:	Logger: MKM
Sub: AquaSurvey	WO:	Deploy No.:	Crew: SW
Tablet #: 4	Date: 09/12/2017	Time: 1100	Vessel: RV PAMOLA
Coordinates: Lat 44.581641	Long -68.812673		
Location ID (GPS Point Name): BU-WCH	Sample Name: SEE COMMENTS	Sub-tidal Location? <input checked="" type="radio"/> Y <input type="radio"/> N	
Weather: 60S-70S	Winds: 5-10 KNOTS	Waters: CALM	Traffic: NONE
Measured Water Depth (ft.): NOT MEASURED		Conditions:	
Correction to NAVD88 (+/- ft. from NAVD88):			
Mudline (Corrected Depth) @ NAVD88:			
Study Depth (-NAVD88):			

All Recovered Quantities are in Percent

Deployment #	Recovery	Description	Sample ID
1	80%	WCH	—
2	80%	WCH	—
3	70%	WCH	—
4	70%	WCH	—
<hr/>			

Number of containers and estimated amount:	—	1	—	—	Grab Equipment
Type of container:	5-gal Bucket	2-gal Bucket	1-gal Bag	Other	Sampler Type: STA. PETTE PONAR PETITE

Live Organisms Present	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Comments SAMPLE NAME - BU-WCH-SED-09122017-03
Oil-Like Present	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
Odor Present	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
Debris Present	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
Photo Numbers		

Aboard Vessel Information Recorded by (F. Last; date): M. MARTIN / 09-12-2017	Checked By (F. Last; date): B. WEYER 11/14/17
Landside Information Recorded by (F. Last; date):	
Clarifying Information Recorded by (F. Last; date):	



Penobscot River Mercury Study - Phase III Engineering Study

SEDIMENT GRAB LOG

FF52A

Owner: USDC, District of Maine	Project No.: 3616166052	Plan Volume: —	Logger: M. MARTIN
Sub: AquaSurvey	WO: 02A.2A0511	Deploy No.: —	Crew: J. TING / JRC
Tablet #: NA	Date: 09/11/2017	Time: 1144	Vessel: RV PAMOLA II
Coordinates: Lat 44.618951	Long -68.8396		
Location ID (GPS Point Name): FF52A B	Sample Name: —	Sub-tidal Location? Y <input checked="" type="radio"/> N	
Weather: —	Winds: —	Waters: CAIM	Traffic: 1
			Water Temp: —°F

Measured Water Depth (ft.): +6 FT MLLW	Conditions: B. WEYER 11/14/17
Correction to NAVD88 (+/- ft. from NAVD88): 5.89 FT	
Mudline (Corrected Depth) @ NAVD88: 0.11 FT	
Study Depth (-NAVD88): 0.11 FT	

All Recovered Quantities are in Percent

Deployment #	Recovery	Description	Sample ID
		10YR 2/1 Wood chips WITH SOME SILT Non COH / Non PLAS	
B. WEYER 11/14/17			

Number of containers and estimated amount:	1	—	—	—	Grab Equipment
Type of container:	5-gal Bucket	2-gal Bucket	1-gal Bag	Other	Sampler Type: SHOVEL
					Capacity: N/A

Live Organisms Present	Y <input checked="" type="radio"/> N	Comments ORGANIC ODOR - MODERATE
Oil-Like Present	Y <input checked="" type="radio"/> N	
Odor Present	Y <input checked="" type="radio"/> N	
Debris Present	Y <input checked="" type="radio"/> N	
Photo Numbers	B. WEYER 11/14/17	

Aboard Vessel Information Recorded by (F. Last, date): M. Martin 09/11/2017	Checked By (F. Last, date):
Landside Information Recorded by (F. Last, date): B. WEYER 11/14/17	K. Casey 11/14/17
Clarifying Information Recorded by (F. Last, date):	

WML



Penobscot River Mercury Study - Phase III Engineering Study

SEDIMENT GRAB LOG

FF52B

Owner: USDC, District of Maine	Project No.: 3616166052	Plan Volume: <u> </u>	Logger: <u>T. GERHARD</u>
Sub: AquaSurvey	WO: <u>OLA 2A0511</u>	Deploy No.: <u> </u>	Crew: <u>TNG, JRC, MKM</u>
Tablet #: <u>NA</u>	Date: <u>09/11/2017</u>	Time: <u>1150</u>	Vessel: <u>RV PAMOLA II</u>
Coordinates: Lat <u>44.618951</u>		Long <u>-68.8396</u>	
Location ID (GPS Point Name): <u>870-FF52A B</u>		Sample Name: <u> </u>	Sub-tidal Location? Y <input checked="" type="radio"/> (N)
Weather: <u> </u>	Winds: <u> </u>	Waters: <u>CALM</u>	Traffic: <u>1</u>
			Water Temp: <u> </u> °F

Measured Water Depth (ft.): <u>+6 FT MLLW</u>	Conditions: <u>B. WEYER 11/14/17</u>
Correction to NAVD88 (+/- ft. from NAVD88): <u>5.89 FT</u>	
Mudline (Corrected Depth) @ NAVD88: <u>0.11 FT</u>	
Study Depth (-NAVD88): <u>0.11 FT</u>	

All Recovered Quantities are in Percent

Deployment #	Recovery	Description	Sample ID
 	 	5Y 3/2 WOOD CHIPS W/ SOME SILT AND TRACE FINE SAND. NON COH / NON PLAS.	
B. WEYER 11/14/17			

Number of containers and estimated amount:	<u>1</u>	<u> </u>	<u> </u>	<u> </u>	Grab Equipment
Type of container:	5-gal Bucket	2-gal Bucket	1-gal Bag	Other	Sampler Type: <u>SHOVEL</u> Capacity: <u>N/A</u>

Live Organisms Present	Y <input checked="" type="radio"/> (N)	Comments <u>-ORGANIC-LIGHT</u>
Oil-Like Present	Y <input checked="" type="radio"/> (N)	
Odor Present	(Y) N	
Debris Present	Y <input checked="" type="radio"/> (N)	

Photo Numbers
B. WEYER 11/14/17

Aboard Vessel Information Recorded by (F. Last, date): <u>T. GERHARD, 09/11/17</u>	Checked By (F. Last, date): <u>L. Casey 11/14/17</u>
Landside Information Recorded by (F. Last, date): <u>B. WEYER 11/14/17</u>	
Clarifying Information Recorded by (F. Last, date):	



Penobscot River Mercury Study - Phase III Engineering Study

SEDIMENT GRAB LOG

BU51A

Owner: USDC, District of Maine	Project No.: 3616166052	Plan Volume: —	Logger: T. GERHARD
Sub: AquaSurvey	WO: 02A.2A0511	Deploy No.: —	Crew: JRC, MKM
Tablet #: NA	Date: 09/11/2017	Time: 1215	Vessel: RV PAMOLA II
Coordinates: Lat 44.586871		Long -68.8249	
Location ID (GPS Point Name): BU51A B		Sample Name: —	Sub-tidal Location? Y (N)
Weather: —	Winds: —	Waters: 1' CHOP	Traffic: 1
			Water Temp: —°F

Measured Water Depth (ft.): 7.5 FT MLLW	Conditions: B. WEYER 11/14/17
Correction to NAVD88 (+/- ft. from NAVD88): 5.89 FT	
Mudline (Corrected Depth) @ NAVD88: 1.61 FT	
Study Depth (-NAVD88): 1.61 FT	

All Recovered Quantities are in Percent

Deployment #	Recovery	Description	Sample ID
 	 	5Y 3/2 SILT W/ TRACE FINE SAND, SOME WOODCHIP.	
 	 	 	
 	 	 	
 	 	 	
 	 	 	
 	 	 	
 	 	 	

Number of containers and estimated amount:	1	—	—	—	Grab Equipment
Type of container:	5-gal Bucket	2-gal Bucket	1-gal Bag	Other	Sampler Type: SHOVEL
					Capacity: N/A

Live Organisms Present	Y (N)	Comments ORGANIC, SLIGHT
Oil-Like Present	Y (N)	
Odor Present	(Y) N	
Debris Present	Y (N)	
Photo Numbers	B. WEYER 11/14/17	

Aboard Vessel Information Recorded by (F. Last, date): T. GERHARD, 09/11/17	Checked By (F. Last, date):
Landside Information Recorded by (F. Last, date): B. WEYER 11/14/17	Kasey 11/14/17
Clarifying Information Recorded by (F. Last, date):	



Penobscot River Mercury Study - Phase III Engineering Study

SEDIMENT GRAB LOG

BU51B

Owner: USDC, District of Maine	Project No.: 3616166052	Plan Volume: <u> </u>	Logger: <u>T. GERHARD</u>
Sub: AquaSurvey	WO: <u>02A.2A0511</u>	Deploy No.: <u> </u>	Crew: <u>JRC, MKM</u>
Tablet #: <u>NA</u>	Date: <u>09/11/2017</u>	Time: <u>1220</u>	Vessel: <u>RV PAMOLA II</u>
Coordinates: Lat <u>44.586871</u>		Long <u>-68.8249</u>	
Location ID (GPS Point Name): <u>BU51A B</u>		Sample Name: <u> </u>	Sub-tidal Location? Y <input checked="" type="radio"/> N <input type="radio"/>
Weather: <u> </u>	Winds: <u> </u>	Waters: <u>1' CHOP</u>	Traffic: <u>1</u>
			Water Temp: <u> </u> °F

Measured Water Depth (ft.): <u>8 FT MLW</u>	Conditions: <u>B. WEYER 11/14/17</u>
Correction to NAVD88 (+/- ft. from NAVD88): <u>5.89 FT</u>	
Mudline (Corrected Depth) @ NAVD88: <u>2.11 FT</u>	
Study Depth (-NAVD88): <u>2.11 FT</u>	

All Recovered Quantities are in Percent

Deployment #	Recovery	Description	Sample ID
 	 	5Y 3/2 SJLT w/ SOME WOODCHIP, TRACE FINE SAND, TRACE ROUNDED GRAVEL	
 	 	 	
 	 	 	
 	 	 	
 	 	 	
 	 	 	
 	 	 	

Number of containers and estimated amount: <u>1</u>	<u> </u>	<u> </u>	<u> </u>	Grab Equipment
Type of container:	5-gal Bucket	2-gal Bucket	1-gal Bag	Other
				Sampler Type: <u>SHOVEL</u>
				Capacity: <u>N/A</u>

Live Organisms Present	Y <input checked="" type="radio"/> N <input type="radio"/>	Comments <u>ORGANIC, LIGHT</u>
Oil-Like Present	Y <input checked="" type="radio"/> N <input type="radio"/>	
Odor Present	Y <input checked="" type="radio"/> N <input type="radio"/>	
Debris Present	Y <input checked="" type="radio"/> N <input type="radio"/>	
Photo Numbers	<u>B. WEYER 11/14/17</u>	

Aboard Vessel Information Recorded by (F. Last; date): <u>T. GERHARD, 09/11/17</u>	Checked By (F. Last; date): <u>K. Casey 11/14/17</u>
Landside Information Recorded by (F. Last; date): <u>B. WEYER 11/14/17</u>	
Clarifying Information Recorded by (F. Last; date):	



Penobscot River Mercury Study - Phase III Engineering Study

SEDIMENT GRAB LOG

VN-BULK 1

Owner: USDC, District of Maine	Project No.: 3616166052	Plan Volume: <u> </u>	Logger: <u>M. MARTIN</u>
Sub: AquaSurvey	WO: <u>02A.2A0511</u>	Deploy No.: <u> </u>	Crew: <u>S. WEAVER</u>
Tablet #: <u>NA</u>	Date: <u>09/12/2017</u>	Time: <u>1245</u>	Vessel: <u>RV PAMOLAZI</u>
Coordinates: Lat <u>44.546620</u>	Long <u>-68.769646</u>		
Location ID (GPS Point Name): <u>VN-BULK 1</u>	Sample Name: <u> </u>	Sub-tidal Location? Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
Weather: <u>70-80</u>	Winds: <u>CALM</u>	Waters: <u>CALM</u>	Traffic: <u>NONE</u>
			Water Temp: <u> </u> °F

Measured Water Depth (ft.): <u>0 to 25 MUD</u>	Conditions: <u>B. WEYER 11/14/17</u>
Correction to NAVD88 (+/- ft. from NAVD88): <u>5.38</u>	
Mudline (Corrected Depth) @ NAVD88: <u>0.87 FT</u>	
Study Depth (-NAVD88): <u>0.87 FT</u>	

All Recovered Quantities are in Percent

Deployment #	Recovery	Description	Sample ID
 	 	10YR 3/1 Silt w TRACE FN SAND and TRACE wood chips, NON COHL, NON PLAT	
 	 	 	
 	 	 	
 	 	 	
 	 	 	
 	 	 	

Number of containers and estimated amount: <u>1</u>	<u> </u>	<u> </u>	<u> </u>	Grab Equipment
Type of container:	5-gal Bucket	2-gal Bucket	1-gal Bag	Other
				Sampler Type: <u>SHOVEL</u>
				Capacity: <u>N/A</u>

Live Organisms Present	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Comments: <u>B. WEYER 11/14/17</u>
Oil-Like Present	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
Odor Present	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
Debris Present	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
Photo Numbers	<u>B. WEYER 11/14/17</u>	

Aboard Vessel Information Recorded by (F. Last, date): <u>M. MARTIN 10/9/12/17</u>	Checked By (F. Last, date): <u>W. Casey 11/14/17</u>
Landside Information Recorded by (F. Last, date): <u>B. WEYER 11/14/17</u>	
Clarifying Information Recorded by (F. Last, date): <u> </u>	



Penobscot River Mercury Study - Phase III Engineering Study

SEDIMENT GRAB LOG

VN-BULK2

Owner: USDC, District of Maine	Project No.: 3616166052	Plan Volume: <u> </u>	Logger: <u>M. MARTIN</u>
Sub: AquaSurvey	WO: <u>02A.2A0511</u>	Deploy No.: <u> </u>	Crew: <u>S. WEAVER</u>
Tablet #: <u>NA</u>	Date: <u>09/12/2017</u>	Time: <u>1305</u>	Vessel: <u>RV W. M. PAMOLA II</u>
Coordinates: Lat <u>44.550897</u>	Long <u>-68.771460</u>		
Location ID (GPS Point Name): <u>VN-BULK2</u>	Sample Name: <u> </u>		Sub-tidal Location? Y <input checked="" type="radio"/> N
Weather: <u>70-80</u>	Winds: <u>CALM</u>	Waters: <u>CALM</u>	Traffic: <u>NONE</u>
			Water Temp: <u> </u> °F

Measured Water Depth (ft.): <u>2 FT 9.5 FT MUD</u>	Conditions: <u>B. WEYER 11/14/17</u>
Correction to NAVD88 (+/- ft. from NAVD88): <u>5.38</u>	
Mudline (Corrected Depth) @ NAVD88: <u>4.12</u>	
Study Depth (-NAVD88): <u>4.12</u>	

All Recovered Quantities are in Percent

Deployment #	Recovery	Description	Sample ID
		<u>10 YR 2/1 SILT WITH TRACE WCH, NON PLAS, COHESIVE</u>	
<u>B. WEYER 11/14/17</u>			

Number of containers and estimated amount: <u>1</u>	<u> </u>	<u> </u>	<u> </u>	Grab Equipment
Type of container: <u>5-gal Bucket</u>	2-gal Bucket	1-gal Bag	Other	Sampler Type: <u>SHOVEL</u>
				Capacity: <u>N/A</u>

Live Organisms Present	Y <input checked="" type="radio"/> N	Comments <u>B. WEYER 11/14/17</u>
Oil-Like Present	Y <input checked="" type="radio"/> N	
Odor Present	Y <input checked="" type="radio"/> N	
Debris Present	Y <input checked="" type="radio"/> N	
Photo Numbers	<u>B. WEYER 11/14/17</u>	

Aboard Vessel Information Recorded by (F. Last, date): <u>M. MARTIN 09/12/2017</u>	Checked By (F. Last, date): <u>W. Casey 11/14/17</u>
Landside Information Recorded by (F. Last, date): <u>B. WEYER 11/14/17</u>	
Clarifying Information Recorded by (F. Last, date): <u> </u>	



Penobscot River Mercury Study - Phase III Engineering Study

SEDIMENT GRAB LOG

VN-BULK3

Owner: USDC, District of Maine	Project No.: 3616166052	Plan Volume: <u> </u>	Logger: <u>M. MARTIN</u>
Sub: AquaSurvey	WO: <u>OLA.2A0511</u>	Deploy No.: <u> </u>	Crew: <u>J. WEYER</u>
Tablet #: <u>NA</u>	Date: <u>9/12/2017</u>	Time: <u>1340</u>	Vessel: <u>RV PAMOLA II</u>
Coordinates: Lat <u>44.556296</u>	Long <u>-68.772717</u>		
Location ID (GPS Point Name): <u>VN-BULK3</u>	Sample Name: <u> </u>	Sub-tidal Location? Y (N)	
Weather: <u>4-50</u>	Winds: <u>CALM</u>	Waters: <u>CALM</u>	Traffic: <u>None</u>
			Water Temp: <u> </u> °F

Measured Water Depth (ft.): <u>3 FT 12' mud</u>	Conditions: <u>B. WEYER 11/14/17</u>
Correction to NAVD88 (+/- ft. from NAVD88): <u>5.38</u>	
Mudline (Corrected Depth) @ NAVD88: <u>6.62</u>	
Study Depth (-NAVD88): <u>6.62</u>	

All Recovered Quantities are in Percent

Deployment #	Recovery	Description	Sample ID
 	 	10YR3/1 SILT WITH SOME CLAY AND TRACE WOOD CHIP, COHESIVE, NON PLAS.	
 	 	 	
 	 	 	
 	 	 	
 	 	 	
 	 	 	
 	 	 	

Number of containers and estimated amount:	<u>1</u>	<u> </u>	<u> </u>	<u> </u>	Grab Equipment
Type of container:	5-gal Bucket	2-gal Bucket	1-gal Bag	Other	Sampler Type: <u>SHOVEL</u>
					Capacity: <u> </u>

Live Organisms Present	<u>(X) N</u>	Comments <u>POLYCHAETE</u> <u>COORDINATES ARE APPROXIMATE. NO GPS LOCATION COLLECTED IN FIELD</u>
Oil-Like Present	<u>Y (N)</u>	
Odor Present	<u>Y (N)</u>	
Debris Present	<u>Y (N)</u>	
Photo Numbers	<u>B. WEYER 11/14/17</u>	

Aboard Vessel Information Recorded by (F. Last, date): <u>M. MARTIN 9/12/2017</u>	Checked By (F. Last, date): <u> </u>
Landside Information Recorded by (F. Last, date): <u>B. WEYER 11/14/17</u>	<u>V. Casey 11/14/17</u>
Clarifying Information Recorded by (F. Last, date): <u> </u>	



Penobscot River Mercury Study - Phase III Engineering Study

SEDIMENT GRAB LOG

VN-BULK4

Owner: USDC, District of Maine	Project No.: 3616166052	Plan Volume: <u> </u>	Logger: <u>M. MARTIN</u>
Sub: AquaSurvey	WO: <u>02A.2A0511</u>	Deploy No.: <u> </u>	Crew: <u>J. WEAVER</u>
Tablet #: <u>NA</u>	Date: <u>09/12/2017</u>	Time: <u>1400</u>	Vessel: <u>RV PAMOLA II</u>
Coordinates: Lat <u>44.561049</u>	Long <u>-68.774977</u>		
Location ID (GPS Point Name): <u>VN-BULK4</u>	Sample Name: <u> </u>	Sub-tidal Location? Y <input type="radio"/> N <input checked="" type="radio"/>	

Weather: <u>SK 70-80</u>	Winds: <u>CALM</u>	Waters: <u>CALM</u>	Traffic: <u>NONE</u>	Water Temp: <u> </u> °F
--------------------------	--------------------	---------------------	----------------------	----------------------------

Measured Water Depth (ft.): <u>3 FT +13.5 MWW</u>	Conditions: <u>B. WEYER 11/14/17</u>
Correction to NAVD88 (+/- ft. from NAVD88): <u>5.39</u>	
Mudline (Corrected Depth) @ NAVD88: <u>8.11 FT</u>	
Study Depth (-NAVD88): <u>8.11 FT</u>	

All Recovered Quantities are in Percent

Deployment #	Recovery	Description	Sample ID
 	 	10YR 3/1 SILT WITH SOME CLAY COHESIVE, NON PLAS.	
 	 	- GREEN SUBMERGED SEAWEED PRESENT IN SAMPLE	
 	 	 	
 	 	 	
 	 	 	
 	 	 	

B. WEYER 11/14/17

Number of containers and estimated amount: <u>1</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	Grab Equipment
Type of container:	5-gal Bucket	2-gal Bucket	1-gal Bag	Other	Sampler Type: <u>SHOVEL</u>
					Capacity: <u> </u>

Live Organisms Present	Y <input checked="" type="radio"/> N <input type="radio"/>	Comments: <u>B. WEYER 11/14/17</u>
Oil-Like Present	Y <input checked="" type="radio"/> N <input type="radio"/>	
Odor Present	Y <input checked="" type="radio"/> N <input type="radio"/>	
Debris Present	Y <input checked="" type="radio"/> N <input type="radio"/>	
Photo Numbers	<u>B. WEYER 11/14/17</u>	

Aboard Vessel Information Recorded by (F. Last, date): <u>M. MARTIN 09/12/2017</u>	Checked By (F. Last, date): <u>W. CASEY 11/14/17</u>
Landside Information Recorded by (F. Last, date): <u>B. WEYER 11/14/17</u>	
Clarifying Information Recorded by (F. Last, date): <u> </u>	



SAMPLE COLLECTION LOG - SURFACE WATER

Project Name:	USDC Penobscot River	Project Number:	3616166052.04A.A042
Location ID:	FPCPIER_H_dat_SW	Sample Crew:	DRY, SMW
Date:	09/11/2017	Latitude:	44.471041
Sample ID:	FPCPIER_HIGH_09112017_SW	Longitude:	-68.812836

SURFACE WATER SAMPLE

Time	Intake Depth (feet)	Temp. (°C)	pH (units)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Salinity (ppt)
14:00	1.0							24 ppt

Water Depth (ft):	15.0	QC Collected:	No
Flow Rate (mL/min):		Duplicate ID:	N/A
Purge Volume:	Bucket rinse 3 times	MS ID:	N/A
Tide Direction:	Incoming	MSD ID:	N/A

Water Body and Water Quality Characteristics:

Requested Analyses:

Analytes:	Methods:	Container:	# Containers	Preservative
Various	Various	2-gal bucket	1	4°C
Tot MeHg/Dis Hg	1630	250 ml BSG	0	H ₂ SO ₄ , 4°C
TOC/DOC	9060	40 ml AG	0	H ₂ SO ₄ , 4°C
TSS	2450D	1 L Plastic	0	4°C
SSC	D3977-97B	1 L Plastic	0	4°C

Location Sketch:

Pier
Dock
Fort Pt.
Sample @ end of dock

Equipment: (Manufacturer, Model, Serial No)

Plastic Bucket, Rope, Refractometer

Notes: (traffic)

Tied clean bucket to rope and dipped into water for collection;
 Sample collected at high tide;
 Clean Hands/ Dirty Hands;
 Surface Water Sampling was conducted according to the following SOPs included in the QAPP;
 SOP S-4 Surface Water Sampling
 SOP S-5 Clean Hands/Dirty Hands Surface Water Sampling.

Technician name (Print): David Young
 Technician Signature: *David Young*

QA/QC by: Brian Weyer
 Date: 11/14/2017



SAMPLE COLLECTION LOG - SURFACE WATER

Project Name: USDC Penobscot River Project Number: 3616166052.04A.A042
 Location ID: ONHAMLN Sample Crew: DRY, SMW
 Date: 09/11/2017 Latitude: 44.76513283
 Sample ID: ONHAMLN_LOW_09112017_SW Longitude: -68.79614833

SURFACE WATER SAMPLE

Time	Intake Depth (feet)	Temp. (°C)	pH (units)	Specific Electrical Conductance (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Salinity (ppt)
08:30	1.0							0 ppt

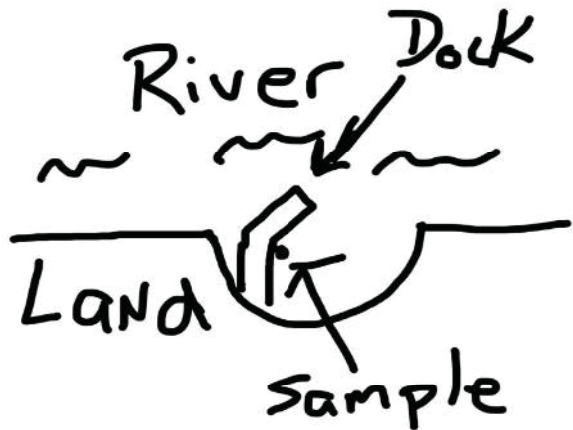
Water Depth (ft): 3.0 QC Collected: No
 Flow Rate (mL/min): _____ Duplicate ID: N/A
 Purge Volume: 0 MS ID: N/A
 Tide Direction: Outgoing MSD ID: N/A

Water Body and Water Quality Characteristics:

Requested Analyses:

Analytes:	Methods:	Container:	# Containers	Preservative
<u>Tot Hg/Dis Hg</u>	<u>1631e</u>	<u>250 ml PETG</u>	<u>0</u>	<u>4°C</u>
<u>Tot MeHg/Dis Hg</u>	<u>1630</u>	<u>250 ml BSG</u>	<u>0</u>	<u>H₂SO₄, 4°C</u>
<u>TOC/DOC</u>	<u>9060</u>	<u>40 ml AG</u>	<u>0</u>	<u>H₂SO₄, 4°C</u>
<u>TSS</u>	<u>2450D</u>	<u>1 L Plastic</u>	<u>0</u>	<u>4°C</u>
<u>SSC</u>	<u>D3977-97B</u>	<u>1 L Plastic</u>	<u>0</u>	<u>4°C</u>

Location Sketch:



Equipment: (Manufacturer, Model, Serial No)

Plastic Bucket, Rope, Refractometer

Notes: (traffic)

Tied clean bucket to rope and dipped into water for collection;
 Sample collected at low tide;
 Clean Hands/ Dirty Hands;
 Surface Water Sampling was conducted according to the following SOPs included in the QAPP;
 SOP S-4 Surface Water Sampling
 SOP S-5 Clean Hands/Dirty Hands Surface Water Sampling.

Technician name (Print): David Young
 Technician Signature: *David Young*

QA/QC by: Brian Weyer
 Date: 11/14/2017

**ATTACHMENT B
LABORATORY REPORTS**

AMEC FOSTER WHEELER

USDC Penobscot

Level IV Data Package

Leachability Study

Project Number - 3616166052.02A.2A0512

Laboratory SDG:

1709436, 1709529, 1709583, 1709607, 1709609, and 1709610

November 14, 2017

AMEC Foster Wheeler

USDC Penobscot

Laboratory SDG: 1709436, 1709529, 1709583, 1709607, 1709609, and 1709610

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November 14, 2017

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Total Pages – 674



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512
Project Manager: Denise King

Reported:
14-Nov-17 12:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
ONHAMLIN_LOW_091117_SW	1709436-01	Soil/Sediment	11-Sep-17 08:30	12-Sep-17 09:20
FPCPIER_HIGH_091117_SW	1709436-02	Water	11-Sep-17 14:00	12-Sep-17 09:20
FFBU_60WCH_091317_SED_05_R1	1709529-01	Soil/Sediment	13-Sep-17 16:30	14-Sep-17 09:35
FFBU_60WCH_091317_SED_05_R2	1709529-02	Soil/Sediment	13-Sep-17 16:30	14-Sep-17 09:35
FFBU_60WCH_091317_SED_05_R3	1709529-03	Soil/Sediment	13-Sep-17 16:30	14-Sep-17 09:35
VN_25WCH_091317_SED_05_R1	1709529-04	Soil/Sediment	13-Sep-17 17:00	14-Sep-17 09:35
VN_25WCH_091317_SED_05_R2	1709529-05	Soil/Sediment	13-Sep-17 17:00	14-Sep-17 09:35
VN_25WCH_091317_SED_05_R3	1709529-06	Soil/Sediment	13-Sep-17 17:00	14-Sep-17 09:35
BU_100WCH_091217_03_R1	1709583-01	Soil/Sediment	12-Sep-17 11:00	13-Sep-17 11:00
BU_100WCH_091217_03_R2	1709583-02	Soil/Sediment	12-Sep-17 11:00	13-Sep-17 11:00
BU_100WCH_091217_03_R3	1709583-03	Soil/Sediment	12-Sep-17 11:00	13-Sep-17 11:00
BU_100WCH_091217_Leach_EHS_R1	1709607-01	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_EHS_R2	1709607-02	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_EHS_R3	1709607-03	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_EHS_Cent_R1	1709607-04	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_EHS_Cent_R2	1709607-05	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_EHS_Cent_R3	1709607-06	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_ELS_R1	1709607-07	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_ELS_R2	1709607-08	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_ELS_R3	1709607-09	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_ELS_Cent_R1	1709607-10	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_ELS_Cent_R2	1709607-11	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_ELS_Cent_R3	1709607-12	Water	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_HS_WCH_R1	1709607-13	Soil/Sediment	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_HS_WCH_R2	1709607-14	Soil/Sediment	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_HS_WCH_R3	1709607-15	Soil/Sediment	12-Sep-17 11:00	22-Sep-17 13:12

Eurofins Frontier Global Sciences, Inc.

The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BU_100WCH_091217_Leach_LS_WCH_R1	1709607-16	Soil/Sediment	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_LS_WCH_R2	1709607-17	Soil/Sediment	12-Sep-17 11:00	22-Sep-17 13:12
BU_100WCH_091217_Leach_LS_WCH_R3	1709607-18	Soil/Sediment	12-Sep-17 11:00	22-Sep-17 13:12
FFBU_60WCH_091317_Leach_EHS_R1	1709609-01	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_EHS_R2	1709609-02	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_EHS_R3	1709609-03	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_EHS_Cent_R1	1709609-04	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_EHS_Cent_R2	1709609-05	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_EHS_Cent_R3	1709609-06	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_ELS_R1	1709609-07	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_ELS_R2	1709609-08	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_ELS_R3	1709609-09	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_ELS_Cent_R1	1709609-10	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_ELS_Cent_R2	1709609-11	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_ELS_Cent_R3	1709609-12	Water	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_HS_WCH_R1	1709609-13	Soil/Sediment	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_HS_WCH_R2	1709609-14	Soil/Sediment	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_HS_WCH_R3	1709609-15	Soil/Sediment	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_LS_WCH_R1	1709609-16	Soil/Sediment	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_LS_WCH_R2	1709609-17	Soil/Sediment	13-Sep-17 16:30	22-Sep-17 14:26
FFBU_60WCH_091317_Leach_LS_WCH_R3	1709609-18	Soil/Sediment	13-Sep-17 16:30	22-Sep-17 14:26
VN_25WCH_091317_Leach_EHS_R1	1709610-01	Water	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_EHS_R2	1709610-02	Water	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_EHS_R3	1709610-03	Water	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_EHS_Cent_R1	1709610-04	Water	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_EHS_Cent_R2	1709610-05	Water	13-Sep-17 17:00	22-Sep-17 14:42

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
VN_25WCH_091317_Leach_EHS_Cent_R3	1709610-06	Water	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_ELS_R1	1709610-07	Water	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_ELS_R2	1709610-08	Water	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_ELS_R3	1709610-09	Water	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_ELS_Cent_R1	1709610-10	Water	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_ELS_Cent_R2	1709610-11	Water	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_ELS_Cent_R3	1709610-12	Water	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_HS_WCH_R1	1709610-13	Soil/Sediment	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_HS_WCH_R2	1709610-14	Soil/Sediment	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_HS_WCH_R3	1709610-15	Soil/Sediment	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_LS_WCH_R1	1709610-16	Soil/Sediment	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_LS_WCH_R2	1709610-17	Soil/Sediment	13-Sep-17 17:00	22-Sep-17 14:42
VN_25WCH_091317_Leach_LS_WCH_R3	1709610-18	Soil/Sediment	13-Sep-17 17:00	22-Sep-17 14:42

Eurofins Frontier Global Sciences, Inc.

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

REVISED REPORT (11/14/17)

Report was revised as the original report did not dry weight correct the Methyl Mercury results for samples 1709529-01->06, 1709583-01->03, 1709607-13->18, and 1709609-13->17.

SAMPLE RECEIPT

EFGS Work Order 1709436 - Samples were received at Eurofins Frontier Global Sciences (EFGS) on 9/12/2017 9:20:00 AM . The samples were received intact, on-ice within a sealed cooler at 2.9 degrees Celsius.

EFGS Work Order 1709529 - Samples were received at Eurofins Frontier Global Sciences (EFGS) on 9/14/2017 9:35:00 AM . The samples were received intact, on-ice within two sealed coolers at -31.0 and 0.1 degrees Celsius.

EFGS Work Order 1709583 - Samples were received at Eurofins Frontier Global Sciences (EFGS) on 9/13/2017 11:00:00 AM . The samples were received intact, on-ice within a sealed cooler at 2.8 degrees Celsius. Client sent in revised COC on 9/26/17. Final Report includes both the original and revised COC.

EFGS Work Orders 1709607, 1709609, and 1709610 were prepped in house following the work instructions provided by the client; EFAFS-T-AFS-WI16840. Wood waste Sample #2 (WW2) was more of a sandy matrix than wood chips and the process had to be modified to compensate for this. WW2 was centrifuged, but the press did not occur. Once the sample was centrifuged, the sandy material compacted and pressing was not required.

After analysis was completed at EFGS, the wood waste from the centrifuge process was sent to Alpha Analytical for TOC analysis. This will be reported directly to the client by Alpha Analytical. The samples included in this are 1709607-13->18, 1709609-13->18, and 1709610-13->18.

SAMPLE PREPARATION AND ANALYSIS

Water samples were prepared and analyzed for total mercury by flow injection atomic fluorescence spectrometry (FI-AFS) in accordance with EPA 1631E.

Water samples were prepared and analyzed for methyl mercury by cold vapor gas chromatography atomic fluorescence spectrometry (CV-GC-AFS) in accordance with EPA 1630 (EFGS-070).

Total solids analysis was performed in accordance with method SM2540B.

For the wood chip samples, total mercury preparation followed EPA 7474 and the analysis was performed by flow injection atomic

Eurofins Frontier Global Sciences, Inc.

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King**Reported:**
14-Nov-17 12:48

fluorescence spectrometry (FI-AFS) in accordance with EPA 1631B.

The wood chip samples were prepped using a Potassium Hydroxide/Methanol solution for analysis of methyl mercury (SOP 2986) and analyzed for methyl mercury by cold vapor gas chromatography atomic fluorescence spectrometry (CV-GC-AFS) in accordance with EPA 1630 (EFGS-070/SOP 2808).

Samples were prepped for density in batch F709497. Sample 1709436-01 was used as the source QC.

Samples were prepped for total solids in two batches; F709443 and F709461. Samples 1709529-01 and 1709529-04 were used for the source QC in batch F709443. Sample 1709610-13 was used for the source QC in batch F709461.

Samples were prepped for total Mercury by EPA 1631E in four batches; F709338, F709469, F709474, and F709481. Samples 1709607-05 and 1709607-11 were used for the source QC in batch F709469. Sample 1709609-12 was used for the source QC in batch F709474. They were analyzed in four sequences; 7I20005, 7I29016, 7I29009, and 7I29018.

Samples were prepped for total Mercury by EPA 7474 in two batches; F709449 and F709453. These were analyzed in three sequences; 7I29007, 7I29019, and 7I29014. Samples 1709529-01 and 1709529-06 were used as the source QC in batch F709449. They were analyzed in three sequences; 7I29007, 7I29019, and 7I29014.

The water samples were prepped for Methyl Mercury in four batches; F709431, F709466, F709480, and F709493. These were analyzed in four sequences; 7I28014, 7I29012, 7I30002, and 7I13003. There were no samples used as the source QC from this project.

The wood chip samples were prepped for Methyl Mercury in three batches; F709436, F709458, and F709476. No data was reported from batch F709476 and it will not be included in this dataset. Batches F709436 and F709458 were analyzed in three sequences; 7I28016, 7I30001, and 7I29010. Samples 1709529-01 and 1709529-04 were used as the source QC in batch F709436.

ANALYTICAL AND QUALITY CONTROL ISSUES

Method blanks were prepared for every preparation to assess possible blank contribution from the sample preparation procedure. The method blanks were carried through the entire analytical procedure. All blanks fell within the established acceptance criteria with the

Eurofins Frontier Global Sciences, Inc.



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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

exception of any items narrated above or flagged and described in the notes and definitions section of the report.

Liquid spikes, certified reference material (CRM) or a quality control samples (QCS) were prepared for every preparation as a measure of accuracy. All liquid spikes, CRMs and/or QCS samples fell within the established acceptance criteria with the exception of any items narrated above or flagged and described in the notes and definitions section of the report.

As an additional measure of the accuracy of the methods used and to check for matrix interference, matrix spikes (MS) and matrix spike duplicates (MSD) were digested and analyzed. All of the matrix spike recoveries fell within the established acceptance criteria with the exception of any items flagged and described in the notes and definitions section of the report.

A reasonable measure of the precision of the analytical methods is the relative percent difference (RPD) between a matrix spike recovery and a matrix spike duplicate recovery and between laboratory control sample recovery and laboratory control sample duplicate recoveries. All of the relative percent differences fell within established acceptance criteria with the exception of any items flagged and described in the notes and definitions section of the report.

Eurofins Frontier Global Sciences, Inc.

The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amy Goodall, Project Manager



Sample Receipt Checklist

EFC

Client: Amec Foster Wheeler

Date & Time Received: ^{BC} 9/12/17 9:20

Date Labeled: 9/15/17 Labeled By: CB

Project: _____

Received By: BC

Label Verified By: LM

of Coolers Received: 1 Samples Arrived By: Shipping Service _____ Courier _____ Hand _____ Other (Specify: _____)

Coolant: None/Ambient Loose Ice Gel Ice Dry Ice Coolant Required: Y N Temp Blank Used: Y N for Cooler(s): _____

Notify Project Manager if packages/coolers are received without coolant or with thawed coolant and at a temperature in excess of 6°C. PM notified: Y/N

Cooler Information:	Y/N/NA	Comments
The coolers do not appear to be tampered with:	<u>Y</u>	
Custody Seals are present and intact:	<u>Y</u>	
Custody seals signed:	<u>Y</u>	

TID:	CF:	Date/time:	By:
<u>3150</u>	<u>+0.2 °C</u>	<u>9/12/17 9:25</u>	<u>BC</u>
Cooler 1: <u>2.7 °C</u>	w/ CF: <u>2.9 °C</u>	Cooler 4: °C	w/ CF: °C
Cooler 2: °C	w/ CF: °C	Cooler 5: °C	w/ CF: °C
Cooler 3: °C	w/ CF: °C	Cooler 6: °C	w/ CF: °C

Chain of Custody:	Y/N/NA	Comments
Sample ID/Description:	<u>Y</u>	
Date and time of collection:	<u>Y</u>	
Sampled by:	<u>Y</u>	
Preservation type:	<u>NA</u>	
Requested analyses:	<u>Y</u>	
Required signatures:	<u>Y</u>	
Internal COC required:	<u>N</u>	

Sample Condition/Integrity:	Y/N/NA	Comments
Sample containers intact/present:	<u>Y</u>	
Sample labels are present and legible:	<u>Y</u>	
Sample ID on container/bag matches COC:	<u>Y</u>	
Correct sample containers used:	<u>Y</u>	
Samples received within holding times:	<u>Y</u>	
Sample volume sufficient for requested analyses:	<u>Y</u>	
Correct preservative used for requested analyses:	<u>NA</u>	

Anomalies/Non-conformances (attach additional pages if needed):

1709436
COC LEACH H2O EuroFin

Environmental Analysis Request/Chain of Custody



Client: Amec Foster Wheeler / 511 Congress St. Suite 200 Portland, ME 04101		Matrix		Analyses Requested				For Lab Use Only	
Project Name/#: USDC Penobscot		PN # 3616166052.02A, 2A0531		Preservation Codes				SF #: _____	
Project Manager: Rod Pendleton		P.O. #:						SCR #: _____	
Sampler: MM/SW/DY		PWSID #:						Preservation Codes	
Phone #:		Quote #:						H = HCl T = Thiourea	
State where samples were collected: ME		For Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>						N = HNO ₃ B = NaOH	
								S = H ₂ SO ₄ P = H ₃ PO ₄	
								O = Other	
Sample Identification		Collection		Soil <input type="checkbox"/> Sediment <input type="checkbox"/> Tissue <input type="checkbox"/>		Total # of Containers		Remarks	
				Potable <input type="checkbox"/> Ground <input type="checkbox"/>					
				Water <input type="checkbox"/> NPDES <input type="checkbox"/> Surface <input type="checkbox"/>					
				Other: Tissue <input type="checkbox"/>					
1 ONHAMLIN_LOW_09112017_SW		Date: 091117 Time: 0830		X		1			
2 FPCPIER_HIGH_09112017_SW		Date: 091117 Time: 1400		X		1			
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
Turnaround Time Requested (TAT) (please check):		Standard <input checked="" type="checkbox"/> Rush <input type="checkbox"/>		Relinquished by: <i>[Signature]</i>		Date: 9/11/2017		Time: 1530	
(Rush TAT is subject to laboratory approval and surcharges.)				Relinquished by:		Date:		Time:	
Notes: Lab required to homogenize and aliquot to sub-labs				Relinquished by:		Date:		Time:	
FedEx # 8103 4444 4798		# of Coolers 1		Relinquished by:		Date:		Time:	
Sample disposal - Hold Equipment Blanks 1-4 until 30 days after delivery of report		Report and EDD to: denise.king@amecwf.com / 978-692-6633		Relinquished by:		Date:		Time:	
Data Package Options (please check if required)		High <input type="checkbox"/> Standard <input checked="" type="checkbox"/>		Relinquished by Commercial Carrier:		Date:		Time:	
EDD Required? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		If yes, format:		UPS <input type="checkbox"/> FedEx <input checked="" type="checkbox"/> Other <input type="checkbox"/>		Temperature upon receipt: 2.9 °C			

FFGS

8103 4444 4798
yes c/s



Sample Receipt Checklist

EFGS 1

Client: Amec

Date & Time Received: 9/19/17 935

Date Labeled: 9/22/17 Labeled By: LM

Project: _____

Received By: CSQ

Label Verified By: BC

of Coolers Received: 1 Samples Arrived By: Shipping Service _____ Courier _____ Hand _____ Other (Specify: _____)

Coolant: None/Ambient Loose Ice Gel Ice Dry Ice Coolant Required: Y N Temp Blank Used: Y N for Cooler(s): _____

Notify Project Manager if packages/coolers are received without coolant or with thawed coolant and at a temperature in excess of 6°C. PM notified: Y/N

Cooler Information:	Y/N/NA	Comments
The coolers do not appear to be tampered with:	<u>Y</u>	
Custody Seals are present and intact:	<u>Y</u>	
Custody seals signed:	<u>Y</u>	

TID: <u>5225</u>	CF: <u>0.0</u> °C	Date/time: <u>9/19/17 935</u>	By: <u>CSQ</u>
Cooler 1: <u>0.3</u> °C	w/CF: <u>0.1</u> °C	Cooler 4: _____ °C	w/CF: _____ °C
Cooler 2: <u>0.1</u> °C	w/CF: <u>0.1</u> °C	Cooler 5: _____ °C	w/CF: _____ °C
Cooler 3: _____ °C	w/CF: _____ °C	Cooler 6: _____ °C	w/CF: _____ °C

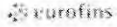
Chain of Custody:	Y/N/NA	Comments
Sample ID/Description:	<u>Y</u>	
Date and time of collection:	<u>Y</u>	
Sampled by:	<u>Y</u>	
Preservation type:	<u>N</u>	
Requested analyses:	<u>Y</u>	
Required signatures:	<u>Y</u>	
Internal COC required:	<u>N</u>	

Sample Condition/Integrity:	Y/N/NA	Comments
Sample containers intact/present:	<u>Y</u>	
Sample labels are present and legible:	<u>Y</u>	
Sample ID on container/bag matches COC:	<u>Y</u>	
Correct sample containers used:	<u>Y</u>	
Samples received within holding times:	<u>Y</u>	
Sample volume sufficient for requested analyses:	<u>Y</u>	
Correct preservative used for requested analyses:	<u>MA</u>	

Anomalies/Non-conformances (attach additional pages if needed):

Cooler 2; 7877 1928 7028

Environmental Analysis Request/Chain of Custody



Page 1 of 1

Client: Amec Foster Wheeler / 511 Congress St. Suite 200 Portland, ME 04101				Matrix		Analyses Requested						For Lab Use Only															
Project Name/#: USDC Penobscot		PN #: 3616166052.02A.02A.2A0511		<input type="checkbox"/>	<input type="checkbox"/>	Preservation Codes						SF #: _____															
Project Manager: Rod Pendleton		P.O. #:		<input type="checkbox"/>	<input type="checkbox"/>							SCR #: _____															
Sampler: MM		PWSID #:		<input type="checkbox"/>	<input type="checkbox"/>							<table border="1" style="width: 100%; font-size: small;"> <tr><th colspan="2">Preservation Codes</th></tr> <tr><td>H = HCl</td><td>T = Thiosulfate</td></tr> <tr><td>N = HNO₃</td><td>B = NaOH</td></tr> <tr><td>S = H₂SO₄</td><td>P = H₃PO₄</td></tr> <tr><td colspan="2">O = Other</td></tr> </table>		Preservation Codes		H = HCl	T = Thiosulfate	N = HNO ₃	B = NaOH	S = H ₂ SO ₄	P = H ₃ PO ₄	O = Other					
Preservation Codes																											
H = HCl	T = Thiosulfate																										
N = HNO ₃	B = NaOH																										
S = H ₂ SO ₄	P = H ₃ PO ₄																										
O = Other																											
Phone #:		Quote #:		<input type="checkbox"/>	<input type="checkbox"/>																						
State where samples were collected: ME		For Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>																						
Sample Identification			Collection		Grab	Composite	Soil <input type="checkbox"/>	Sediment <input checked="" type="checkbox"/>	Tissue <input type="checkbox"/>	Potable <input type="checkbox"/>	Ground <input type="checkbox"/>	Water <input type="checkbox"/>	NPDES <input type="checkbox"/>	Surface <input type="checkbox"/>	Other: Tissue	Total # of Containers	Leachability testing preparation wood waste solids, 2 Gall pail, 4 Deg C	Low Salinity water (2-gallon pail), 4 Deg C	high salinity water, 2-gallon pail, 4 Deg C	Analyses Requested						Remarks	
Date	Time																										
1	FFBU_60WCH_091317_SED_05	091317	1630		X		X										1	1									
2	VN_25WCH_091217_SED_05	091217	1700		X		X										1	1									
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											
13																											
14																											
15																											

Turnaround Time Requested (TAT) (please check):				Standard <input checked="" type="checkbox"/> Rush <input type="checkbox"/>		Relinquished by:		Date: 9/11/2017		Time: 1630		Received by:		Date: 9/19/17		Time: 935	
Notes: Lab required to homogenized and aliquot to sub-labs						Relinquished by:		Date:		Time:		Received by: <i>Cabin Paul</i>		Date:		Time:	
FedEx # 8103 4444 4798				# of Coolers: 1		Relinquished by:		Date:		Time:		Received by: <i>FFGS</i>		Date:		Time:	
Sample disposal - Hold Equipment Blanks 1-4 until 30 days after delivery of report Report and EDD to: denise.king@amecfw.com / 978-692-6633						Relinquished by:		Date:		Time:		Received by:		Date:		Time:	
Data Package Options (please check if required)				High <input type="checkbox"/> Standard <input checked="" type="checkbox"/>		Relinquished by Commercial Carrier:											
EDD Required? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				If yes, format: _____		UPS _____ FedEx _____ Other _____											
																Temperature upon receipt _____ °C	

NA
-31.0°C
FedEx
935

8103 4444 4798



Sample Receipt Checklist

EFGS

Client: AMCC Foster Wheeler

Date & Time Received: 9/13/17 9:40

Date Labeled: 9/24/17 Labeled By: LM

Project: _____

Received By: LM

Label Verified By: BC

of Coolers Received: 1 Samples Arrived By: Shipping Service _____ Courier _____ Hand _____ Other (Specify: _____)

Coolant: None/Ambient Loose Ice Gel Ice Dry Ice Coolant Required: N Temp Blank Used: Y/N for Cooler(s): _____

Notify Project Manager if packages/coolers are received without coolant or with thawed coolant and at a temperature in excess of 6°C. PM notified: Y/N

Cooler Information:	Y/N/NA	Comments
The coolers do not appear to be tampered with:	<u>Y</u>	
Custody Seals are present and intact:	<u>Y</u>	
Custody seals signed:	<u>Y</u>	

TID: <u>5225</u>	CF: <u>0.0</u> °C	Date/time: <u>9/13/17 9:40</u>	By: <u>LM</u>
Cooler 1: <u>2.8</u> °C	w/ CF: <u>2.8</u> °C	Cooler 4: °C	w/ CF: °C
Cooler 2: °C	w/ CF: °C	Cooler 5: °C	w/ CF: °C
Cooler 3: °C	w/ CF: °C	Cooler 6: °C	w/ CF: °C

Chain of Custody:	Y/N/NA	Comments
Sample ID/Description:	<u>Y</u>	
Date and time of collection:	<u>Y</u>	
Sampled by:	<u>Y</u>	
Preservation type:	<u>NA</u>	
Requested analyses:	<u>Y</u>	
Required signatures:	<u>Y</u>	
Internal COC required:	<u>Y</u>	

Sample Condition/Integrity:	Y/N/NA	Comments
Sample containers intact/present:	<u>Y</u>	
Sample labels are present and legible:	<u>Y</u>	
Sample ID on container/bag matches COC:	<u>Y</u>	
Correct sample containers used:	<u>Y</u>	
Samples received within holding times:	<u>Y</u>	
Sample volume sufficient for requested analyses:	<u>Y</u>	
Correct preservative used for requested analyses:	<u>NA</u>	

Anomalies/Non-conformances (attach additional pages if needed):

1709628 1709583

LMM 9/22/17



Frontier Global Sciences

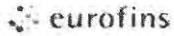
Environmental Analysis Request/Chain of Custody

Client: Amec Foster Wheeler / 511 Congress St. Suite 200 Portland, ME 04101				Matrix			Analyses Requested								For Lab Use Only				
Project Name/#: USDC Penobscot		PN #: 3616166052.04A		<input type="checkbox"/> Tissue			Preservation Codes								SF #: _____				
Project Manager: Rod Pendleton		P.O. #:		<input type="checkbox"/> Ground			O								SCR #: _____				
Sampler: Matt Martin		PWSID #:		<input type="checkbox"/> Surface			Leachability Teaching Preparation Wood Waste Solids								Preservation Codes				
Phone #: (919)-765-9979		Quote #:		<input type="checkbox"/> Potable											H = HCl T = Thiosulfate				
State where samples were collected: ME		For Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		<input type="checkbox"/> NPDES											N = HNO ₃ B = NaOH				
				<input type="checkbox"/> Water											S = H ₂ SO ₄ P = H ₃ PO ₄				
				<input type="checkbox"/> Other:											O = Other				
				Total # of Containers															
				Total Hg 1631 4 oz Plastic / frozen															
				Composite															
				Soil															
				Collection															
				Date															
				Time															
				Grab															
				Composite															
				Sample Identification															
				1															
				2															
				3															
				4															
				5															
				6															
				7															
				8															
				9															
				10															
				11															
				12															
Turnaround Time Requested (TAT) (please check):				Rush <input type="checkbox"/>				Relinquished by:		Date		Time		Received by:		Date		Time	
(Rush TAT is subject to laboratory approval and surcharges.)								MATT MARTIN / WJFM		09/12/17		1700		[Signature]		9/12/17		9:40	
Notes:								Relinquished by:		Date		Time		Received by:		Date		Time	
FedEx # 81034444813								Relinquished by:		Date		Time		Received by:		Date		Time	
# of Coolers 1								Relinquished by:		Date		Time		Received by:		Date		Time	
Sample disposal - Standard 30 days after report								Relinquished by:		Date		Time		Received by:		Date		Time	
Report and EDD to: denise.king@amecfw.com / 978-692-6633								Relinquished by:		Date		Time		Received by:		Date		Time	
Data Package Options (please check if required)								Relinquished by Commercial Carrier:		Date		Time		Received by:		Date		Time	
High <input type="checkbox"/> Standard <input type="checkbox"/>								UPS <input type="checkbox"/> FedEx <input checked="" type="checkbox"/> Other <input type="checkbox"/>		Date		Time		Received by:		Date		Time	
EDD Required? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				If yes, format: _____				Temperature upon receipt		Date		Time		Received by:		Date		Time	
														2.8 °C					

Yes Seal

1709628 1709583

LMM 9/22/17



Environmental Analysis Request/Chain of Custody

Client: Amec Foster Wheeler / 511 Congress St. Suite 200 Portland, ME 04101				Matrix		Analyses Requested						For Lab Use Only					
Project Name/#: USDC Penobscot		PN #: 3616166052 04A		<input type="checkbox"/> Tissue <input type="checkbox"/> Ground <input type="checkbox"/> Surface		Preservation Codes						SF #: _____					
Project Manager: Rod Pendleton		P.O. #:		<input type="checkbox"/> Potable <input type="checkbox"/> NPDES <input type="checkbox"/> Water		O						SCR #: _____					
Sampler: Matt Martin		PWSID #:		Other:		Leachability Teaching Preparation Wood Waste Solids						Preservation Codes H = HCl T = Thiosulfate N = HNO ₃ B = NaOH S = H ₂ SO ₄ P = H ₃ PO ₄ O = Other					
Phone #: (919)-765-9979		Quote #:		Total # of Containers		Total Hg 1631 4 oz Plastic / frozen											
State where samples were collected: ME		For Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				Leachability Teaching Preparation Wood Waste Solids											
Collection				Soil <input type="checkbox"/> Sediment <input checked="" type="checkbox"/>		7474-1631						Remarks					
Sample Identification				Grab													
		Date		Time													
1	BU-08-01_SED_09122017_03		9/12/2017	14:25	X	X											
2	BU_WCH_09122017_03 9/12/17		9/12/2017	11:00	X	X				X							
3	DYK																
4	BU-100WCH-091217-03-R1		9/12/17	11:00						X							
5	BU-100WCH-091217-03-R2		↓	↓						X							
6	BU-100WCH-091217-03-R3		↓	↓						X							
7																	
8																	
9																	
10																	
11																	
12																	
Turnaround Time Requested (TAT) (please check):				Rush <input type="checkbox"/>		Relinquished by:		Date		Time		Received by:		Date		Time	
(Rush TAT is subject to laboratory approval and surcharges.)						MATT MARTIN / WYFM		09/12/17		1700		[Signature]		9/12/17		9:40	
Notes:						Relinquished by:		Date		Time		Received by:		Date		Time	
FedEx # 81034444813				# of Coolers 1		Relinquished by:		Date		Time		Received by:		Date		Time	
Sample disposal - Standard 30 days after report				Report and EDD to: denise.king@amectw.com / 978-692-6633		Relinquished by:		Date		Time		Received by:		Date		Time	
Data Package Options (please check if required)				High <input type="checkbox"/> Standard <input type="checkbox"/>		Relinquished by:		Date		Time		Received by:		Date		Time	
EDD Required? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				If yes, format: _____		Relinquished by Commercial Carrier:		Date		Time		Received by:		Date		Time	
						UPS <input type="checkbox"/> FedEx <input checked="" type="checkbox"/> Other <input type="checkbox"/>						Temperature upon receipt		2.8 °C			

Yes Seal



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

ONHAMLIN_LOW_091117_SW
1709436-01

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: Density											
Density	0.9977	0.0001	0.0001	g/mL	1	F709497	29-Sep-17		29-Sep-17	FGS-019	
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	0.093	0.026	0.050	ng/L	1.25	F709493	29-Sep-17	7130003	30-Sep-17	EPA 1630/FGS-070	
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	1.76	0.08	0.50	ng/L	1	F709338	15-Sep-17	7120005	19-Sep-17	EPA 1631E	

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**FPCPIER_HIGH_091117_SW
1709436-02**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: Density											
Density	1.0202	0.0001	0.0001	g/mL	1	F709497	29-Sep-17		29-Sep-17	FGS-019	
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L	1.25	F709493	29-Sep-17	7I30003	30-Sep-17	EPA 1630/FGS-070	U
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	1.02	0.08	0.50	ng/L	1	F709338	15-Sep-17	7I20005	19-Sep-17	EPA 1631E	

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**FFBU_60WCH_091317_SED_05_R1
1709529-01**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion

Methyl Mercury (as Mercury)	9.7	1.4	5.5	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
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Sample Preparation: EFGS-019 Solids Analysis

% Solids	33.3	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
----------	------	-----	-----	----------------	---	---------	-----------	--	-----------	----------	------------

Sample Preparation: EPA 7474

Mercury	756	13.3	58.7	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	
---------	-----	------	------	----------	----	---------	-----------	---------	-----------	-----------	--

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**FFBU_60WCH_091317_SED_05_R2
1709529-02**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	9.4	1.5	6.0	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	32.5	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	757	13.4	59.0	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**FFBU_60WCH_091317_SED_05_R3
1709529-03**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	9.2	1.5	5.8	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	32.4	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	694	12.6	55.7	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**VN_25WCH_091317_SED_05_R1
1709529-04**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	15.4	1.4	5.7	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	33.3	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	771	12.5	55.3	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

VN_25WCH_091317_SED_05_R2
1709529-05

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	15.0	1.5	5.8	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	33.8	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	738	12.9	57.0	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

VN_25WCH_091317_SED_05_R3
1709529-06

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	17.5	1.4	5.7	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	32.4	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	780	13.3	58.7	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

Eurofins Frontier Global Sciences, Inc.

The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

BU_100WCH_091217_03_R1
1709583-01

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
---------	--------	-----------------	-----------------	-------	----------	-------	----------	----------	----------	--------	-------

Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion

Methyl Mercury (as Mercury)	14.8	2.7	10.9	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
-----------------------------	------	-----	------	----------	-----	---------	-----------	---------	-----------	-------------------------	--

Sample Preparation: EFGS-019 Solids Analysis

% Solids	17.2	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
----------	------	-----	-----	----------------	---	---------	-----------	--	-----------	----------	------------

Sample Preparation: EPA 7474

Mercury	1000	22.3	98.7	ng/g dry	50	F709453	27-Sep-17	7I29014	28-Sep-17	EPA 1631B	
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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

BU_100WCH_091217_03_R2
1709583-02

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion

Methyl Mercury (as Mercury)	11.0	2.8	11.3	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	J
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Sample Preparation: EFGS-019 Solids Analysis

% Solids	17.5	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
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Sample Preparation: EPA 7474

Mercury	855	23.1	102	ng/g dry	50	F709453	27-Sep-17	7I29014	28-Sep-17	EPA 1631B	
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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

BU_100WCH_091217_03_R3
1709583-03

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	12.7	2.9	11.3	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	16.6	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	829	24.5	108	ng/g dry	50	F709453	27-Sep-17	7I29014	28-Sep-17	EPA 1631B	

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**BU_100WCH_091217_Leach_EHS_R1
1709607-01**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	U
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	0.66	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	

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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

BU_100WCH_091217_Leach_EHS_R2
1709607-02

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	U
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	0.83	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	

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AMEC Foster Wheeler
271 Mill Road
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

BU_100WCH_091217_Leach_EHS_R3
1709607-03

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	U
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	0.83	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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271 Mill Road
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

BU_100WCH_091217_Leach_EHS_Cent_R1
1709607-04

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.851	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	364	0.87	5.20	ng/L	10	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**BU_100WCH_091217_Leach_EHS_Cent_R2
1709607-05**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	3.98	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	310	4.34	26.0	ng/L	50	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

BU_100WCH_091217_Leach_EHS_Cent_R3
1709607-06

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	2.06	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	357	4.34	26.0	ng/L	50	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**BU_100WCH_091217_Leach_ELS_R1
1709607-07**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.108	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	1.93	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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**BU_100WCH_091217_Leach_ELS_R2
1709607-08**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.102	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	2.27	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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BU_100WCH_091217_Leach_ELS_R3
1709607-09

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.101	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	2.35	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**BU_100WCH_091217_Leach_ELS_Cent_R1
1709607-10**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	4.63	0.207	0.400	ng/L	10	F709480	29-Sep-17	7130002	29-Sep-17	EPA 1630/FGS-070	
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	259	4.34	26.0	ng/L	50	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	

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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**BU_100WCH_091217_Leach_ELS_Cent_R2
1709607-11**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	7.83	0.207	0.400	ng/L	10	F709480	29-Sep-17	7130002	29-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	421	4.34	26.0	ng/L	50	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

BU_100WCH_091217_Leach_ELS_Cent_R3
1709607-12

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	7.26	0.207	0.400	ng/L	10	F709480	29-Sep-17	7130002	29-Sep-17	EPA 1630/FGS-070	
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	369	4.34	26.0	ng/L	50	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	

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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**BU_100WCH_091217_Leach_HS_WCH_R1
1709607-13**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion

Methyl Mercury (as Mercury)	19.3	2.0	7.9	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
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Sample Preparation: EFGS-019 Solids Analysis

% Solids	24.7	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
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Sample Preparation: EPA 7474

Mercury	1320	17.6	77.6	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	
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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**BU_100WCH_091217_Leach_HS_WCH_R2
1709607-14**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	17.4	1.7	6.9	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	25.9	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	1030	16.0	70.6	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**BU_100WCH_091217_Leach_HS_WCH_R3
1709607-15**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion

Methyl Mercury (as Mercury)	15.9	1.7	6.8	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
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Sample Preparation: EFGS-019 Solids Analysis

% Solids	28.2	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
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Sample Preparation: EPA 7474

Mercury	3810	30.5	135	ng/g dry	100	F709449	27-Sep-17	7I29019	29-Sep-17	EPA 1631B	
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271 Mill Road
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**BU_100WCH_091217_Leach_LS_WCH_R1
1709607-16**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion

Methyl Mercury (as Mercury)	20.1	2.7	10.8	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
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Sample Preparation: EFGS-019 Solids Analysis

% Solids	17.8	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
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Sample Preparation: EPA 7474

Mercury	1080	22.2	98.2	ng/g dry	50	F709449	27-Sep-17	7I29019	29-Sep-17	EPA 1631B	
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271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**BU_100WCH_091217_Leach_LS_WCH_R2
1709607-17**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	15.6	2.2	8.8	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	21.4	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	1160	19.7	87.0	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**BU_100WCH_091217_Leach_LS_WCH_R3
1709607-18**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	17.0	2.1	8.5	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	21.1	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	1330	20.4	90.1	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_EHS_R1
1709609-01

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	U
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	0.38	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	J

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**FFBU_60WCH_091317_Leach_EHS_R2
1709609-02**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	U
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	0.44	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	J

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_EHS_R3
1709609-03

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	U
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	0.41	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	J

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_EHS_Cent_R1
1709609-04

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.057	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	13.1	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_EHS_Cent_R2
1709609-05

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	0.064	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	13.0	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_EHS_Cent_R3
1709609-06

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.034	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	J
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	14.8	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_ELS_R1
1709609-07

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	U
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	1.16	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_ELS_R2
1709609-08

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.035	0.026	0.050	ng/L	1.25	F709431	26-Sep-17	7128014	27-Sep-17	EPA 1630/FGS-070	J
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	1.14	0.08	0.50	ng/L	1	F709469	28-Sep-17	7129016	28-Sep-17	EPA 1631E	
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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_ELS_R3
1709609-09

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	U
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	1.17	0.08	0.50	ng/L	1	F709474	27-Sep-17	7129009	28-Sep-17	EPA 1631E	

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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_ELS_Cent_R1
1709609-10

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	0.074	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	38.4	0.08	0.50	ng/L	1	F709474	27-Sep-17	7129009	28-Sep-17	EPA 1631E	

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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**FFBU_60WCH_091317_Leach_ELS_Cent_R2
1709609-11**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.161	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	39.5	0.08	0.50	ng/L	1	F709474	27-Sep-17	7129009	28-Sep-17	EPA 1631E	
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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_ELS_Cent_R3
1709609-12

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.152	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	46.7	0.84	5.05	ng/L	10	F709474	27-Sep-17	7129009	28-Sep-17	EPA 1631E	
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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**FFBU_60WCH_091317_Leach_HS_WCH_R1
1709609-13**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	9.3	1.1	4.2	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	45.6	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	760	8.45	37.4	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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AMEC Foster Wheeler
271 Mill Road
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_HS_WCH_R2
1709609-14

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	8.8	1.1	4.4	ng/g dry	500	F709436	26-Sep-17	7130001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	41.5	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	773	9.69	42.8	ng/g dry	50	F709449	27-Sep-17	7129007	28-Sep-17	EPA 1631B	

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271 Mill Road
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**FFBU_60WCH_091317_Leach_HS_WCH_R3
1709609-15**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	9.1	1.3	5.0	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	38.5	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	911	10.7	47.5	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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271 Mill Road
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**FFBU_60WCH_091317_Leach_LS_WCH_R1
1709609-16**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	10.0	1.1	4.5	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	44.1	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	715	8.70	38.4	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	



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Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

FFBU_60WCH_091317_Leach_LS_WCH_R2
1709609-17

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	11.9	1.2	4.9	ng/g dry	500	F709436	26-Sep-17	7I30001	29-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	39.4	0.1	0.1	% by Weight	1	F709443	26-Sep-17		27-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	900	10.5	46.4	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**FFBU_60WCH_091317_Leach_LS_WCH_R3
1709609-18**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	8.6	1.3	5.2	ng/g dry	500	F709458	27-Sep-17	7I29010	28-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	36.4	0.1	0.1	% by Weight	1	F709461	27-Sep-17		28-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	918	12.1	53.4	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**VN_25WCH_091317_Leach_EHS_R1
1709610-01**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	U
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	1.69	0.08	0.50	ng/L	1	F709474	27-Sep-17	7129009	28-Sep-17	EPA 1631E	

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VN_25WCH_091317_Leach_EHS_R2
1709610-02

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.039	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	J
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	1.68	0.08	0.50	ng/L	1	F709474	27-Sep-17	7129009	28-Sep-17	EPA 1631E	
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**VN_25WCH_091317_Leach_EHS_R3
1709610-03**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.034	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	J
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	1.48	0.08	0.50	ng/L	1	F709481	29-Sep-17	7129018	29-Sep-17	EPA 1631E	
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**VN_25WCH_091317_Leach_EHS_Cent_R1
1709610-04**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	0.089	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	14.4	0.08	0.50	ng/L	1	F709481	29-Sep-17	7129018	29-Sep-17	EPA 1631E	

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Amy Goodall, Project Manager



AMEC Foster Wheeler 271 Mill Road Chelmsford MA, 01824	Project: Leachability Study Project Number: 3616166052.02A.2A0512. Project Manager: Denise King	Reported: 14-Nov-17 12:48
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**VN_25WCH_091317_Leach_EHS_Cent_R2
1709610-05**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.126	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	5.44	0.08	0.50	ng/L	1	F709481	29-Sep-17	7129018	29-Sep-17	EPA 1631E	
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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**VN_25WCH_091317_Leach_EHS_Cent_R3
1709610-06**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	0.112	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	28-Sep-17	EPA 1630/FGS-070	
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	12.1	0.08	0.50	ng/L	1	F709481	29-Sep-17	7129018	29-Sep-17	EPA 1631E	

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Amy Goodall, Project Manager



AMEC Foster Wheeler
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Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**VN_25WCH_091317_Leach_ELS_R1
1709610-07**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	1.60	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	29-Sep-17	EPA 1630/FGS-070	
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	6.56	0.08	0.50	ng/L	1	F709481	29-Sep-17	7129018	29-Sep-17	EPA 1631E	

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Project Manager: Denise King

Reported:
14-Nov-17 12:48

**VN_25WCH_091317_Leach_ELS_R2
1709610-08**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	0.964	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	29-Sep-17	EPA 1630/FGS-070	
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	5.47	0.08	0.50	ng/L	1	F709481	29-Sep-17	7129018	29-Sep-17	EPA 1631E	

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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**VN_25WCH_091317_Leach_ELS_R3
1709610-09**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	1.00	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	29-Sep-17	EPA 1630/FGS-070	
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	5.88	0.08	0.50	ng/L	1	F709481	29-Sep-17	7129018	29-Sep-17	EPA 1631E	

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Project Manager: Denise King

Reported:
14-Nov-17 12:48

**VN_25WCH_091317_Leach_ELS_Cent_R1
1709610-10**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-013 Methyl Hg Distillation for Water											
Methyl Mercury (as Mercury)	0.135	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	29-Sep-17	EPA 1630/FGS-070	
Sample Preparation: EPA 1631E BrCl Oxidation											
Mercury	54.1	0.84	5.05	ng/L	10	F709481	29-Sep-17	7129018	29-Sep-17	EPA 1631E	

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Project Manager: Denise King

Reported:
14-Nov-17 12:48

**VN_25WCH_091317_Leach_ELS_Cent_R2
1709610-11**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.451	0.026	0.050	ng/L	1.25	F709466	28-Sep-17	7129012	29-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	42.5	0.84	5.05	ng/L	10	F709481	29-Sep-17	7129018	29-Sep-17	EPA 1631E	
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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

**VN_25WCH_091317_Leach_ELS_Cent_R3
1709610-12**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS-013 Methyl Hg Distillation for Water

Methyl Mercury (as Mercury)	0.095	0.026	0.050	ng/L	1.25	F709480	29-Sep-17	7130002	29-Sep-17	EPA 1630/FGS-070	
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Sample Preparation: EPA 1631E BrCl Oxidation

Mercury	47.8	0.84	5.05	ng/L	10	F709481	29-Sep-17	7129018	29-Sep-17	EPA 1631E	
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**VN_25WCH_091317_Leach_HS_WCH_R1
1709610-13**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	20.0	1.3	5.2	ng/g dry	500	F709458	27-Sep-17	7I29010	28-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	36.5	0.1	0.1	% by Weight	1	F709461	27-Sep-17		28-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	733	11.4	50.3	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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Project Manager: Denise King

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**VN_25WCH_091317_Leach_HS_WCH_R2
1709610-14**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	21.1	1.1	4.3	ng/g dry	500	F709458	27-Sep-17	7I29010	28-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	42.3	0.1	0.1	% by Weight	1	F709461	27-Sep-17		28-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	988	10.2	45.1	ng/g dry	50	F709449	27-Sep-17	7I29007	28-Sep-17	EPA 1631B	

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**VN_25WCH_091317_Leach_HS_WCH_R3
1709610-15**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	18.6	1.1	4.4	ng/g dry	500	F709458	27-Sep-17	7I29010	28-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	40.6	0.1	0.1	% by Weight	1	F709461	27-Sep-17		28-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	877	9.49	41.9	ng/g dry	50	F709453	27-Sep-17	7I29014	28-Sep-17	EPA 1631B	

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Project Manager: Denise King

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**VN_25WCH_091317_Leach_LS_WCH_R1
1709610-16**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	18.5	1.1	4.3	ng/g dry	500	F709458	27-Sep-17	7I29010	28-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	40.1	0.1	0.1	% by Weight	1	F709461	27-Sep-17		28-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	863	10.3	45.6	ng/g dry	50	F709453	27-Sep-17	7I29014	28-Sep-17	EPA 1631B	

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**VN_25WCH_091317_Leach_LS_WCH_R2
1709610-17**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	23.0	1.1	4.4	ng/g dry	500	F709458	27-Sep-17	7I29010	28-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	43.6	0.1	0.1	% by Weight	1	F709461	27-Sep-17		28-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	826	8.99	39.7	ng/g dry	50	F709453	27-Sep-17	7I29014	28-Sep-17	EPA 1631B	

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Project Manager: Denise King

Reported:
14-Nov-17 12:48

**VN_25WCH_091317_Leach_LS_WCH_R3
1709610-18**

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS-010 KOH/Methanol Hg Digestion											
Methyl Mercury (as Mercury)	21.1	1.1	4.4	ng/g dry	500	F709458	27-Sep-17	7I29010	28-Sep-17	EPA 1630 Mod/FGS-070	
Sample Preparation: EFGS-019 Solids Analysis											
% Solids	38.8	0.1	0.1	% by Weight	1	F709461	27-Sep-17		28-Sep-17	SM 2540B	O-04, O-09
Sample Preparation: EPA 7474											
Mercury	852	10.6	46.9	ng/g dry	50	F709453	27-Sep-17	7I29014	28-Sep-17	EPA 1631B	

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Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7I20005 - F709338											
Cal Standard (7I20005-CAL1)					Prepared & Analyzed: 19-Sep-17						
Mercury	0.54	-		ng/L	0.50100		107				
Cal Standard (7I20005-CAL2)					Prepared & Analyzed: 19-Sep-17						
Mercury	0.98	-		ng/L	1.0020		98.2				
Cal Standard (7I20005-CAL3)					Prepared & Analyzed: 19-Sep-17						
Mercury	4.97	-		ng/L	5.0100		99.2				
Cal Standard (7I20005-CAL4)					Prepared & Analyzed: 19-Sep-17						
Mercury	19.51	-		ng/L	20.040		97.3				
Cal Standard (7I20005-CAL5)					Prepared & Analyzed: 19-Sep-17						
Mercury	38.81	-		ng/L	40.080		96.8				
Calibration Blank (7I20005-CCB1)					Prepared & Analyzed: 19-Sep-17						
Mercury	0.14	-		ng/L							
Calibration Blank (7I20005-CCB2)					Prepared & Analyzed: 19-Sep-17						
Mercury	0.13	-		ng/L							
Calibration Blank (7I20005-CCB3)					Prepared & Analyzed: 19-Sep-17						
Mercury	0.07	-		ng/L							
Calibration Blank (7I20005-CCB4)					Prepared & Analyzed: 19-Sep-17						
Mercury	0.11	-		ng/L							
Calibration Blank (7I20005-CCB5)					Prepared & Analyzed: 19-Sep-17						
Mercury	0.09	-		ng/L							

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AMEC Foster Wheeler 271 Mill Road Chelmsford MA, 01824	Project: Leachability Study Project Number: 3616166052.02A.2A0512. Project Manager: Denise King	Reported: 14-Nov-17 12:48
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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I20005 - F709338

Calibration Check (7I20005-CCV1)												Prepared & Analyzed: 19-Sep-17	
Mercury	5.04	-		ng/L	5.0000		101	77-123					
Calibration Check (7I20005-CCV2)												Prepared & Analyzed: 19-Sep-17	
Mercury	5.08	-		ng/L	5.0000		102	77-123					
Calibration Check (7I20005-CCV3)												Prepared & Analyzed: 19-Sep-17	
Mercury	4.97	-		ng/L	5.0000		99.5	77-123					
Calibration Check (7I20005-CCV4)												Prepared & Analyzed: 19-Sep-17	
Mercury	4.90	-		ng/L	5.0000		97.9	77-123					
Calibration Check (7I20005-CCV5)												Prepared & Analyzed: 19-Sep-17	
Mercury	4.97	-		ng/L	5.0000		99.5	77-123					
Instrument Blank (7I20005-IBL1)												Prepared & Analyzed: 19-Sep-17	
Mercury	ND	0.08	0.50	ng/L							U		
Instrument Blank (7I20005-IBL2)												Prepared & Analyzed: 19-Sep-17	
Mercury	ND	0.08	0.50	ng/L							U		
Instrument Blank (7I20005-IBL3)												Prepared & Analyzed: 19-Sep-17	
Mercury	ND	0.08	0.50	ng/L							U		
Initial Cal Check (7I20005-ICV1)												Prepared & Analyzed: 19-Sep-17	
Mercury	5.20	-		ng/L	5.0000		104	79-121					

Batch 7I28014 - F709431

Cal Standard (7I28014-CAL1)												Prepared & Analyzed: 27-Sep-17	
Methyl Mercury (as Mercury)	0.046	-		ng/L	0.050050		92.0						

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I28014 - F709431

Cal Standard (7I28014-CAL2)					Prepared & Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	0.182	-		ng/L	0.20020		91.1				
Cal Standard (7I28014-CAL3)					Prepared & Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	0.972	-		ng/L	1.0010		97.1				
Cal Standard (7I28014-CAL4)					Prepared & Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	2.009	-		ng/L	2.0020		100				
Cal Standard (7I28014-CAL5)					Prepared & Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	4.759	-		ng/L	4.0040		119				
Calibration Blank (7I28014-CCB1)					Prepared & Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	0.000	-		ng/L							U
Calibration Blank (7I28014-CCB2)					Prepared & Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	0.004	-		ng/L							
Calibration Blank (7I28014-CCB3)					Prepared & Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	0.000	-		ng/L							U
Calibration Check (7I28014-CCV1)					Prepared & Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	0.510	-		ng/L	0.50049		102	67-133			
Calibration Check (7I28014-CCV2)					Prepared & Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	0.482	-		ng/L	0.50049		96.4	67-133			
Calibration Check (7I28014-CCV3)					Prepared & Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	0.463	-		ng/L	0.50049		92.6	67-133			

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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I28014 - F709431

Instrument Blank (7I28014-IBL1) Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	ND	0.021	0.040	ng/L							U
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Initial Cal Blank (7I28014-ICB1) Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	0.004	-		ng/L							
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Initial Cal Check (7I28014-ICV1) Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	0.527	-		ng/L	0.50049		105	69-131			
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Batch 7I28016 - F709436

Cal Standard (7I28016-CAL1) Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	0.05	-		ng/L	0.050050		92.0				
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Cal Standard (7I28016-CAL2) Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	0.2	-		ng/L	0.20020		91.1				
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Cal Standard (7I28016-CAL3) Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	1.0	-		ng/L	1.0010		97.1				
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Cal Standard (7I28016-CAL4) Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	2.0	-		ng/L	2.0020		100				
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Cal Standard (7I28016-CAL5) Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	4.8	-		ng/L	4.0040		119				
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Calibration Blank (7I28016-CCB1) Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	0.0	-		ng/L							U
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271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7I28016 - F709436											
Calibration Blank (7I28016-CCB2) Prepared & Analyzed: 27-Sep-17											
Methyl Mercury (as Mercury)	0.004	-		ng/L							
Calibration Blank (7I28016-CCB3) Prepared & Analyzed: 27-Sep-17											
Methyl Mercury (as Mercury)	0.0	-		ng/L							U
Calibration Blank (7I28016-CCB4) Prepared & Analyzed: 27-Sep-17											
Methyl Mercury (as Mercury)	0.0	-		ng/L							U
Calibration Blank (7I28016-CCB5) Prepared & Analyzed: 27-Sep-17											
Methyl Mercury (as Mercury)	0.0	-		ng/L							U
Calibration Blank (7I28016-CCB6) Prepared & Analyzed: 27-Sep-17											
Methyl Mercury (as Mercury)	0.0	-		ng/L							U
Calibration Check (7I28016-CCV1) Prepared & Analyzed: 27-Sep-17											
Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		102	67-133			
Calibration Check (7I28016-CCV2) Prepared & Analyzed: 27-Sep-17											
Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		96.4	67-133			
Calibration Check (7I28016-CCV3) Prepared & Analyzed: 27-Sep-17											
Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		92.6	67-133			
Calibration Check (7I28016-CCV4) Prepared & Analyzed: 27-Sep-17											
Methyl Mercury (as Mercury)	0.4	-		ng/L	0.50049		85.3	67-133			
Calibration Check (7I28016-CCV5) Prepared & Analyzed: 27-Sep-17											
Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		96.2	67-133			

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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I28016 - F709436

Calibration Check (7I28016-CCV6)

Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		101	67-133			
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Instrument Blank (7I28016-IBL1)

Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	ND	0.001	0.004	ng/L							U
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Initial Cal Blank (7I28016-ICB1)

Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	0.004	-		ng/L							
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Initial Cal Check (7I28016-ICV1)

Prepared & Analyzed: 27-Sep-17

Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		105	69-131			
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Batch 7I29009 - F709474

Cal Standard (7I29009-CAL1)

Prepared & Analyzed: 28-Sep-17

Mercury	0.49	-		ng/L	0.50100		98.1				
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Cal Standard (7I29009-CAL2)

Prepared & Analyzed: 28-Sep-17

Mercury	1.02	-		ng/L	1.0020		102				
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Cal Standard (7I29009-CAL3)

Prepared & Analyzed: 28-Sep-17

Mercury	5.07	-		ng/L	5.0100		101				
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Cal Standard (7I29009-CAL4)

Prepared & Analyzed: 28-Sep-17

Mercury	19.62	-		ng/L	20.040		97.9				
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Cal Standard (7I29009-CAL5)

Prepared & Analyzed: 28-Sep-17

Mercury	40.19	-		ng/L	40.080		100				
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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7129009 - F709474											
Calibration Blank (7129009-CCB1)											
Mercury	0.15	-		ng/L							Prepared & Analyzed: 28-Sep-17
Calibration Blank (7129009-CCB2)											
Mercury	0.30	-		ng/L							Prepared & Analyzed: 28-Sep-17
Calibration Blank (7129009-CCB3)											
Mercury	0.16	-		ng/L							Prepared & Analyzed: 28-Sep-17
Calibration Blank (7129009-CCB4)											
Mercury	0.19	-		ng/L							Prepared & Analyzed: 28-Sep-17
Calibration Blank (7129009-CCB5)											
Mercury	0.14	-		ng/L							Prepared & Analyzed: 28-Sep-17
Calibration Blank (7129009-CCB6)											
Mercury	0.18	-		ng/L							Prepared & Analyzed: 28-Sep-17
Calibration Blank (7129009-CCB7)											
Mercury	0.22	-		ng/L							Prepared & Analyzed: 28-Sep-17
Calibration Blank (7129009-CCB8)											
Mercury	0.23	-		ng/L							Prepared & Analyzed: 28-Sep-17
Calibration Blank (7129009-CCB9)											
Mercury	0.22	-		ng/L							Prepared & Analyzed: 28-Sep-17
Calibration Check (7129009-CCV1)											
Mercury	4.97	-		ng/L	5.0000		99.3	77-123			

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Project Manager: Denise King

Reported:
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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I29009 - F709474

Calibration Check (7I29009-CCV2)												Prepared & Analyzed: 28-Sep-17
Mercury	5.35	-		ng/L	5.0000		107	77-123				
Calibration Check (7I29009-CCV3)												Prepared & Analyzed: 28-Sep-17
Mercury	5.08	-		ng/L	5.0000		102	77-123				
Calibration Check (7I29009-CCV4)												Prepared & Analyzed: 28-Sep-17
Mercury	5.09	-		ng/L	5.0000		102	77-123				
Calibration Check (7I29009-CCV5)												Prepared & Analyzed: 28-Sep-17
Mercury	4.87	-		ng/L	5.0000		97.5	77-123				
Calibration Check (7I29009-CCV6)												Prepared & Analyzed: 28-Sep-17
Mercury	5.03	-		ng/L	5.0000		101	77-123				
Calibration Check (7I29009-CCV7)												Prepared & Analyzed: 28-Sep-17
Mercury	5.16	-		ng/L	5.0000		103	77-123				
Calibration Check (7I29009-CCV8)												Prepared & Analyzed: 28-Sep-17
Mercury	5.42	-		ng/L	5.0000		108	77-123				
Calibration Check (7I29009-CCV9)												Prepared & Analyzed: 28-Sep-17
Mercury	5.44	-		ng/L	5.0000		109	77-123				
Instrument Blank (7I29009-IBL1)												Prepared & Analyzed: 28-Sep-17
Mercury	ND	0.08	0.50	ng/L							U	
Instrument Blank (7I29009-IBL2)												Prepared & Analyzed: 28-Sep-17
Mercury	ND	0.08	0.50	ng/L							U	

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Project Manager: Denise King

Reported:
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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I29009 - F709474

Instrument Blank (7I29009-IBL3)				Prepared & Analyzed: 28-Sep-17							
Mercury	ND	0.08	0.50	ng/L							U

Initial Cal Check (7I29009-ICV1)				Prepared & Analyzed: 28-Sep-17							
Mercury	5.26	-		ng/L	5.0000		105	79-121			

Batch 7I29010 - F709458

Cal Standard (7I29010-CAL1)				Prepared & Analyzed: 28-Sep-17							
Methyl Mercury (as Mercury)	0.05	-		ng/L	0.050050		90.1				

Cal Standard (7I29010-CAL2)				Prepared & Analyzed: 28-Sep-17							
Methyl Mercury (as Mercury)	0.2	-		ng/L	0.20020		96.6				

Cal Standard (7I29010-CAL3)				Prepared & Analyzed: 28-Sep-17							
Methyl Mercury (as Mercury)	1.0	-		ng/L	1.0010		105				

Cal Standard (7I29010-CAL4)				Prepared & Analyzed: 28-Sep-17							
Methyl Mercury (as Mercury)	2.0	-		ng/L	2.0020		99.3				

Cal Standard (7I29010-CAL5)				Prepared & Analyzed: 28-Sep-17							
Methyl Mercury (as Mercury)	4.4	-		ng/L	4.0040		109				

Calibration Blank (7I29010-CCB1)				Prepared & Analyzed: 28-Sep-17							
Methyl Mercury (as Mercury)	0.0	-		ng/L							U

Calibration Blank (7I29010-CCB2)				Prepared & Analyzed: 28-Sep-17							
Methyl Mercury (as Mercury)	0.0	-		ng/L							U

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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I29010 - F709458

Calibration Blank (7I29010-CCB3) Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.005	-		ng/L							
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Calibration Check (7I29010-CCV1) Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.4	-		ng/L	0.50049		89.2	75-125			
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Calibration Check (7I29010-CCV2) Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.4	-		ng/L	0.50049		89.0	75-125			
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Calibration Check (7I29010-CCV3) Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		102	75-125			
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Instrument Blank (7I29010-IBL1) Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	ND	0.001	0.004	ng/L							U
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Initial Cal Blank (7I29010-ICB1) Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.005	-		ng/L							
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Initial Cal Check (7I29010-ICV1) Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		98.6	80-120			
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Batch 7I29012 - F709466

Cal Standard (7I29012-CAL1) Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.045	-		ng/L	0.050050		90.1				
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Cal Standard (7I29012-CAL2) Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.193	-		ng/L	0.20020		96.6				
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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7I29012 - F709466											
Cal Standard (7I29012-CAL3)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	1.047	-		ng/L	1.0010		105				
Cal Standard (7I29012-CAL4)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	1.988	-		ng/L	2.0020		99.3				
Cal Standard (7I29012-CAL5)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	4.359	-		ng/L	4.0040		109				
Calibration Blank (7I29012-CCB1)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	0.000	-		ng/L							U
Calibration Blank (7I29012-CCB2)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	0.000	-		ng/L							U
Calibration Blank (7I29012-CCB3)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	0.005	-		ng/L							
Calibration Blank (7I29012-CCB4)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	0.001	-		ng/L							
Calibration Blank (7I29012-CCB5)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	0.000	-		ng/L							U
Calibration Blank (7I29012-CCB6)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	0.002	-		ng/L							
Calibration Check (7I29012-CCV1)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	0.446	-		ng/L	0.50049		89.2	67-133			

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I29012 - F709466

Calibration Check (7I29012-CCV2)

Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.445	-		ng/L	0.50049		89.0	67-133			
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Calibration Check (7I29012-CCV3)

Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.509	-		ng/L	0.50049		102	67-133			
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Calibration Check (7I29012-CCV4)

Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.438	-		ng/L	0.50049		87.4	67-133			
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Calibration Check (7I29012-CCV5)

Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.509	-		ng/L	0.50049		102	67-133			
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Calibration Check (7I29012-CCV6)

Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.427	-		ng/L	0.50049		85.3	67-133			
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Instrument Blank (7I29012-IBL1)

Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	ND	0.021	0.040	ng/L							U
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Initial Cal Blank (7I29012-ICB1)

Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.005	-		ng/L							
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Initial Cal Check (7I29012-ICV1)

Prepared & Analyzed: 28-Sep-17

Methyl Mercury (as Mercury)	0.493	-		ng/L	0.50049		98.6	69-131			
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Batch 7I29016 - F709469

Cal Standard (7I29016-CAL1)

Prepared & Analyzed: 28-Sep-17

Mercury	0.50	-		ng/L	0.50100		99.4				
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

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14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I29016 - F709469

Cal Standard (7I29016-CAL2)					Prepared & Analyzed: 28-Sep-17						
Mercury	1.03	-		ng/L	1.0020		103				
Cal Standard (7I29016-CAL3)					Prepared & Analyzed: 28-Sep-17						
Mercury	4.95	-		ng/L	5.0100		98.8				
Cal Standard (7I29016-CAL4)					Prepared & Analyzed: 28-Sep-17						
Mercury	19.89	-		ng/L	20.040		99.3				
Cal Standard (7I29016-CAL5)					Prepared & Analyzed: 28-Sep-17						
Mercury	39.44	-		ng/L	40.080		98.4				
Calibration Blank (7I29016-CCB1)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.03	-		ng/L							
Calibration Blank (7I29016-CCB2)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.0001	-		ng/L							
Calibration Blank (7I29016-CCB3)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.06	-		ng/L							
Calibration Blank (7I29016-CCB4)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.07	-		ng/L							
Calibration Blank (7I29016-CCB5)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.05	-		ng/L							
Calibration Blank (7I29016-CCB6)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.07	-		ng/L							

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I29016 - F709469

Calibration Blank (7I29016-CCB7)											
Prepared & Analyzed: 28-Sep-17											
Mercury	0.06	-		ng/L							
Calibration Blank (7I29016-CCB8)											
Prepared & Analyzed: 28-Sep-17											
Mercury	0.06	-		ng/L							
Calibration Blank (7I29016-CCB9)											
Prepared & Analyzed: 28-Sep-17											
Mercury	0.07	-		ng/L							
Calibration Check (7I29016-CCV1)											
Prepared & Analyzed: 28-Sep-17											
Mercury	4.96	-		ng/L	5.0000		99.1	77-123			
Calibration Check (7I29016-CCV2)											
Prepared & Analyzed: 28-Sep-17											
Mercury	5.05	-		ng/L	5.0000		101	77-123			
Calibration Check (7I29016-CCV3)											
Prepared & Analyzed: 28-Sep-17											
Mercury	5.12	-		ng/L	5.0000		102	77-123			
Calibration Check (7I29016-CCV4)											
Prepared & Analyzed: 28-Sep-17											
Mercury	5.15	-		ng/L	5.0000		103	77-123			
Calibration Check (7I29016-CCV5)											
Prepared & Analyzed: 28-Sep-17											
Mercury	5.24	-		ng/L	5.0000		105	77-123			
Calibration Check (7I29016-CCV6)											
Prepared & Analyzed: 28-Sep-17											
Mercury	5.29	-		ng/L	5.0000		106	77-123			
Calibration Check (7I29016-CCV7)											
Prepared & Analyzed: 28-Sep-17											
Mercury	5.28	-		ng/L	5.0000		106	77-123			

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Amy Goodall, Project Manager



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Project Manager: Denise King

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I29016 - F709469

Calibration Check (7I29016-CCV8)					Prepared & Analyzed: 28-Sep-17						
Mercury	5.38	-		ng/L	5.0000		108	77-123			
Calibration Check (7I29016-CCV9)					Prepared & Analyzed: 28-Sep-17						
Mercury	5.40	-		ng/L	5.0000		108	77-123			
Instrument Blank (7I29016-IBL1)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.08	0.50	ng/L							U
Instrument Blank (7I29016-IBL2)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.08	0.50	ng/L							U
Instrument Blank (7I29016-IBL3)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.08	0.50	ng/L							U
Initial Cal Check (7I29016-ICV1)					Prepared & Analyzed: 28-Sep-17						
Mercury	4.92	-		ng/L	5.0000		98.5	79-121			

Batch 7I29018 - F709481

Cal Standard (7I29018-CAL1)					Prepared & Analyzed: 29-Sep-17						
Mercury	0.52	-		ng/L	0.50100		103				
Cal Standard (7I29018-CAL2)					Prepared & Analyzed: 29-Sep-17						
Mercury	1.00	-		ng/L	1.0020		99.4				
Cal Standard (7I29018-CAL3)					Prepared & Analyzed: 29-Sep-17						
Mercury	5.01	-		ng/L	5.0100		100				

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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I29018 - F709481

Cal Standard (7I29018-CAL4)					Prepared & Analyzed: 29-Sep-17						
Mercury	19.34	-		ng/L	20.040		96.5				
Cal Standard (7I29018-CAL5)					Prepared & Analyzed: 29-Sep-17						
Mercury	40.11	-		ng/L	40.080		100				
Calibration Blank (7I29018-CCB1)					Prepared & Analyzed: 29-Sep-17						
Mercury	0.12	-		ng/L							
Calibration Blank (7I29018-CCB2)					Prepared & Analyzed: 29-Sep-17						
Mercury	0.10	-		ng/L							
Calibration Blank (7I29018-CCB3)					Prepared & Analyzed: 29-Sep-17						
Mercury	0.06	-		ng/L							
Calibration Blank (7I29018-CCB4)					Prepared & Analyzed: 29-Sep-17						
Mercury	0.08	-		ng/L							
Calibration Check (7I29018-CCV1)					Prepared & Analyzed: 29-Sep-17						
Mercury	5.01	-		ng/L	5.0000		100	77-123			
Calibration Check (7I29018-CCV2)					Prepared & Analyzed: 29-Sep-17						
Mercury	4.85	-		ng/L	5.0000		97.1	77-123			
Calibration Check (7I29018-CCV3)					Prepared & Analyzed: 29-Sep-17						
Mercury	4.91	-		ng/L	5.0000		98.3	77-123			
Calibration Check (7I29018-CCV4)					Prepared & Analyzed: 29-Sep-17						
Mercury	4.77	-		ng/L	5.0000		95.4	77-123			

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7129018 - F709481

Instrument Blank (7129018-IBL1)												Prepared & Analyzed: 29-Sep-17											
Mercury	ND	0.08	0.50	ng/L							U												
Instrument Blank (7129018-IBL2)												Prepared & Analyzed: 29-Sep-17											
Mercury	ND	0.08	0.50	ng/L							U												
Instrument Blank (7129018-IBL3)												Prepared & Analyzed: 29-Sep-17											
Mercury	ND	0.08	0.50	ng/L							U												
Initial Cal Check (7129018-ICV1)												Prepared & Analyzed: 29-Sep-17											
Mercury	5.11	-		ng/L	5.0000		102	79-121															

Batch 7130001 - F709458

Cal Standard (7130001-CAL1)												Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.05	-		ng/L	0.050050		93.2																
Cal Standard (7130001-CAL2)												Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.2	-		ng/L	0.20020		99.0																
Cal Standard (7130001-CAL3)												Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	1.0	-		ng/L	1.0010		103																
Cal Standard (7130001-CAL4)												Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	2.0	-		ng/L	2.0020		97.6																
Cal Standard (7130001-CAL5)												Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	4.3	-		ng/L	4.0040		106																

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7I30001 - F709458											
Calibration Blank (7I30001-CCB1) Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.0	-		ng/L							U
Calibration Blank (7I30001-CCB2) Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.002	-		ng/L							
Calibration Blank (7I30001-CCB3) Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.0	-		ng/L							U
Calibration Blank (7I30001-CCB4) Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.0	-		ng/L							U
Calibration Blank (7I30001-CCB5) Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.003	-		ng/L							
Calibration Blank (7I30001-CCB6) Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.0	-		ng/L							U
Calibration Blank (7I30001-CCB7) Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.0	-		ng/L							U
Calibration Check (7I30001-CCV1) Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.4	-		ng/L	0.50049		82.8	75-125			
Calibration Check (7I30001-CCV2) Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		92.2	75-125			
Calibration Check (7I30001-CCV3) Prepared & Analyzed: 29-Sep-17											
Methyl Mercury (as Mercury)	0.4	-		ng/L	0.50049		83.1	75-125			

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I30001 - F709458

Calibration Check (7I30001-CCV4)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	0.4	-		ng/L	0.50049		84.4	75-125			
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Calibration Check (7I30001-CCV5)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		90.1	75-125			
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Calibration Check (7I30001-CCV6)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		93.3	75-125			
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Calibration Check (7I30001-CCV7)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	0.4	-		ng/L	0.50049		83.7	75-125			
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Instrument Blank (7I30001-IBL1)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	ND	0.001	0.004	ng/L							U
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Initial Cal Blank (7I30001-ICB1)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	0.003	-		ng/L							
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Initial Cal Check (7I30001-ICV1)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	0.5	-		ng/L	0.50049		104	80-120			
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Batch 7I30002 - F709480

Cal Standard (7I30002-CAL1)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	0.047	-		ng/L	0.050050		93.2				
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Cal Standard (7I30002-CAL2)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	0.198	-		ng/L	0.20020		99.0				
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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7I30002 - F709480											
Cal Standard (7I30002-CAL3)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	1.034	-		ng/L	1.0010		103				
Cal Standard (7I30002-CAL4)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	1.955	-		ng/L	2.0020		97.6				
Cal Standard (7I30002-CAL5)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	4.261	-		ng/L	4.0040		106				
Calibration Blank (7I30002-CCB1)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	0.000	-		ng/L							U
Calibration Blank (7I30002-CCB2)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	0.002	-		ng/L							
Calibration Blank (7I30002-CCB3)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	0.000	-		ng/L							U
Calibration Blank (7I30002-CCB4)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	0.000	-		ng/L							U
Calibration Check (7I30002-CCV1)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	0.414	-		ng/L	0.50049		82.8	67-133			
Calibration Check (7I30002-CCV2)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	0.461	-		ng/L	0.50049		92.2	67-133			
Calibration Check (7I30002-CCV3)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	0.416	-		ng/L	0.50049		83.1	67-133			

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I30002 - F709480

Calibration Check (7I30002-CCV4)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	0.423	-		ng/L	0.50049		84.4	67-133			
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Instrument Blank (7I30002-IBL1)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	ND	0.021	0.040	ng/L							U
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Initial Cal Blank (7I30002-ICB1)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	0.003	-		ng/L							
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Initial Cal Check (7I30002-ICV1)

Prepared & Analyzed: 29-Sep-17

Methyl Mercury (as Mercury)	0.521	-		ng/L	0.50049		104	69-131			
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Batch 7I30003 - F709493

Cal Standard (7I30003-CAL1)

Prepared & Analyzed: 30-Sep-17

Methyl Mercury (as Mercury)	0.048	-		ng/L	0.050050		96.8				
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Cal Standard (7I30003-CAL2)

Prepared & Analyzed: 30-Sep-17

Methyl Mercury (as Mercury)	0.186	-		ng/L	0.20020		92.8				
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Cal Standard (7I30003-CAL3)

Prepared & Analyzed: 30-Sep-17

Methyl Mercury (as Mercury)	1.065	-		ng/L	1.0010		106				
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Cal Standard (7I30003-CAL4)

Prepared & Analyzed: 30-Sep-17

Methyl Mercury (as Mercury)	1.887	-		ng/L	2.0020		94.3				
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Cal Standard (7I30003-CAL5)

Prepared & Analyzed: 30-Sep-17

Methyl Mercury (as Mercury)	4.373	-		ng/L	4.0040		109				
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Amy Goodall, Project Manager



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Project: Leachability Study
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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I30003 - F709493

Calibration Blank (7I30003-CCB1)											
Prepared & Analyzed: 30-Sep-17											
Methyl Mercury (as Mercury)	0.000	-		ng/L							U

Calibration Blank (7I30003-CCB2)											
Prepared & Analyzed: 30-Sep-17											
Methyl Mercury (as Mercury)	0.000	-		ng/L							U

Calibration Check (7I30003-CCV1)											
Prepared & Analyzed: 30-Sep-17											
Methyl Mercury (as Mercury)	0.444	-		ng/L	0.50049		88.8	67-133			

Calibration Check (7I30003-CCV2)											
Prepared & Analyzed: 30-Sep-17											
Methyl Mercury (as Mercury)	0.424	-		ng/L	0.50049		84.7	67-133			

Instrument Blank (7I30003-IBL1)											
Prepared & Analyzed: 30-Sep-17											
Methyl Mercury (as Mercury)	ND	0.021	0.040	ng/L							U

Initial Cal Blank (7I30003-ICB1)											
Prepared & Analyzed: 30-Sep-17											
Methyl Mercury (as Mercury)	0.005	-		ng/L							

Initial Cal Check (7I30003-ICV1)											
Prepared & Analyzed: 30-Sep-17											
Methyl Mercury (as Mercury)	0.485	-		ng/L	0.50049		96.9	69-131			

Batch F709338 - EPA 1631E BrCl Oxidation

Blank (F709338-BLK1)											
Prepared & Analyzed: 19-Sep-17											
Mercury	0.11	0.08	0.50	ng/L							J

Blank (F709338-BLK2)											
Prepared & Analyzed: 19-Sep-17											
Mercury	ND	0.08	0.50	ng/L							U



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Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F709338 - EPA 1631E BrCl Oxidation

Blank (F709338-BLK3)					Prepared & Analyzed: 19-Sep-17						
Mercury	ND	0.08	0.50	ng/L							U
LCS (F709338-BS1)					Prepared & Analyzed: 19-Sep-17						
Mercury	15.37	0.08	0.50	ng/L	15.679		98.0	80-120			
LCS Dup (F709338-BSD1)					Prepared & Analyzed: 19-Sep-17						
Mercury	15.46	0.08	0.50	ng/L	15.679		98.6	80-120	0.611	24	
Duplicate (F709338-DUP1)					Source: 1709230-10 Prepared & Analyzed: 19-Sep-17						
Mercury	469.1	8.34	50.0	ng/L		477.9			1.87	24	
Matrix Spike (F709338-MS1)					Source: 1709230-11 Prepared & Analyzed: 19-Sep-17						
Mercury	2519	8.34	50.0	ng/L	2024.0	544.9	97.6	71-125			
Matrix Spike (F709338-MS2)					Source: 1709187-01RE2 Prepared & Analyzed: 19-Sep-17						
Mercury	2562	8.34	50.0	ng/L	2024.0	599.6	97.0	71-125			
Matrix Spike Dup (F709338-MSD1)					Source: 1709230-11 Prepared & Analyzed: 19-Sep-17						
Mercury	2538	8.34	50.0	ng/L	2024.0	544.9	98.5	71-125	0.741	24	
Matrix Spike Dup (F709338-MSD2)					Source: 1709187-01RE2 Prepared & Analyzed: 19-Sep-17						
Mercury	2555	8.34	50.0	ng/L	2024.0	599.6	96.6	71-125	0.277	24	

Batch F709431 - EFGS-013 Methyl Hg Distillation for Water

Blank (F709431-BLK1)					Prepared: 26-Sep-17 Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U

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Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F709431 - EFGS-013 Methyl Hg Distillation for Water

Blank (F709431-BLK2)					Prepared: 26-Sep-17 Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U
Blank (F709431-BLK3)					Prepared: 26-Sep-17 Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U
LCS (F709431-BS1)					Prepared: 26-Sep-17 Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	0.982	0.026	0.050	ng/L	1.0010		98.1	70-130			
LCS Dup (F709431-BSD1)					Prepared: 26-Sep-17 Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	1.068	0.026	0.050	ng/L	1.0010		107	70-130	8.44	35	
Duplicate (F709431-DUP1)					Source: 1709608-01 Prepared: 26-Sep-17 Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	0.073	0.026	0.050	ng/L		0.135			59.9	35	QR-07
Matrix Spike (F709431-MS1)					Source: 1709608-01 Prepared: 26-Sep-17 Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	1.193	0.026	0.050	ng/L	1.0010	0.135	106	65-130			
Matrix Spike (F709431-MS2)					Source: 1709608-03 Prepared: 26-Sep-17 Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	1.297	0.026	0.050	ng/L	1.0010	0.210	109	65-130			
Matrix Spike Dup (F709431-MSD1)					Source: 1709608-01 Prepared: 26-Sep-17 Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	1.124	0.026	0.050	ng/L	1.0010	0.135	98.8	65-130	5.89	35	
Matrix Spike Dup (F709431-MSD2)					Source: 1709608-03 Prepared: 26-Sep-17 Analyzed: 27-Sep-17						
Methyl Mercury (as Mercury)	1.291	0.026	0.050	ng/L	1.0010	0.210	108	65-130	0.459	35	

Batch F709436 - EFGS-010 KOH/Methanol Hg Digestion

Blank (F709436-BLK4)					Prepared: 26-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	ND	0.5	2.0	ng/g wet							U

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Batch F709436 - EFGS-010 KOH/Methanol Hg Digestion

Blank (F709436-BLK5)					Prepared: 26-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	ND	0.5	2.0	ng/g wet							U
Blank (F709436-BLK6)					Prepared: 26-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	ND	0.5	2.0	ng/g wet							U
LCS (F709436-BS2)					Prepared: 26-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	257.4	2.0	7.8	ng/g wet	330.28		77.9	70-130			
LCS Dup (F709436-BSD2)					Prepared: 26-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	239.4	2.0	7.8	ng/g wet	330.28		72.5	70-130	7.23	25	
Duplicate (F709436-DUP2)					Source: 1709529-01RE2 Prepared: 26-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	8.9	1.4	5.5	ng/g dry		9.7			8.15	35	
Matrix Spike (F709436-MS3)					Source: 1709529-01RE2 Prepared: 26-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	114.8	1.4	5.5	ng/g dry	110.23	9.7	95.4	65-130			
Matrix Spike (F709436-MS4)					Source: 1709529-04RE2 Prepared: 26-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	128.9	1.5	5.9	ng/g dry	117.19	15.4	96.8	65-130			
Matrix Spike Dup (F709436-MSD3)					Source: 1709529-01RE2 Prepared: 26-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	120.8	1.5	5.8	ng/g dry	115.70	9.7	96.1	65-130	0.753	35	
Matrix Spike Dup (F709436-MSD4)					Source: 1709529-04RE2 Prepared: 26-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	130.2	1.4	5.7	ng/g dry	113.18	15.4	101	65-130	4.63	35	

Batch F709458 - EFGS-010 KOH/Methanol Hg Digestion

Blank (F709458-BLK1)					Prepared: 27-Sep-17 Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	ND	0.5	2.0	ng/g wet							U

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AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F709458 - EFGS-010 KOH/Methanol Hg Digestion

Blank (F709458-BLK2)					Prepared: 27-Sep-17 Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	ND	0.5	2.0	ng/g wet							U
Blank (F709458-BLK3)					Prepared: 27-Sep-17 Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	ND	0.5	2.0	ng/g wet							U
Blank (F709458-BLK4)					Prepared: 27-Sep-17 Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	ND	0.5	1.8	ng/g wet							F-03, U
Blank (F709458-BLK5)					Prepared: 27-Sep-17 Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	ND	0.5	1.9	ng/g wet							F-03, U
Blank (F709458-BLK6)					Prepared: 27-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	ND	0.5	2.0	ng/g wet							U
Blank (F709458-BLK7)					Prepared: 27-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	ND	0.5	2.0	ng/g wet							U
Blank (F709458-BLK8)					Prepared: 27-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	ND	0.5	2.0	ng/g wet							U
LCS (F709458-BS2)					Prepared: 27-Sep-17 Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	263.9	2.0	7.9	ng/g wet	330.28		79.9	70-130			
LCS Dup (F709458-BSD2)					Prepared: 27-Sep-17 Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	252.2	2.0	8.0	ng/g wet	330.28		76.4	70-130	4.55	25	
Duplicate (F709458-DUP1)					Source: 1709610-18 Prepared: 27-Sep-17 Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	22.0	1.2	4.8	ng/g dry		21.1			4.40	35	

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Batch F709458 - EFGS-010 KOH/Methanol Hg Digestion

Matrix Spike (F709458-MS2)		Source: 1709673-01			Prepared: 27-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	29.2	0.5	1.9	ng/g wet	38.949	13.8	39.7	65-130			QM-07
Matrix Spike Dup (F709458-MSD2)		Source: 1709673-01			Prepared: 27-Sep-17 Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	23.9	0.4	1.7	ng/g wet	34.637	13.8	29.4	65-130	29.7	35	QM-07

Batch F709466 - EFGS-013 Methyl Hg Distillation for Water

Blank (F709466-BLK1)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U
Blank (F709466-BLK2)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U
Blank (F709466-BLK3)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U
LCS (F709466-BS1)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	1.051	0.026	0.050	ng/L	1.0010		105	70-130			
LCS Dup (F709466-BSD1)					Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	1.031	0.026	0.050	ng/L	1.0010		103	70-130	1.92	35	
Duplicate (F709466-DUP1)		Source: 1709610-11			Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	0.132	0.026	0.050	ng/L		0.451			109	35	QR-07
Matrix Spike (F709466-MS1)		Source: 1709608-05			Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	1.053	0.026	0.050	ng/L	1.0010	0.073	97.8	65-130			

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Amy Goodall, Project Manager



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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F709466 - EFGS-013 Methyl Hg Distillation for Water

Matrix Spike (F709466-MS2)		Source: 1709608-07			Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	1.057	0.026	0.050	ng/L	1.0010	0.061	99.5	65-130			
Matrix Spike Dup (F709466-MSD1)		Source: 1709608-05			Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	1.129	0.026	0.050	ng/L	1.0010	0.073	105	65-130	7.00	35	
Matrix Spike Dup (F709466-MSD2)		Source: 1709608-07			Prepared & Analyzed: 28-Sep-17						
Methyl Mercury (as Mercury)	1.135	0.026	0.050	ng/L	1.0010	0.061	107	65-130	7.11	35	

Batch F709469 - EPA 1631E BrCl Oxidation

Blank (F709469-BLK1)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.08	0.08	0.50	ng/L							J
Blank (F709469-BLK2)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.08	0.50	ng/L							U
Blank (F709469-BLK3)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.08	0.50	ng/L							U
Blank (F709469-BLK4)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.08	0.50	ng/L							QB-04, U
Blank (F709469-BLK5)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.09	0.52	ng/L							QB-06, U
LCS (F709469-BS1)					Prepared & Analyzed: 28-Sep-17						
Mercury	16.93	0.08	0.50	ng/L	15.679		108	80-120			

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AMEC Foster Wheeler 271 Mill Road Chelmsford MA, 01824	Project: Leachability Study Project Number: 3616166052.02A.2A0512. Project Manager: Denise King	Reported: 14-Nov-17 12:48
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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F709469 - EPA 1631E BrCl Oxidation

LCS Dup (F709469-BSD1)					Prepared & Analyzed: 28-Sep-17						
Mercury	16.94	0.08	0.50	ng/L	15.679		108	80-120	0.0615	24	
Duplicate (F709469-DUP1)					Source: 1709607-05 Prepared & Analyzed: 28-Sep-17						
Mercury	307.1	4.34	26.0	ng/L		309.7			0.849	24	AD
Matrix Spike (F709469-MS1)					Source: 1709607-05 Prepared & Analyzed: 28-Sep-17						
Mercury	868.3	4.34	26.0	ng/L	526.05	309.7	106	71-125			AS
Matrix Spike (F709469-MS2)					Source: 1709607-11 Prepared & Analyzed: 28-Sep-17						
Mercury	828.8	4.34	26.0	ng/L	526.05	421.0	77.5	71-125			AS
Matrix Spike Dup (F709469-MSD1)					Source: 1709607-05 Prepared & Analyzed: 28-Sep-17						
Mercury	871.7	4.34	26.0	ng/L	526.05	309.7	107	71-125	0.396	24	AS
Matrix Spike Dup (F709469-MSD2)					Source: 1709607-11 Prepared & Analyzed: 28-Sep-17						
Mercury	822.6	4.34	26.0	ng/L	526.05	421.0	76.3	71-125	0.756	24	AS

Batch F709474 - EPA 1631E BrCl Oxidation

Blank (F709474-BLK1)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.21	0.08	0.50	ng/L							J
Blank (F709474-BLK2)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.12	0.08	0.50	ng/L							J
Blank (F709474-BLK3)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.12	0.08	0.50	ng/L							J

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F709474 - EPA 1631E BrCl Oxidation

Blank (F709474-BLK4)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.08	0.08	0.50	ng/L							J
LCS (F709474-BS1)					Prepared & Analyzed: 28-Sep-17						
Mercury	15.32	0.08	0.50	ng/L	15.679		97.7	80-120			
LCS Dup (F709474-BSD1)					Prepared & Analyzed: 28-Sep-17						
Mercury	15.12	0.08	0.50	ng/L	15.679		96.4	80-120	1.28	24	
Duplicate (F709474-DUP1)					Source: 1709609-12RE1 Prepared & Analyzed: 28-Sep-17						
Mercury	45.86	0.84	5.05	ng/L		46.72			1.86	24	AD
Matrix Spike (F709474-MS1)					Source: 1709609-12RE1 Prepared & Analyzed: 28-Sep-17						
Mercury	150.8	0.84	5.05	ng/L	102.20	46.72	102	71-125			AS
Matrix Spike Dup (F709474-MSD1)					Source: 1709609-12RE1 Prepared & Analyzed: 28-Sep-17						
Mercury	149.2	0.84	5.05	ng/L	102.20	46.72	100	71-125	1.10	24	AS

Batch F709480 - EFGS-013 Methyl Hg Distillation for Water

Blank (F709480-BLK1)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U
Blank (F709480-BLK2)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U
Blank (F709480-BLK3)					Prepared & Analyzed: 29-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F709480 - EFGS-013 Methyl Hg Distillation for Water

LCS (F709480-BS1)											
											Prepared & Analyzed: 29-Sep-17
Methyl Mercury (as Mercury)	0.915	0.026	0.050	ng/L	1.0010		91.4	70-130			
LCS Dup (F709480-BSD1)											
											Prepared & Analyzed: 29-Sep-17
Methyl Mercury (as Mercury)	1.004	0.026	0.050	ng/L	1.0010		100	70-130	9.20	35	
Duplicate (F709480-DUP1)											
											Source: 1709608-09
											Prepared & Analyzed: 29-Sep-17
Methyl Mercury (as Mercury)	0.125	0.026	0.050	ng/L		0.114			9.57	35	
Matrix Spike (F709480-MS1)											
											Source: 1709608-09
											Prepared & Analyzed: 29-Sep-17
Methyl Mercury (as Mercury)	1.152	0.026	0.050	ng/L	1.0010	0.114	104	65-130			
Matrix Spike Dup (F709480-MSD1)											
											Source: 1709608-09
											Prepared & Analyzed: 29-Sep-17
Methyl Mercury (as Mercury)	1.037	0.026	0.050	ng/L	1.0010	0.114	92.2	65-130	10.5	35	

Batch F709481 - EPA 1631E BrCl Oxidation

Blank (F709481-BLK1)											
											Prepared & Analyzed: 29-Sep-17
Mercury	ND	0.08	0.50	ng/L							U
Blank (F709481-BLK2)											
											Prepared & Analyzed: 29-Sep-17
Mercury	ND	0.08	0.50	ng/L							U
Blank (F709481-BLK3)											
											Prepared & Analyzed: 29-Sep-17
Mercury	ND	0.08	0.50	ng/L							U
Blank (F709481-BLK4)											
											Prepared & Analyzed: 29-Sep-17
Mercury	ND	0.08	0.50	ng/L							QB-04, U

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Amy Goodall, Project Manager



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Quality Control Data

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Batch F709481 - EPA 1631E BrCl Oxidation

LCS (F709481-BS1)					Prepared & Analyzed: 29-Sep-17						
Mercury	15.73	0.08	0.50	ng/L	15.679		100	80-120			
LCS Dup (F709481-BSD1)					Prepared & Analyzed: 29-Sep-17						
Mercury	15.64	0.08	0.50	ng/L	15.679		99.7	80-120	0.591	24	
Duplicate (F709481-DUP1)					Source: 1709738-07		Prepared & Analyzed: 29-Sep-17				
Mercury	1.07	0.08	0.50	ng/L		1.08			0.646	24	AD
Matrix Spike (F709481-MS1)					Source: 1709738-05		Prepared & Analyzed: 29-Sep-17				
Mercury	3.60	0.08	0.50	ng/L	2.5300	1.10	98.8	71-125			AS
Matrix Spike (F709481-MS2)					Source: 1709738-07		Prepared & Analyzed: 29-Sep-17				
Mercury	3.56	0.08	0.50	ng/L	2.5300	1.08	98.1	71-125			AS
Matrix Spike Dup (F709481-MSD1)					Source: 1709738-05		Prepared & Analyzed: 29-Sep-17				
Mercury	3.50	0.08	0.50	ng/L	2.5300	1.10	94.7	71-125	2.90	24	AS
Matrix Spike Dup (F709481-MSD2)					Source: 1709738-07		Prepared & Analyzed: 29-Sep-17				
Mercury	3.54	0.08	0.50	ng/L	2.5300	1.08	97.4	71-125	0.486	24	AS

Batch F709493 - EFGS-013 Methyl Hg Distillation for Water

Blank (F709493-BLK1)					Prepared: 29-Sep-17 Analyzed: 30-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U
Blank (F709493-BLK2)					Prepared: 29-Sep-17 Analyzed: 30-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U

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Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F709493 - EFGS-013 Methyl Hg Distillation for Water

Blank (F709493-BLK3)					Prepared: 29-Sep-17 Analyzed: 30-Sep-17						
Methyl Mercury (as Mercury)	ND	0.026	0.050	ng/L							U
LCS (F709493-BS1)					Prepared: 29-Sep-17 Analyzed: 30-Sep-17						
Methyl Mercury (as Mercury)	0.915	0.026	0.050	ng/L	1.0010		91.4	70-130			
LCS Dup (F709493-BSD1)					Prepared: 29-Sep-17 Analyzed: 30-Sep-17						
Methyl Mercury (as Mercury)	1.021	0.026	0.050	ng/L	1.0010		102	70-130	11.0	35	
Duplicate (F709493-DUP1)					Source: 1709608-11 Prepared: 29-Sep-17 Analyzed: 30-Sep-17						
Methyl Mercury (as Mercury)	0.082	0.026	0.050	ng/L		0.087			6.03	35	
Matrix Spike (F709493-MS1)					Source: 1709608-11 Prepared: 29-Sep-17 Analyzed: 30-Sep-17						
Methyl Mercury (as Mercury)	0.981	0.026	0.050	ng/L	1.0010	0.087	89.3	65-130			
Matrix Spike Dup (F709493-MSD1)					Source: 1709608-11 Prepared: 29-Sep-17 Analyzed: 30-Sep-17						
Methyl Mercury (as Mercury)	1.006	0.026	0.050	ng/L	1.0010	0.087	91.8	65-130	2.46	35	

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Amy Goodall, Project Manager



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Batch 7129007 - F709449											
Cal Standard (7129007-CAL1)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.49	-		ng/L	0.50100		98.1				
Cal Standard (7129007-CAL2)					Prepared & Analyzed: 28-Sep-17						
Mercury	1.02	-		ng/L	1.0020		102				
Cal Standard (7129007-CAL3)					Prepared & Analyzed: 28-Sep-17						
Mercury	5.07	-		ng/L	5.0100		101				
Cal Standard (7129007-CAL4)					Prepared & Analyzed: 28-Sep-17						
Mercury	19.62	-		ng/L	20.040		97.9				
Cal Standard (7129007-CAL5)					Prepared & Analyzed: 28-Sep-17						
Mercury	40.19	-		ng/L	40.080		100				
Calibration Blank (7129007-CCB1)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.15	-		ng/L							
Calibration Blank (7129007-CCB2)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.30	-		ng/L							
Calibration Blank (7129007-CCB3)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.16	-		ng/L							
Calibration Check (7129007-CCV1)					Prepared & Analyzed: 28-Sep-17						
Mercury	4.97	-		ng/L	5.0000		99.3	77-123			
Calibration Check (7129007-CCV2)					Prepared & Analyzed: 28-Sep-17						
Mercury	5.35	-		ng/L	5.0000		107	77-123			

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Batch 7I29007 - F709449

Calibration Check (7I29007-CCV3)					Prepared & Analyzed: 28-Sep-17						
Mercury	5.08	-		ng/L	5.0000		102	77-123			
Instrument Blank (7I29007-IBL1)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.09	0.40	ng/L							U
Instrument Blank (7I29007-IBL2)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.09	0.40	ng/L							U
Instrument Blank (7I29007-IBL3)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.09	0.40	ng/L							U
Initial Cal Check (7I29007-ICV1)					Prepared & Analyzed: 28-Sep-17						
Mercury	5.26	-		ng/L	5.0000		105	79-121			

Batch 7I29014 - F709453

Cal Standard (7I29014-CAL1)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.50	-		ng/L	0.50100		99.4				
Cal Standard (7I29014-CAL2)					Prepared & Analyzed: 28-Sep-17						
Mercury	1.03	-		ng/L	1.0020		103				
Cal Standard (7I29014-CAL3)					Prepared & Analyzed: 28-Sep-17						
Mercury	4.95	-		ng/L	5.0100		98.8				
Cal Standard (7I29014-CAL4)					Prepared & Analyzed: 28-Sep-17						
Mercury	19.89	-		ng/L	20.040		99.3				

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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I29014 - F709453

Cal Standard (7I29014-CAL5)					Prepared & Analyzed: 28-Sep-17						
Mercury	39.44	-		ng/L	40.080		98.4				
Calibration Blank (7I29014-CCB1)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.03	-		ng/L							
Calibration Blank (7I29014-CCB2)					Prepared & Analyzed: 28-Sep-17						
Mercury	0.0001	-		ng/L							
Calibration Check (7I29014-CCV1)					Prepared & Analyzed: 28-Sep-17						
Mercury	4.96	-		ng/L	5.0000		99.1	77-123			
Calibration Check (7I29014-CCV2)					Prepared & Analyzed: 28-Sep-17						
Mercury	5.05	-		ng/L	5.0000		101	77-123			
Instrument Blank (7I29014-IBL1)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.09	0.40	ng/L							U
Instrument Blank (7I29014-IBL2)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.09	0.40	ng/L							U
Instrument Blank (7I29014-IBL3)					Prepared & Analyzed: 28-Sep-17						
Mercury	ND	0.09	0.40	ng/L							U
Initial Cal Check (7I29014-ICV1)					Prepared & Analyzed: 28-Sep-17						
Mercury	4.92	-		ng/L	5.0000		98.5	79-121			

Batch 7I29019 - F709449

Cal Standard (7I29019-CAL1)					Prepared & Analyzed: 29-Sep-17						
Mercury	0.52	-		ng/L	0.50100		103				

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Amy Goodall, Project Manager



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271 Mill Road
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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7I29019 - F709449											
Cal Standard (7I29019-CAL2)					Prepared & Analyzed: 29-Sep-17						
Mercury	1.00	-		ng/L	1.0020		99.4				
Cal Standard (7I29019-CAL3)					Prepared & Analyzed: 29-Sep-17						
Mercury	5.01	-		ng/L	5.0100		100				
Cal Standard (7I29019-CAL4)					Prepared & Analyzed: 29-Sep-17						
Mercury	19.34	-		ng/L	20.040		96.5				
Cal Standard (7I29019-CAL5)					Prepared & Analyzed: 29-Sep-17						
Mercury	40.11	-		ng/L	40.080		100				
Calibration Blank (7I29019-CCB1)					Prepared & Analyzed: 29-Sep-17						
Mercury	0.12	-		ng/L							
Calibration Blank (7I29019-CCB2)					Prepared & Analyzed: 29-Sep-17						
Mercury	0.10	-		ng/L							
Calibration Blank (7I29019-CCB3)					Prepared & Analyzed: 29-Sep-17						
Mercury	0.06	-		ng/L							
Calibration Blank (7I29019-CCB4)					Prepared & Analyzed: 29-Sep-17						
Mercury	0.08	-		ng/L							
Calibration Blank (7I29019-CCB5)					Prepared & Analyzed: 29-Sep-17						
Mercury	0.08	-		ng/L							
Calibration Check (7I29019-CCV1)					Prepared & Analyzed: 29-Sep-17						
Mercury	5.01	-		ng/L	5.0000		100	77-123			

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Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
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Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7I29019 - F709449

Calibration Check (7I29019-CCV2)					Prepared & Analyzed: 29-Sep-17						
Mercury	4.85	-		ng/L	5.0000		97.1	77-123			
Calibration Check (7I29019-CCV3)					Prepared & Analyzed: 29-Sep-17						
Mercury	4.91	-		ng/L	5.0000		98.3	77-123			
Calibration Check (7I29019-CCV4)					Prepared & Analyzed: 29-Sep-17						
Mercury	4.77	-		ng/L	5.0000		95.4	77-123			
Calibration Check (7I29019-CCV5)					Prepared & Analyzed: 29-Sep-17						
Mercury	4.68	-		ng/L	5.0000		93.6	77-123			
Instrument Blank (7I29019-IBL1)					Prepared & Analyzed: 29-Sep-17						
Mercury	ND	0.09	0.40	ng/L							U
Instrument Blank (7I29019-IBL2)					Prepared & Analyzed: 29-Sep-17						
Mercury	ND	0.09	0.40	ng/L							U
Instrument Blank (7I29019-IBL3)					Prepared & Analyzed: 29-Sep-17						
Mercury	ND	0.09	0.40	ng/L							U
Initial Cal Check (7I29019-ICV1)					Prepared & Analyzed: 29-Sep-17						
Mercury	5.11	-		ng/L	5.0000		102	79-121			

Batch F709449 - EPA 7474

Blank (F709449-BLK1)					Prepared: 27-Sep-17 Analyzed: 28-Sep-17						
Mercury	ND	0.01	0.04	ng/g wet							U

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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F709449 - EPA 7474

Blank (F709449-BLK2)											
Prepared: 27-Sep-17 Analyzed: 28-Sep-17											
Mercury	ND	0.01	0.04	ng/g wet							U
Blank (F709449-BLK3)											
Prepared: 27-Sep-17 Analyzed: 29-Sep-17											
Mercury	ND	0.91	4.00	ng/g wet							U
Blank (F709449-BLK4)											
Prepared: 27-Sep-17 Analyzed: 29-Sep-17											
Mercury	ND	0.91	4.00	ng/g wet							U
LCS (F709449-BS1)											
Prepared: 27-Sep-17 Analyzed: 28-Sep-17											
Mercury	0.91	0.01	0.04	ng/g wet	0.88889		103	75-125			
LCS Dup (F709449-BSD1)											
Prepared: 27-Sep-17 Analyzed: 28-Sep-17											
Mercury	0.89	0.01	0.04	ng/g wet	0.88889		100	75-125	2.20	24	
Matrix Spike (F709449-MS1)											
Source: 1709529-01 Prepared: 27-Sep-17 Analyzed: 28-Sep-17											
Mercury	3186	100	442	ng/g dry	2769.2	756.1	87.7	71-125			
Matrix Spike (F709449-MS2)											
Source: 1709529-06 Prepared: 27-Sep-17 Analyzed: 28-Sep-17											
Mercury	3552	102	450	ng/g dry	2816.6	780.2	98.4	71-125			
Matrix Spike Dup (F709449-MSD1)											
Source: 1709529-01 Prepared: 27-Sep-17 Analyzed: 28-Sep-17											
Mercury	3490	96.8	428	ng/g dry	2678.5	756.1	102	71-125	15.1	24	
Matrix Spike Dup (F709449-MSD2)											
Source: 1709529-06 Prepared: 27-Sep-17 Analyzed: 28-Sep-17											
Mercury	3335	101	447	ng/g dry	2797.2	780.2	91.3	71-125	7.49	24	

Batch F709453 - EPA 7474

Blank (F709453-BLK1)											
Prepared: 27-Sep-17 Analyzed: 28-Sep-17											
Mercury	ND	0.91	4.00	ng/g wet							U

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Amy Goodall, Project Manager



AMEC Foster Wheeler
271 Mill Road
Chelmsford MA, 01824

Project: Leachability Study
Project Number: 3616166052.02A.2A0512.
Project Manager: Denise King

Reported:
14-Nov-17 12:48

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F709453 - EPA 7474

LCS (F709453-BS1)

Prepared: 27-Sep-17 Analyzed: 28-Sep-17

Mercury	79.87	0.91	4.00	ng/g wet	80.000		99.8	75-125			
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LCS Dup (F709453-BSD1)

Prepared: 27-Sep-17 Analyzed: 28-Sep-17

Mercury	82.83	0.91	4.00	ng/g wet	80.000		104	75-125	3.64	24	
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Matrix Spike (F709453-MS1)

Source: 1709552-03

Prepared: 27-Sep-17 Analyzed: 28-Sep-17

Mercury	1797	58.8	260	ng/g dry	1625.9	16.32	110	71-125			
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Matrix Spike Dup (F709453-MSD1)

Source: 1709552-03

Prepared: 27-Sep-17 Analyzed: 28-Sep-17

Mercury	1773	55.9	247	ng/g dry	1546.6	16.32	114	71-125	3.67	24	
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AMEC Foster Wheeler 271 Mill Road Chelmsford MA, 01824	Project: Leachability Study Project Number: 3616166052.02A.2A0512. Project Manager: Denise King	Reported: 14-Nov-17 12:48
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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F709443 - EFGS-019 Solids Analysis

Duplicate (F709443-DUP1)		Source: 1709529-01		Prepared: 26-Sep-17 Analyzed: 27-Sep-17							
% Solids	33.1	0.1	0.1	% by Weight		33.3			0.602	10	O-04, O-09

Duplicate (F709443-DUP2)		Source: 1709529-04		Prepared: 26-Sep-17 Analyzed: 27-Sep-17							
% Solids	33.0	0.1	0.1	% by Weight		33.3			0.905	10	O-04, O-09

Batch F709461 - EFGS-019 Solids Analysis

Duplicate (F709461-DUP1)		Source: 1709610-13		Prepared: 27-Sep-17 Analyzed: 28-Sep-17							Z-01
% Solids	48.4	0.1	0.1	% by Weight		36.5			28.0	10	O-04, O-09

Batch F709497 - Density

Duplicate (F709497-DUP1)		Source: 1709436-01		Prepared & Analyzed: 29-Sep-17							
Density	0.9867	0.0001	0.0001	g/mL		0.9977			1.11	25	

AMEC Foster Wheeler
 271 Mill Road
 Chelmsford MA, 01824

Project: Leachability Study
 Project Number: 3616166052.02A.2A0512.
 Project Manager: Denise King

Reported:
 14-Nov-17 12:48

Notes and Definitions

- Z-01 High RPD, talked to QA and qualifier added. No re-digestion due to limited sample volume. PL 9/28/17
- U Analyte was not detected and is reported as less than the LOD or as defined by the client. The LOD has been adjusted for any dilution or concentration of the sample.
- QR-07 The RPD/RSD value for the matrix duplicate/triplicate was outside of acceptance limits. Batch QC acceptable based on MS/MSD and/or LCS/LCSD RPD values within control limits.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QB-06 The blank was preserved to 5% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- QB-04 The blank was preserved to 2% BrCl rather than 1%. The control limit for blanks preserved to greater than 1% BrCl is the preservation percentage multiplied by the MRL.
- O-09 Total Solids are prepared at the same time as the preparation for the analyte(s) of interest in order to provide the most accurate dry mass correction.
- O-04 This sample was analyzed outside of the recommended holding time.
- J The result is an estimated concentration.
- FB This blank is a filtration blank. Data is reported for informational purposes only.
- F-03 This method blank is an equipment blank created during the homogenization process of associated samples at the laboratory. For informational purposes only.
- E-01 Sample was preceded by a sample exceeding the calibration curve and was reanalyzed for confirmation.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate (CLP E-flag).
- AS This MS and/or MSD is an analytical spike and/or an analytical spike duplicate.
- AD This matrix duplicate is an analytical duplicate.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference



Leachability Summary Table

Total Minimum Mass/Volume Needed							Analysis				
Media	Comment	EFGS Work Order	Sample ID	Grams of Wood Waste Needed	mL of High Saline Water Needed	mL of Low Saline Water Needed	Mercury		Methyl Mercury		TOC
							7474_1631	1631E	1630 (KOH Extraction)	1630 (Distillation)	Lloyd Kahn
Wood Waste/Sediment	WW1	1709583-01	BU_100WCH_091217_SED_03_R1	30	0	0	1		1		1
	WW1	1709583-02	BU_100WCH_091217_SED_03_R2	30	0	0	1		1		1
	WW1	1709583-03	BU_100WCH_091217_SED_03_R3	30	0	0	1		1		1
	WW2	1709529-01	FFBU_60WCH_091317_SED_05_R1	30	0	0	1		1		1
	WW2	1709529-02	FFBU_60WCH_091317_SED_05_R2	30	0	0	1		1		1
	WW2	1709529-03	FFBU_60WCH_091317_SED_05_R3	30	0	0	1		1		1
	WW3	1709529-04	VN_25WCH_091317_SED_05_R1	30	0	0	1		1		1
	WW3	1709529-05	VN_25WCH_091317_SED_05_R2	30	0	0	1		1		1
Surface Water	High Saline	1709436-02	FPCPIER_HIGH_091117_SW	0	200	0		1		1	
	Low Saline	1709436-01	ONHAMLIN_LOW_091117_SW	0	0	200		1		1	
Elutriate - Decanted and Filtered (0.45 µm)	WW1A	1709607-01	BU_100WCH_091217_Leach_EHS_R1	50	200	0		1		1	
	WW1B	1709607-02	BU_100WCH_091217_Leach_EHS_R2	50	200	0		1		1	
	WW1C	1709607-03	BU_100WCH_091217_Leach_EHS_R3	50	200	0		1		1	
	WW1G	1709607-07	BU_100WCH_091217_Leach_ELS_R1	50	0	200		1		1	
	WW1H	1709607-08	BU_100WCH_091217_Leach_ELS_R2	50	0	200		1		1	
	WW1I	1709607-09	BU_100WCH_091217_Leach_ELS_R3	50	0	200		1		1	
	WW2A	1709609-01	FFBU_60WCH_091317_Leach_EHS_R1	50	200	0		1		1	
	WW2B	1709609-02	FFBU_60WCH_091317_Leach_EHS_R2	50	200	0		1		1	
	WW2C	1709609-03	FFBU_60WCH_091317_Leach_EHS_R3	50	200	0		1		1	
	WW2G	1709609-07	FFBU_60WCH_091317_Leach_ELS_R1	50	0	200		1		1	
	WW2H	1709609-08	FFBU_60WCH_091317_Leach_ELS_R2	50	0	200		1		1	
	WW2I	1709609-09	FFBU_60WCH_091317_Leach_ELS_R3	50	0	200		1		1	
	WW3A	1709610-01	VN_25WCH_091317_Leach_EHS_R1	50	200	0		1		1	
	WW3B	1709610-02	VN_25WCH_091317_Leach_EHS_R2	50	200	0		1		1	
	WW3C	1709610-03	VN_25WCH_091317_Leach_EHS_R3	50	200	0		1		1	
	WW3G	1709610-07	VN_25WCH_091317_Leach_ELS_R1	50	0	200		1		1	
WW3H	1709610-08	VN_25WCH_091317_Leach_ELS_R2	50	0	200		1		1		
WW3I	1709610-09	VN_25WCH_091317_Leach_ELS_R3	50	0	200		1		1		

Leachability Summary Table

Media	Comment	EFGS Work Order	Sample ID	Grams of Wood Waste Needed	mL of High Saline Water Needed	mL of Low Saline Water Needed	7474_1631	1631E	1630 (KOH Extraction)	1630 (Distillation)	Lloyd Kahn
Elutriate - Centrifuged or Pressed	WW1D	1709607-04	BU_100WCH_091217_Leach_EHS_Cent_R1	0	200	0		1		1	
	WW1E	1709607-05	BU_100WCH_091217_Leach_EHS_Cent_R2	0	200	0		1		1	
	WW1F	1709607-06	BU_100WCH_091217_Leach_EHS_Cent_R3	0	200	0		1		1	
	WW1J	1709607-10	BU_100WCH_091217_Leach_ELS_Cent_R1	0	0	200		1		1	
	WW1K	1709607-11	BU_100WCH_091217_Leach_ELS_Cent_R2	0	0	200		1		1	
	WW1L	1709607-12	BU_100WCH_091217_Leach_ELS_Cent_R3	0	0	200		1		1	
	WW2D	1709609-04	FFBU_60WCH_091317_Leach_EHS_Cent_R1	0	200	0		1		1	
	WW2E	1709609-05	FFBU_60WCH_091317_Leach_EHS_Cent_R2	0	200	0		1		1	
	WW2F	1709609-06	FFBU_60WCH_091317_Leach_EHS_Cent_R3	0	200	0		1		1	
	WW2J	1709609-10	FFBU_60WCH_091317_Leach_ELS_Cent_R1	0	0	200		1		1	
	WW2K	1709609-11	FFBU_60WCH_091317_Leach_ELS_Cent_R2	0	0	200		1		1	
	WW2L	1709609-12	FFBU_60WCH_091317_Leach_ELS_Cent_R3	0	0	200		1		1	
	WW3D	1709610-04	VN_25WCH_091317_Leach_EHS_Cent_R1	0	200	0		1		1	
	WW3E	1709610-05	VN_25WCH_091317_Leach_EHS_Cent_R2	0	200	0		1		1	
	WW3F	1709610-06	VN_25WCH_091317_Leach_EHS_Cent_R3	0	200	0		1		1	
	WW3J	1709610-10	VN_25WCH_091317_Leach_ELS_Cent_R1	0	0	200		1		1	
	WW3K	1709610-11	VN_25WCH_091317_Leach_ELS_Cent_R2	0	0	200		1		1	
	WW3L	1709610-12	VN_25WCH_091317_Leach_ELS_Cent_R3	0	0	200		1		1	
Wood waste - Centrifuged	WW1D	1709607-13	BU_100WCH_091217_Leach_HS_WCH_R1	50	0	0	1		1		1
	WW1E	1709607-14	BU_100WCH_091217_Leach_HS_WCH_R2	50	0	0	1		1		1
	WW1F	1709607-15	BU_100WCH_091217_Leach_HS_WCH_R3	50	0	0	1		1		1
	WW1J	1709607-16	BU_100WCH_091217_Leach_LS_WCH_R1	50	0	0	1		1		1
	WW1K	1709607-17	BU_100WCH_091217_Leach_LS_WCH_R2	50	0	0	1		1		1
	WW1L	1709607-18	BU_100WCH_091217_Leach_LS_WCH_R3	50	0	0	1		1		1
	WW2D	1709609-13	FFBU_60WCH_091317_Leach_HS_WCH_R1	50	0	0	1		1		1
	WW2E	1709609-14	FFBU_60WCH_091317_Leach_HS_WCH_R2	50	0	0	1		1		1
	WW2F	1709609-15	FFBU_60WCH_091317_Leach_HS_WCH_R3	50	0	0	1		1		1
	WW2J	1709609-16	FFBU_60WCH_091317_Leach_LS_WCH_R1	50	0	0	1		1		1
	WW2K	1709609-17	FFBU_60WCH_091317_Leach_LS_WCH_R2	50	0	0	1		1		1
	WW2L	1709609-18	FFBU_60WCH_091317_Leach_LS_WCH_R3	50	0	0	1		1		1
	WW3D	1709610-13	VN_25WCH_091317_Leach_HS_WCH_R1	50	0	0	1		1		1
	WW3E	1709610-14	VN_25WCH_091317_Leach_HS_WCH_R2	50	0	0	1		1		1
	WW3F	1709610-15	VN_25WCH_091317_Leach_HS_WCH_R3	50	0	0	1		1		1
WW3J	1709610-16	VN_25WCH_091317_Leach_LS_WCH_R1	50	0	0	1		1		1	

Leachability Summary Table

Media	Comment	EFGS Work Order	Sample ID	Grams of Wood Waste Needed	mL of High Saline Water Needed	mL of Low Saline Water Needed	7474_163 1	1631E	1630 (KOH Extraction)	1630 (Distillation)	Lloyd Kahn
	WW3K	1709610-17	VN_25WCH_091317_Leach_LS_WCH_R2	50	0	0	1		1		1
	WW3L	1709610-18	VN_25WCH_091317_Leach_LS_WCH_R3	50	0	0	1		1		1
totals							27	38	27	38	27

Cent = Centrifuged
 EHS = Elutriate High Saline
 ELS = Elutriate Low Saline
 HS = High Saline
 LS = Low Saline

Peer Review Checklist for Total Solids and Density (SOP5133)

Analyst: AMB

Date: 9/29/17

Reviewer: [Signature]

Date: 9/29/17

WO #: 1709436

Batch #: F709497

Dataset ID: N/A

Reviewer Initials: [Signature]

General Comments/Re-run requirements:

[Empty box for general comments]

Select	SOP	Method	Matrix
<input type="checkbox"/>	SOP5133	TS	S/T
<input checked="" type="checkbox"/>	SOP5133	Density	Liquids

Initials	SOP Date	
<u>AMB</u>	<u>6/02/16</u>	<input type="checkbox"/>
		<input type="checkbox"/>

Reviewer Initials: [Signature]

1. Total Solids

- A. Check for transcription errors from Benchsheet/Raw Data
 - (i) Do sample ID(s) match?
 - (ii) Do masses/volumes match?
 - (iii) Are the analyst name, dataset ID, and preparation date listed?
 - (iv) Does the LIMS benchsheet prep date match the actual prep date?
- B. Does the batch include 1 MD/MT per 10 client samples?
- C. MD RPD/MT RSD ≤ 10%
- D. Are qualifiers, O-04 and O-09, included for samples analyzed out of hold time?

Density Only - NA this section

<input type="checkbox"/> DONE		<input checked="" type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
<input type="checkbox"/> PASS	<input type="checkbox"/> FAIL	<input checked="" type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A <input checked="" type="checkbox"/>

2. Density

- A. Check for transcription errors from Benchsheet/Raw Data
 - (i) Do sample ID(s) match?
 - (ii) Do masses/volumes match?
 - (iii) Are the analyst name, dataset ID, and preparation date listed?
 - (iv) Does the LIMS benchsheet prep date match the actual prep date?
 - (v) Volume (if other than 1 mL): 10. Can the calculated result be reproduced?

Total Solids Only - NA this section

<input checked="" type="checkbox"/> DONE		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A <input checked="" type="checkbox"/>

QUALITY ASSURANCE
PEER-REVIEWED

INITIALS: [Signature] 9/29/17

Technician: AMB Batch#: F709497 Date: 9/29/17

- EFAFS-T-AFS-SOP2986 Tissues - Methyl Mercury - KOH/Methanol: Hot plate 75±5°C for 2-4 hours.
- EFAFS-T-AFS-SOP2795 Tissues - Total Mercury - 70:30: Hot plate 75±5°C for two hours.
- EFAFS-T-AFS-SOP5134 Sediments - Methyl Mercury - KBr/CH₂Cl₂: Heat Block 45°C (nitrogen purge for 30 minutes).
- EFAFS-T-AFS-SOP2807 Solids - Total Mercury - Cold AR: 18-25°C for over four hours.

Other: Density Vial Type: Glass Teflon
 Balance#: 19 Calibrated? Yes No Therm.#: N/A Calibrated? Yes No

*Time in: N/A Actual Temp. (raw): N/A °C w/ CF: N/A °C

Time out: N/A Actual Temp. (raw): N/A °C w/ CF: N/A °C

*Time in can't begin before target temperature is reached

Final vol.: N/A mL (LIMS ID: N/A) Spike vol.: N/A µL (LIMS ID: N/A)

Spike Witness: N/A (initial and date)

HCl LIMS ID: N/A

Pipette SN#: N/A Calibration Date: N/A

HNO₃ LIMS ID: N/A

Pipette SN#: N/A Calibration Date: N/A

70/30 LIMS ID: N/A

Dispenser #: N/A Calibrated? Yes No

Other Acid LIMS ID: N/A

Dispenser #: N/A

Glass Vial # N/A Boiling Chip lot # N/A *Hotblock Position: N/A

Vial #	Sample ID Number	Sample Size <input type="checkbox"/> mL <input checked="" type="checkbox"/> g	Vial #	Sample ID Number	Sample Size <input type="checkbox"/> mL <input type="checkbox"/> g	CRM LIMS ID <input checked="" type="checkbox"/> NA
1	1709436-01A	9.9773	23			
2	F709497-DUPI	9.8671	24			
3	1709436-02A	10.2023	25			
4			26			Comments F709497- DUP1 Source: 1709436-01A AMB 9/29/17
5			27			
6			28			
7			29			
8			30			
9			31			
10			32			
11			33			
12			34			
13			35			
14			36			
15			37			
16			38			
17			39			
18			40			
19			41			
20			42			
21			43			
22			44			

PREPARATION BENCH SHEET

F709497

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: Hg Aquatic/Solids - Density

Prepared: 9/29/2017

Lab Number	Sample ID and Source Sample	Initial (mL)	Final (g)	Spike1 ID	μ l Spike1	Spike2 ID	μ l Spike2	Extraction Comments
F709497-DUP1	Duplicate [1709436-01]	1	1					

Standard ID(s):

Description:

Expiration:

PREPARATION BENCH SHEET

F709497

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: Hg Aquatic/Solids - Density

Prepared: 9/29/2017

Lab Number	Sample ID	Initial (mL)	Final (g)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709436-01	ONHAMLIN_LOW_09112017_SW	1	1	-	-	-		
1709436-02	FPCPIER_HIGH_09112017_SW	1	1	-	-	-		





Frontier Global Sciences

Total Solids Dataset Cover Page

Dataset ID: TS170926-1
Batch ID: F709443
Work Order(s): 1529, 1709583, 1709607, 170

Analyst: CWF/CLC
Prep. Date: 9/26/2017

Analytical Issues/Explanations:

QUALITY ASSURANCE
PEEP - 20
INITIALS: DM 9/28/17

Preparation Date: Sep 26, 2017

Batch #: 1

Analyst: CWF/CLC

Batch ID: F709443

Work Order(s): 1709529, 1709583, 1709607, 1709609

Pan ID	Sample ID	Pan Wt (g)	Pan + Sample Wet (g)	Wet Sample (g)	Pan + Sample Dry (g)	Dry Sample (g)	% TS	Notes
1	1709529-01	0.9987	6.1148	5.1161	2.7013	1.7026	33.3%	
2	1709529-01MD	1.0108	6.2277	5.2169	2.7378	1.7270	33.1%	0.5%
3	1709529-02	1.0223	6.1371	5.1148	2.6861	1.6638	32.5%	
4	1709529-03	1.0251	6.1782	5.1531	2.6922	1.6671	32.4%	
5	1709529-04	1.0175	6.1981	5.1806	2.7419	1.7244	33.3%	
6	1709529-04MD	1.0139	6.1133	5.0994	2.6948	1.6809	33.0%	1.0%
7	1709529-05	1.0138	6.2066	5.1928	2.7685	1.7547	33.8%	
8	1709529-06	1.0372	6.1938	5.1566	2.7093	1.6721	32.4%	
9	1709583-01	1.0289	6.2753	5.2464	1.9308	0.9019	17.2%	
10	1709583-02	1.0107	6.2440	5.2333	1.9256	0.9149	17.5%	
11	1709583-03	1.0206	6.3088	5.2882	1.8969	0.8763	16.6%	
12	1709607-13	0.9905	6.2745	5.2840	2.2945	1.3040	24.7%	
13	1709607-14	0.9965	6.1549	5.1584	2.3318	1.3353	25.9%	
14	1709607-15	1.0065	6.2776	5.2711	2.4929	1.4864	28.2%	
15	1709607-16	1.0107	6.1320	5.1213	1.9246	0.9139	17.8%	
16	1709607-17	1.0363	6.1208	5.0845	2.1226	1.0863	21.4%	
17	1709607-18	1.0041	6.2132	5.2091	2.1049	1.1008	21.1%	
18	1709609-13	1.0135	6.1943	5.1808	3.3765	2.3630	45.6%	
19	1709609-14	0.9904	6.3231	5.3327	3.2056	2.2152	41.5%	
20	1709609-15	1.0055	6.0596	5.0541	2.9489	1.9434	38.5%	
21	1709609-16	1.0070	6.0771	5.0701	3.2431	2.2361	44.1%	
22	1709607-17	1.0031	6.2732	5.2701	3.0777	2.0746	39.4%	

Preparation Date: Sep 26, 2017

Batch #: 1

Analyst: CWF/CLC

Batch ID: F709443

Work Order(s): 1709529, 1709583, 1709607, 1709609

Pan ID	Sample ID	Pan Wt (g)	Pan + Sample Wet (g)	Wet Sample (g)	Pan + Sample Dry (g)	Dry Sample (g)	% TS	Notes
1	1709529-01	0.9987	6.1148	5.1161	2.7013	1.7026	33.3%	
2	1709529-01MD	1.0108	6.2277	5.2169	2.7378	1.7270	33.1%	0.5%
3	1709529-02	1.0223	6.1371	5.1148	2.6861	1.6638	32.5%	
4	1709529-03	1.0251	6.1782	5.1531	2.6922	1.6671	32.4%	
5	1709529-04	1.0175	6.1981	5.1806	2.7419	1.7244	33.3%	
6	1709529-04MD	1.0139	6.1133	5.0994	2.6948	1.6809	33.0%	1.0%
7	1709529-05	1.0138	6.2066	5.1928	2.7685	1.7547	33.8%	
8	1709529-06	1.0372	6.1938	5.1566	2.7093	1.6721	32.4%	
9	1709583-01	1.0289	6.2753	5.2464	1.9308	0.9019	17.2%	
10	1709583-02	1.0107	6.2440	5.2333	1.9256	0.9149	17.5%	
11	1709583-03	1.0206	6.3088	5.2882	1.8969	0.8763	16.6%	
12	1709607-13	0.9905	6.2745	5.2840	2.2945	1.3040	24.7%	
13	1709607-14	0.9965	6.1549	5.1584	2.3318	1.3353	25.9%	
14	1709607-15	1.0065	6.2776	5.2711	2.4929	1.4864	28.2%	
15	1709607-16	1.0107	6.1320	5.1213	1.9246	0.9139	17.8%	
16	1709607-17	1.0363	3.1208	2.0845	2.1226	1.0863	52.1%	
17	1709607-18	1.0041	6.2132	5.2091	2.1049	1.1008	21.1%	
18	1709609-13	1.0135	6.1943	5.1808	3.3765	2.3630	45.6%	
19	1709609-14	0.9904	6.3231	5.3327	3.2056	2.2152	41.5%	
20	1709609-15	1.0055	6.0596	5.0541	2.9489	1.9434	38.5%	
21	1709609-16	1.0070	6.0771	5.0701	3.2431	2.2361	44.1%	
22	1709607-17	1.0031	6.2732	5.2701	3.0777	2.0746	39.4%	

Remote Lab Total Solids Logbook

Lab Technician(s): CWF / CJC Batch: F709443 Date: 9/26/17 Page 1 of 1
 Thermometer #: 13/206134 Oven #: 12 Actual temperature: 103.1 (Range 103-105°C)
 Balance #¹: 19 Start time: 8:05 ^{wf 9/26/17} End time²: 10:10 ^{9/27/17} Time re-weighed³: 10:43
 Client(s)/WO#: 1709529, 1709583, 1709607, 1709609

Sample ID	Pan #	Pan (g)	Pan + Wet Sample (g)	Pan + Dry Sample (g) <i>CJC 9/27/17</i>	Notes
1709529 - 01	A1	0.9987	5.1148	2.7013	
F709443 - DUP1	A2	1.0108	6.2277	2.7378 ^{wf}	
1709529 - 02	A3	1.0223	6.1371	2.6856 ^{wf}	
1709529 - 03	A4	1.0251	6.1782	2.6922	
1709529 - 04	A5	1.0175	6.1981	2.7419	
F709443 - DUP2	A6	1.0139	6.1133	2.6948	
1709529 - 05	A7	1.0138	6.2066	2.7685	
1709529 - 06	A8	1.0372	6.1938	2.7093	
1709583 - 01	A9	1.0289	6.2793	1.9308	
1709583 - 02	A10	1.0107	6.2440	1.9256	
1709583 - 03	A11	1.0206	6.3088	1.8969	
1709607 - 13	A12	0.9905	6.2745	2.2945	
1709607 - 14	A13	0.9965	6.1549	2.3318	
1709607 - 15	A14	1.0065	6.2776	2.4929	
1709607 - 16	A15	1.0107	6.1320	1.9246	
1709607 - 17	A16	1.0363	6.1208	2.1226	
1709607 - 18	A17	1.0041	6.2132	2.1049	
1709609 - 13	A18	1.0135	6.1943	3.3765	
1709609 - 14	A19	0.9904	6.3221 ^{wf 9/26/17} 6.3221	3.2056	
1709609 - 15	A20	1.0055	6.0596	2.9489	
1709609 - 16	A21	1.0070	6.0771	3.2431	
1709609 - 17	A22	1.0031	6.2732	3.0777	
1709609					

Comments: wf 9/26/17

¹The same balance must be used to weight samples before and after ovening.

²Samples must be ovened over 12 hours.

³Samples must be re-weighed within 30 minutes of oven cool down.

Failing Data Report -

Sample ID	Analysis	Result	MRL	Dup Result	Source Result	True Value	Units	% Rec.	Rec. LCL	Rec. UCL	RPD	RPD Limit	Over Cal	Failure	Qualifier
-----------	----------	--------	-----	------------	---------------	------------	-------	--------	----------	----------	-----	-----------	----------	---------	-----------

Courtney Coch
Analyst Reviewed By
9/27/17
Date

Don Mason
Peer Reviewed By
9/28/17
Date

PREPARATION BENCH SHEET

F709443

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: AFS - EFGS-019 Solids Analysis

Prepared: 9/26/2017

Lab Number	Sample ID and Source Sample	Initial (g)	Final (g)	Spike1 ID	μ l Spike1	Spike2 ID	μ l Spike2	Extraction Comments
F709443-DUP1	Duplicate [1709529-01]	5	5					
F709443-DUP2	Duplicate [1709529-04]	5	5					

Standard ID(s):

Description:

Expiration:

PREPARATION BENCH SHEET

F709443

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: AFS - EFGS-019 Solids Analysis

Prepared: 9/26/2017

Lab Number	Sample ID	Initial (g)	Final (g)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709529-01	FFBU_60WCH_091317_SED_05_R1	5	5	-	-	-		
1709529-02	FFBU_60WCH_091317_SED_05_R2	5	5	-	-	-		
1709529-03	FFBU_60WCH_091317_SED_05_R3	5	5	-	-	-		
1709529-04	VN_25WCH_091217_SED_05_R1	5	5	-	-	-		
1709529-05	VN_25WCH_091217_SED_05_R2	5	5	-	-	-		
1709529-06	VN_25WCH_091217_SED_05_R3	5	5	-	-	-		
1709583-01	BU_WCH_09122017_03_R1	5	5	-	-	-		
1709583-02	BU_WCH_09122017_03_R2	5	5	-	-	-		
1709583-03	BU_WCH_09122017_03_R3	5	5	-	-	-		
1709607-13	WW1D BU51_09122017_Leach_EHS_R4	5	5	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-14	WW1E BU51_09122017_Leach_EHS_R5	5	5	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-15	WW1F BU51_09122017_Leach_EHS_R6	5	5	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-16	WW1J BU51_09122017_Leach_ELS_R4	5	5	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-17	WW1K BU51_09122017_Leach_ELS_R5	5	5	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-18	WW1L BU51_09122017_Leach_ELS_R6	5	5	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709609-13	WW2D FF52_091317_Leach_EHS_R4	5	5	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-14	WW2E FF52_091317_Leach_EHS_R5	5	5	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-15	WW2F FF52_091317_Leach_EHS_R6	5	5	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-16	WW2J FF52_091317_Leach_ELS_R4	5	5	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	

PREPARATION BENCH SHEET

F709443

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: AFS - EFGS-019 Solids Analysis

Prepared: 9/26/2017

1709609-17	WW2K FF52_091317_Leach_ELS_R5	5	5	-	-	-	Wood Chip 1709529-01->03 - FFBU_6
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Peer Review Checklist for Total Solids and Density (SOP5133)

Analyst: CWF/ccl

Date: 9/27/17

Reviewer: DM

Date: 9/28/17

WO #: 1709529, 1709583,
1709607, 1709609

Batch #: F709443

Dataset ID: TS170926-1

Reviewer Initials: DM

General Comments/Re-run requirements:

Select	SOP	Method	Matrix
<input checked="" type="checkbox"/>	SOP5133	TS	S/T
<input type="checkbox"/>	SOP5133	Density	Liquids

Initials	SOP Date	
<u>ccl</u>	<u>12/20/16</u>	<input checked="" type="checkbox"/>
<u>CWF</u>	<u>5/19/17</u>	<input checked="" type="checkbox"/>

Reviewer Initials: DM

1. Total Solids

- A. Check for transcription errors from Benchsheet/Raw Data
 - (i) Do sample ID(s) match?
 - (ii) Do masses/volumes match?
 - (iii) Are the analyst name, dataset ID, and preparation date listed?
 - (iv) Does the LIMS benchsheet prep date match the actual prep date?
- B. Does the batch include 1 MD/MT per 10 client samples?
- C. MD RPD/MT RSD ≤ 10%
- D. Are qualifiers, O-04 and O-09, included for samples analyzed out of hold time?

<input type="checkbox"/> Density Only - NA this section			
<input type="checkbox"/> DONE			<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/>

2. Density

- A. Check for transcription errors from Benchsheet/Raw Data
 - (i) Do sample ID(s) match?
 - (ii) Do masses/volumes match?
 - (iii) Are the analyst name, dataset ID, and preparation date listed?
 - (iv) Does the LIMS benchsheet prep date match the actual prep date?
 - (v) Volume (if other than 1 mL): _____ Can the calculated result be reproduced?

<input checked="" type="checkbox"/> Total Solids Only - NA this section			
<input type="checkbox"/> DONE			<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A	<input type="checkbox"/>



Total Solids Dataset Cover Page

Dataset ID: TS170927-2
Batch ID: F709461
Work Order(s): 1709609, 1709610

Analyst: CWF/CLC
Prep. Date: 9/27/2017

Analytical Issues/Explanations:

QUANTIFICATION
PEER REVIEWED
INITIALS: dm 9/28/17

Failing Data Report -

Sample ID	Analysis	Result	MRL	Dup Result	Source Result	True Value	Units	% Rec.	Rec. LCL	Rec. UCL	RPD	RPD Limit	Over Cal	Failure	Qualifier
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Covely 9/28/17
Analyst Reviewed By Date

Don Matern 9/28/17
Peer Reviewed By Date

PREPARATION BENCH SHEET

F709461

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: AFS - EFGS-019 Solids Analysis

Prepared: 9/27/2017

Lab Number	Sample ID and Source Sample	Initial (g)	Final (g)	Spike1 ID	μ l Spike1	Spike2 ID	μ l Spike2	Extraction Comments
F709461-DUPI	Duplicate [1709610-13]	5	5					

Standard ID(s): Description:

Expiration:

PREPARATION BENCH SHEET

F709461

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: AFS - EFGS-019 Solids Analysis

Prepared: 9/27/2017

Lab Number	Sample ID	Initial (g)	Final (g)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709609-18	WW2L FF52_091317_Leach_ELS_R6	5	5	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709610-13	WW3D VN81_091217_Leach_EHS_R4	5	5	-	-	-	Wood Chip 1709529-04->06 - VN_25V	
1709610-14	WW3E VN81_091217_Leach_EHS_R5	5	5	-	-	-	Wood Chip 1709529-04->06 - VN_25V	
1709610-15	WW3F VN81_091217_Leach_EHS_R6	5	5	-	-	-	Wood Chip 1709529-04->06 - VN_25V	
1709610-16	WW3J VN81_091217_Leach_ELS_R4	5	5	-	-	-	Wood Chip 1709529-04->06 - VN_25V	
1709610-17	WW3K VN81_091217_Leach_ELS_R5	5	5	-	-	-	Wood Chip 1709529-04->06 - VN_25V	
1709610-18	WW3L VN81_091217_Leach_ELS_R6	5	5	-	-	-	Wood Chip 1709529-04->06 - VN_25V	



Remote Lab Total Solids Logbook

Lab Technician(s): W F / CUC Batch: F709461 Date: 9/27/17 Page 1 of 1
 Thermometer #: 131206134 Oven #: 12 Actual temperature: 102.9 (Range 103-105°C)
 Balance #¹: 6 Start time: 17:30 End time²: 19:32 ^{9/27/17} Time re-weighed³: 11:04
 Client(s)/WO#: 1709609, 1709610

Sample ID	Pan #	Pan (g)	Pan + Wet Sample (g)	Pan + Dry Sample (g)	Notes
1709609 ^{WF 9/27/17} F709609 - 18	A1	1.022	6.066	2.859	
1709610 - 13	A2	0.998	6.131	2.873	
F709461 - DUPL	A3	1.025	6.258 ^{6.164} ^{WF 9/27/17}	3.510	
1709610 - 14	A4	1.006	6.160	3.188	
1709610 - 15	A5	1.013	6.138	3.093	
1709610 - 16	A6	1.031	6.109	3.068	
1709610 - 17	A7	0.998	6.128	3.234	
1709610 - 18	A8	0.989	6.033	2.946	

Comments:

¹The same balance must be used to weight samples before and after ovening.

²Samples must be ovened over 12 hours.

³Samples must be re-weighed within 30 minutes of oven cool down.

Preparation Date: Sep 27, 2017

Batch #: 2

Analyst: CWF/CLC

Batch ID: F709461

Work Order(s): 1709609, 1709610

Pan ID	Sample ID	Pan Wt (g)	Pan + Sample Wet (g)	Wet Sample (g)	Pan + Sample Dry (g)	Dry Sample (g)	% TS	Notes
1	1709609-18	1.0220	6.0660	5.0440	2.8590	1.8370	36.4%	
2	1709610-13	0.9980	6.1310	5.1330	2.8730	1.8750	36.5%	
3	1709610-13MD	1.0250	6.1640	5.1390	3.5100	2.4850	48.4%	27.9%
4	1709610-14	1.0060	6.1600	5.1540	3.1880	2.1820	42.3%	
5	1709610-15	1.0130	6.1380	5.1250	3.0930	2.0800	40.6%	
6	1709610-16	1.0310	6.1090	5.0780	3.0680	2.0370	40.1%	
7	1709610-17	0.9980	6.1280	5.1300	3.2340	2.2360	43.6%	
8	1709610-18	0.9890	6.0330	5.0440	2.9460	1.9570	38.8%	

Peer Review Checklist for Total Solids and Density (SOP5133)

Analyst: CWF/CLC Date: 9/28/17 Reviewer: DM Date: 9/28/17

WO #: 1709609, 1709610 Batch #: F7D9461 Dataset ID: TS170927-2

Reviewer Initials: DM

General Comments/Re-run requirements:

RPD > 10%
 Talked to QA, 2-01 qualifier added,
 due to limited volume. PC 9/28/17

Select	SOP	Method	Matrix
<input checked="" type="checkbox"/>	SOP5133	TS	S/T
<input type="checkbox"/>	SOP5133	Density	Liquids

Initials	SOP Date	
<u>CLC</u>	<u>12/20/16</u>	<input checked="" type="checkbox"/>
<u>CWF</u>	<u>5/9/17</u>	<input checked="" type="checkbox"/>

Reviewer Initials: DM

1. Total Solids

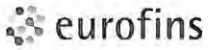
- A. Check for transcription errors from Benchsheet/Raw Data
 - (i) Do sample ID(s) match?
 - (ii) Do masses/volumes match?
 - (iii) Are the analyst name, dataset ID, and preparation date listed?
 - (iv) Does the LIMS benchsheet prep date match the actual prep date?
- B. Does the batch include 1 MD/MT per 10 client samples?
- C. MD RPD/MT RSD ≤ 10%
- D. Are qualifiers, O-04 and O-09, included for samples analyzed out of hold time?

<input type="checkbox"/> Density Only - NA this section			
<input checked="" type="checkbox"/> DONE			<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
<input type="checkbox"/> PASS	<input checked="" type="checkbox"/> FAIL		<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/>

2. Density

- A. Check for transcription errors from Benchsheet/Raw Data
 - (i) Do sample ID(s) match?
 - (ii) Do masses/volumes match?
 - (iii) Are the analyst name, dataset ID, and preparation date listed?
 - (iv) Does the LIMS benchsheet prep date match the actual prep date?
 - (v) Volume (if other than 1 mL): _____ Can the calculated result be reproduced?

<input checked="" type="checkbox"/> Total Solids Only - NA this section			
<input type="checkbox"/> DONE			<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/>
<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A	<input type="checkbox"/>



Frontier Global Sciences

THg26003-170919-1

Analysis Datasheet for Total Mercury

Date of Analysis: September 19, 2017

Analyst: BC

Instrument #: Hg2600-2

Units ng/L

LIMS Sequence #: 7120005, 7120006, 7120007

Calibration Statistics:

LabNumber	n	True Val	Area	Uncorrected Response Factor	Corrected Peak Height	Corrected Response Factor	% Recovery
SEQ-CAL1	1	0.50 ng/L	49.38 units	98.76	46.21 units	92.41	107.6 %Rec
SEQ-CAL2	1	1.00 ng/L	87.69 units	87.69	84.52 units	84.52	98.4 %Rec
SEQ-CAL3	1	5.00 ng/L	429.73 units	85.95	426.56 units	85.31	99.4 %Rec
SEQ-CAL4	1	20.00 ng/L	1677.86 units	83.89	1674.69 units	83.73	97.5 %Rec
SEQ-CAL5	1	40.00 ng/L	3334.81 units	83.37	3331.64 units	83.29	97.0 %Rec
SEQ-CAL6	0						
SEQ-CAL7	0						
SEQ-CAL8	0						
SEQ-CAL9	0						

Corr. Mean RF **Corr. St Dev RF** **Corr. RSD CF** **Uncorr. Mean RF**
 85.85 +/- 3.75 4.4% RSD 87.93

Blanks:

LabNumber	n	Mean	Std Dev	Mean (ng/L)	Std Dev (ng/L)
SEQ-IBL	3	3.17 units	±1.03	0.04 ng/L	±0.01

Preparation Blanks

Sample Type	Batch ID	n	Mean	Std Dev
BLK	1	3	0.038 ng/L	±0.061
BLK	2	2	5.030 ng/L	±5.518
BLK	3	3	6.476 ng/L	±2.716
BLK	4	0	0.000 ng/L	
BLK	5	0	0.000 ng/L	
BLK	6	0	0.000 ng/L	

dm 9/20/17

TotalMercury EPA1631
 Operat BC
 BlankSi 3.1739
 Calib Eqn: Conc = (Area-3.173
 Run Date: 9/19/2017
 Blank SD: 1.02516294
 Worksh THg2600
 CalibFa 85.853
 Status: QC Warnings:4/QC E
 Run Time: 14:02:09
 Blank RSD%: 32.30015871
 Method ##### R: 1
 R2: 1
 Descrip THg26003-170919-1
 CF SD: 3.747696873
 CF RSD%: 4.365239746

Sample/ID	Location	Rinse	Dilute	Blank	Conc (ppt)	MB%	FinalConc	Rec%	QA	RawData	RunEnd	Peak (Raw)	Control (etf)	Flags	RunCount	Comment
Clean				0.00	4.32					75761-1.RAW	9:23:52	370.61	Clean	OK	1	
clean										75762-1.RAW	9:26:44	0.00	Clean	NP	1	
ws				3.17	0.00					75763-1.RAW	9:30:52	3.30	Sample	OK	1	
ws										75764-1.RAW	9:35:00	0.00	Sample	NP	1	
ws				3.17	0.00					75765-1.RAW	9:39:09	2.97	Sample	OK	1	
SEQ-IBL1	A1		1	0.00	0.05					75766-1.RAW	9:43:17	4.30	Sample	OK	1	
SEQ-IBL2	A2		1	0.00	0.03					75767-1.RAW	9:47:26	2.29	Sample	OK	1	
SEQ-IBL3	A3		1	0.00	0.03					75768-1.RAW	9:51:34	2.93	Sample	OK	1	
SEQ-CAL1	A4		1	3.17	0.54		107.64			75769-1.RAW	9:55:43	49.38	Sample	OK	1	
SEQ-CAL2	A5		1	3.17	0.98		98.44			75770-1.RAW	9:59:51	87.69	Sample	OK	1	
SEQ-CAL3	A6		1	3.17	4.97		99.37			75771-1.RAW	10:04:00	429.73	Sample	OK	1	
SEQ-CAL4	A7		1	3.17	19.51		97.53			75772-1.RAW	10:08:08	1677.86	Sample	OK	1	
SEQ-CAL5	A8		1	3.17	38.81		97.02			75773-1.RAW	10:12:17	3334.81	Sample	OK	1	
SEQ-ICV1	A9		1	3.17	5.20		103.91			75774-1.RAW	10:16:25	449.22	Sample	OK	1	
F709338-BLK1	A10		1	3.17	0.11					75775-1.RAW	10:25:41	12.47	Sample	OK	1	
F709338-BLK2	A11		1	3.17	0.01					75776-1.RAW	10:29:49	3.70	Sample	OK	1	
F709338-BLK3	A12		1	3.17	0.00					75777-1.RAW	10:33:58	3.02	Sample	OK	1	
F709338-BS1	B1		1	3.17	15.25					75778-1.RAW	10:38:06	1312.72	Sample	OK	1	
F709338-BSD1	B2		1	3.17	15.35					75779-1.RAW	10:42:15	1320.73	Sample	OK	1	
1709187-01	B3		1	3.17	557.73					75780-1.RAW	10:46:23	47886.25	Sample	FB	1	
1709187-02	B4		1	3.17	738.17					75781-1.RAW	10:50:32	63377.17	Sample	FB	1	
clean				0.00	0.13					75782-1.RAW	10:58:59	11.12	Clean	OK	1	
ws				3.17	0.45					75783-1.RAW	11:03:47	41.88	Sample	OK	1	
ws				3.17	0.22					75784-1.RAW	11:07:55	21.72	Sample	OK	1	
1709187-03	B5		2500	3.17	702.27					75785-1.RAW	11:12:04	27.29	Sample	OK	1	
1709187-04	B6		2500	3.17	755.85					75786-1.RAW	11:16:12	29.13	Sample	OK	1	
1709187-05	B7		1	3.17	0.14					75787-1.RAW	11:20:21	15.03	Sample	OK	1	
SEQ-CCV1	B8		1	3.17	5.04		100.86			75788-1.RAW	11:24:29	436.11	Sample	OK	1	
SEQ-CCB1	B9		1	3.17	0.14		0.00			75789-1.RAW	11:28:38	15.01	Sample	OK	1	
1709187-06	B10		1	3.17	0.10					75790-1.RAW	11:32:46	11.35	Sample	OK	1	
1709187-07	B11		1	3.17	0.25					75791-1.RAW	11:36:55	24.54	Sample	OK	1	
1709187-01RE1	B12		2500	3.17	884.91					75792-1.RAW	11:41:03	33.56	Sample	OK	1	
1709187-02RE1	C1		2500	3.17	307.77					75793-1.RAW	11:45:11	13.74	Sample	OK	1	
1709187-03RE1	C2		100	3.17	112.90					75794-1.RAW	11:49:20	100.10	Sample	OK	1	
1709187-04RE1	C3		100	3.17	323.66					75795-1.RAW	11:53:28	281.05	Sample	OK	1	
1709230-09	C4		2500	3.17	803.19					75796-1.RAW	11:57:37	30.76	Sample	OK	1	
1709230-15	C5		1	3.17	0.05					75797-1.RAW	12:01:45	7.41	Sample	OK	1	
1709230-16	C6		1	3.17	0.01					75798-1.RAW	12:05:54	4.29	Sample	OK	1	
1709230-21	C7		1	3.17	0.02					75799-1.RAW	12:10:02	4.68	Sample	OK	1	
SEQ-CCV2	C8		1	3.17	5.08		101.64			75800-1.RAW	12:14:11	439.50	Sample	OK	1	
SEQ-CCB2	C9		1	3.17	0.13		0.00			75801-1.RAW	12:18:19	14.08	Sample	OK	1	
1709230-09RE1	C10		100	3.17	531.41					75802-1.RAW	12:22:27	459.40	Sample	OK	1	
1709187-01RE2	C11		100	3.17	593.69					75803-1.RAW	12:28:47	512.87	Sample	OK	1	
1709187-02RE2	C12		100	3.17	781.70					75804-1.RAW	12:32:55	674.29	Sample	OK	1	
WS				3.17	0.07					75805-1.RAW	12:37:03	8.84	Sample	OK	1	NO LOCATION
WS				3.17	0.04					75806-1.RAW	12:41:12	6.54	Sample	OK	1	NO LOCATION
1709230-10	D1		100	3.17	473.25					75807-2.RAW	12:47:32	409.47	Sample	OK	1	
1709230-11	D2		100	3.17	539.51					75808-1.RAW	12:51:40	466.36	Sample	OK	1	
1709230-12	D3		100	3.17	490.95					75809-1.RAW	12:55:49	424.67	Sample	OK	1	

1709230-13	D4	100	3.17	546.26		75810-1.RAW	12:59:57	472.16	Sample	OK	1
1709230-14	D5	100	3.17	482.02		75811-1.RAW	13:04:05	417.00	Sample	OK	1
SEQ-CCV3	D6	1	3.17	4.97	99.46	75812-1.RAW	13:08:13	430.13	Sample	OK	1
SEQ-CCB3	D7	1	3.17	0.07	0.00	75813-1.RAW	13:12:21	9.44	Sample	OK	1
SEQ-CCV4	B8	1	3.17	4.90	97.94	75814-1.RAW	13:16:29	423.58	Sample	OK	1
SEQ-CCB4	B9	1	3.17	0.11	0.00	75815-2.RAW	13:21:52	12.38	Sample	OK	1
1709436-01	D10	1	3.17	1.78		75816-1.RAW	13:26:00	155.79	Sample	OK	1
1709436-02	D11	1	3.17	1.05		75817-1.RAW	13:30:09	93.17	Sample	OK	1
1709360-02	D8	10	3.17	65.32		75818-1.RAW	13:34:17	563.96	Sample	OK	1
1709360-04	D9	1	3.17	0.83		75819-1.RAW	13:38:26	74.60	Sample	OK	1
F709338-DUP1	D12	100	3.17	464.48		75820-1.RAW	13:42:34	401.95	Sample	OK	1
F709338-MS1	A1	100	3.17	2494.45	535.89	75821-1.RAW	13:46:42	2144.74	Sample	OK	1
F709338-MSD1	A2	100	3.17	2512.99		75822-1.RAW	13:50:51	2160.66	Sample	OK	1
F709338-MS2	A3	100	3.17	2537.15	100.88	75823-1.RAW	13:54:59	2181.39	Sample	OK	1
F709338-MSD2	A4	100	3.17	2530.12		75824-1.RAW	13:59:08	2175.36	Sample	OK	1
F709311-BLK1	A5	50	3.17	8.93		75825-1.RAW	14:06:18	18.51	Sample	OK	1
SEQ-CCV5	A6	1	3.17	4.97	99.48	75826-1.RAW	14:10:27	430.19	Sample	OK	1
SEQ-CCB5	A7	1	3.17	0.09	0.00	75827-1.RAW	14:14:35	11.26	Sample	OK	1
F709311-BLK2	A8	50	3.17	1.13		75828-1.RAW	14:18:44	5.11	Sample	OK	1
F709311-BS1	A9	400	3.17	2222.60		75829-1.RAW	14:22:52	480.22	Sample	OK	1
F709311-BSD1	A10	400	3.17	2799.41		75830-1.RAW	14:27:01	604.02	Sample	OK	1
1709417-01	A11	50	3.17	1.37		75831-1.RAW	14:31:09	5.53	Sample	OK	1
F709311-DUP1	A12	50	3.17	1.68		75832-1.RAW	14:35:17	6.06	Sample	OK	1
F709311-MS1	B1	400	3.17	2710.60	101048.35	75833-1.RAW	14:39:26	584.96	Sample	OK	1
F709311-MSD1	B2	400	3.17	2239.56		75834-1.RAW	14:43:34	483.86	Sample	OK	1
F709311-BS2	B3	400	3.17	2243.63		75835-1.RAW	14:47:43	484.73	Sample	OK	1
F709311-BSD2	B4	400	3.17	2830.26		75836-1.RAW	14:51:51	610.64	Sample	OK	1
F709319-BLK1	B5	100	3.17	7.71		75837-1.RAW	14:56:00	9.79	Sample	OK	1
SEQ-CCV6	B6	1	3.17	4.97	99.30	75838-1.RAW	15:00:08	429.44	Sample	OK	1
SEQ-CCB6	B7	1	3.17	0.10	0.00	75839-1.RAW	15:04:16	11.98	Sample	OK	1
F709319-BLK2	B8	100	3.17	8.36		75840-1.RAW	15:08:25	10.35	Sample	OK	1
F709319-BLK3	B9	100	3.17	3.36		75841-1.RAW	15:12:33	6.06	Sample	OK	1
F709319-BS1	B10	400	3.17	1189.14		75842-1.RAW	15:16:42	1024.09	Sample	OK	1
F709319-BSD1	B11	400	3.17	1202.28		75843-1.RAW	15:20:50	1035.37	Sample	OK	1
1709386-12	B12	100	3.17	93.30		75844-1.RAW	15:24:58	83.27	Sample	OK	1
1709387-31	C1	100	3.17	11.56		75845-1.RAW	15:29:07	13.10	Sample	OK	1
1709387-32	C2	100	3.17	15.92		75846-1.RAW	15:33:15	16.84	Sample	OK	1
1709387-33	C3	100	3.17	13.15		75847-1.RAW	15:37:24	14.46	Sample	OK	1
1709387-34	C4	100	3.17	18.84		75848-1.RAW	15:41:32	19.35	Sample	OK	1
1709388-01	C5	100	3.17	0.00		75849-1.RAW	15:45:40	0.64	Sample	OK	1
SEQ-CCV7	C6	1	3.17	5.01	100.21	75850-1.RAW	15:49:49	433.32	Sample	OK	1
SEQ-CCB7	C7	1	3.17	0.10	0.00	75851-1.RAW	15:53:57	11.62	Sample	OK	1
1709386-12B	C8	100	3.17	7.60		75852-1.RAW	15:58:06	9.70	Sample	OK	1
1709387-31B	C9	100	3.17	7.54		75853-1.RAW	16:02:14	9.65	Sample	OK	1
1709387-32B	C10	100	3.17	4.63		75854-1.RAW	16:06:23	7.15	Sample	OK	1
1709387-33B	C11	100	3.17	7.89		75855-1.RAW	16:10:31	9.94	Sample	OK	1
1709387-34B	C12	100	3.17	7.35		75856-1.RAW	16:14:39	9.49	Sample	OK	1
1709388-01B	D1	100	3.17	2.96		75857-1.RAW	16:18:48	5.71	Sample	OK	1
F709311-MS2	D2	50	3.17	126.23	2546.04	75858-1.RAW	16:22:56	219.92	Sample	OK	1
F709311-MSD2	D3	50	3.17	125.20		75859-1.RAW	16:27:05	218.16	Sample	OK	1
F709319-DUP1	D4	100	3.17	91.38		75860-1.RAW	16:31:13	81.63	Sample	OK	1
F709319-MS1	D5	100	3.17	349.01	377.80	75861-1.RAW	16:35:22	302.81	Sample	OK	1
SEQ-CCV8	D6	1	3.17	4.93	98.54	75862-1.RAW	16:39:30	426.18	Sample	OK	1
SEQ-CCB8	D7	1	3.17	0.06	0.00	75863-1.RAW	16:43:38	8.52	Sample	OK	1

F709319-MSD1	D8	100	3.17	336.73
BrCl 1705580-1	D9	1	3.17	0.04
BrCl 1705580-2	D10	1	3.17	0.00
BrCl 1705580-3	D11	1	3.17	0.02
BrCl 1705580-4	D12	1	3.17	0.00
SEQ-CCV9	A1	1	3.17	5.00
SEQ-CCB9	A2	1	3.17	0.04

100.01
0.00

75864-1.RAW	16:47:47	292.27	Sample	OK	1
75865-1.RAW	16:51:55	6.95	Sample	OK	1
75866-1.RAW	16:56:04	2.74	Sample	OK	1
75867-1.RAW	17:00:12	5.25	Sample	OK	1
75868-1.RAW	17:04:20	3.26	Sample	OK	1
75869-1.RAW	17:08:29	432.50	Sample	OK	1
75870-1.RAW	17:12:37	6.91	Sample	OK	1

Failing Data Report - 7I20005

Sample ID	Analysis	Result	MRL	Dup Result	Source Result	True Value	Units	% Rec.	Rec. LCL	Rec. UCL	RPD	RPD Limit	Over Cal	Failure	Qualifier
1709187-01	Hg-CVAFS-W-1631	563	0.50				ng/L						FAIL-OVER	PASS	E I I
1709187-02	Hg-CVAFS-W-1631	746	0.50				ng/L						FAIL-OVER	PASS	

Becing 9/20/17
 Analyst Reviewed By Date

Dan Mottam 9/20/17
 Peer Reviewed By Date

Failing Data Report - 7I20006

Sample ID	Analysis	Result	MRL	Dup Result	Source Result	True Value	Units	% Rec.	Rec. LCL	Rec. UCL	RPD	RPD Limit	Over Cal	Failure	Qualifier
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Beating 9/20/17
Analyst Reviewed By Date

Dan M. Stearn 9/20/17
Peer Reviewed By Date

Failing Data Report - 7120007

Sample ID	Analysis	Result	MRL	Dup Result	Source Result	True Value	Units	% Rec.	Rec. LCL	Rec. UCL	RPD	RPD Limit	Over Cal	Failure	Qualifier
F709311-BS1	Hg-CVAFS-S-Bomb	221.8	20.0			300.00	ng/g	73.9	75.00	125.00			PASS-OVER	FAIL-BS	DNR
F709311-BS2	Hg-CVAFS-S-Bomb	223.9	20.0			300.00	ng/g	74.6	75.00	125.00			PASS-OVER	FAIL-BS	Passing


 Analyst Reviewed By _____

 Date _____


 Peer Reviewed By _____

 Date _____

ANALYSIS SEQUENCE

7120007



Instrument: Hg2600-3

Calibration ID: UNASSIGNED

Analyzed: 9/19/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
7120007-IBL1	QC	1			
7120007-IBL2	QC	2			
7120007-IBL3	QC	3			
7120007-CAL1	QC	4	1704505		
7120007-CAL2	QC	5	1704506		
7120007-CAL3	QC	6	1704507		
7120007-CAL4	QC	7	1704508		
7120007-CAL5	QC	8	1704509		
7120007-ICV1	QC	9	1703679		
7120007-CCV1	QC	10	1703679		
7120007-CCB1	QC	11			
7120007-CCV2	QC	12	1703679		
7120007-CCB2	QC	13			
7120007-CCV3	QC	14	1703679		
7120007-CCB3	QC	15			
7120007-CCV4	QC	16	1703679		
7120007-CCB4	QC	17			
F709311-BLK1	QC	18			
7120007-CCV5	QC	19	1703679		
7120007-CCB5	QC	20			
F709311-BLK2	QC	21			
F709311-BS1	QC	22			
F709311-BSD1	QC	23			
1709417-01	Hg-CVAFS-S-Bomb	24			QG00L-1 - Prep 2.0-2.15 grams
F709311-DUP1	QC	25			
F709311-MS1	QC	26			
F709311-MSD1	QC	27			
F709311-BS2	QC	28			
F709311-BSD2	QC	29			
7120007-CCV6	QC	30	1703679		
7120007-CCB6	QC	31			
7120007-CCV7	QC	32	1703679		
7120007-CCB7	QC	33			
F709311-MS2	QC	34			
F709311-MSD2	QC	35			

Due Date: 9/21/2017

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Instrument: Hg2600-3

Calibration ID: UNASSIGNED

Analyzed: 9/19/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
7120007-CCV8	QC	36	1703679		
7120007-CCB8	QC	37			

Preli 9/20/17
Samples Loaded By Date

Brook 9/20/17
Data Processed By Date

1026-8 9/19/17

ANALYSIS SEQUENCE

7I20006



Instrument: Hg2600-3

Calibration ID: UNASSIGNED

Analyzed: 9/19/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
7I20006-IBL1	QC	1			
7I20006-IBL2	QC	2			
7I20006-IBL3	QC	3			
7I20006-CAL1	QC	4	1704505		
7I20006-CAL2	QC	5	1704506		
7I20006-CAL3	QC	6	1704507		
7I20006-CAL4	QC	7	1704508		
7I20006-CAL5	QC	8	1704509		
7I20006-ICV1	QC	9	1703679		
7I20006-CCV1	QC	10	1703679		
7I20006-CCB1	QC	11			
7I20006-CCV2	QC	12	1703679		
7I20006-CCB2	QC	13			
7I20006-CCV3	QC	14	1703679		
7I20006-CCB3	QC	15			
7I20006-CCV4	QC	16	1703679		
7I20006-CCB4	QC	17			
7I20006-CCV5	QC	18	1703679		
7I20006-CCB5	QC	19			
F709319-BLK1	QC	20			
7I20006-CCV6	QC	21	1703679		
7I20006-CCB6	QC	22			
F709319-BLK2	QC	23			
F709319-BLK3	QC	24			
F709319-BS1	QC	25			
F709319-BSD1	QC	26			
1709386-12	Hg_FSTM_TRAP_A	27			
1709387-31	Hg_FSTM_TRAP_A	28			
1709387-32	Hg_FSTM_TRAP_A	29			
1709387-33	Hg_FSTM_TRAP_A	30			
1709387-34	Hg_FSTM_TRAP_A	31			
1709388-01	Hg_FSTM_TRAP_A	32			
7I20006-CCV7	QC	33	1703679		
7I20006-CCB7	QC	34			
F709319-DUP1	QC	35			

Due Date: 9/21/2017

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Page 1 of 2


Instrument: Hg2600-3

Calibration ID: UNASSIGNED

Analyzed: 9/19/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
F709319-MS1	QC	36			
7I20006-CCV8	QC	37	1703679		
7I20006-CCB8	QC	38			
F709319-MSD1	QC	39			
7I20006-CCV9	QC	40	1703679		
7I20006-CCB9	QC	41			

 9/20/17
Samples Loaded By Date

 9/20/17
Data Processed By Date

1 ord →
9/19/17

ANALYSIS SEQUENCE

7120005



Instrument: Hg2600-3

Calibration ID: UNASSIGNED

Analyzed: 9/19/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
7120005-IBL1	QC	1			
7120005-IBL2	QC	2			
7120005-IBL3	QC	3			
7120005-CAL1	QC	4	1704505		
7120005-CAL2	QC	5	1704506		
7120005-CAL3	QC	6	1704507		
7120005-CAL4	QC	7	1704508		
7120005-CAL5	QC	8	1704509		
7120005-ICV1	QC	9	1703679		
F709338-BLK1	QC	10			
F709338-BLK2	QC	11			
F709338-BLK3	QC	12			
F709338-BS1	QC	13			
F709338-BSD1	QC	14			
1709187-01	Hg-CVAFS-W-1631	15			
1709187-02	Hg-CVAFS-W-1631	16			
1709187-03	Hg-CVAFS-W-1631	17			
1709187-04	Hg-CVAFS-W-1631	18			
1709187-05	Hg-CVAFS-W-1631	19			
7120005-CCV1	QC	20	1703679		
7120005-CCB1	QC	21			
1709187-06	Hg-CVAFS-W-1631	22			
1709187-07	Hg-CVAFS-W-1631	23			
1709187-01RE1	Hg-CVAFS-W-1631	24			Added 9/20/2017 by BC
1709187-02RE1	Hg-CVAFS-W-1631	25			Added 9/20/2017 by BC
1709187-03RE1	Hg-CVAFS-W-1631	26			Added 9/20/2017 by BC
1709187-04RE1	Hg-CVAFS-W-1631	27			Added 9/20/2017 by BC
1709230-09	Hg-CVAFS-W-1631	28			
1709230-15	Hg-CVAFS-W-1631	29			
1709230-16	Hg-CVAFS-W-1631	30			
1709230-21	Hg-CVAFS-W-1631	31			
7120005-CCV2	QC	32	1703679		
7120005-CCB2	QC	33			
1709230-09RE1	Hg-CVAFS-W-1631	34			Added 9/20/2017 by BC
1709187-01RE2	Hg-CVAFS-W-1631	35			Added 9/20/2017 by BC

Due Date: 9/22/2017

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Instrument: Hg2600-3

Calibration ID: UNASSIGNED

Analyzed: 9/19/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
1709187-02RE2	Hg-CVAFS-W-1631	36			Added 9/20/2017 by BC
1709230-10	Hg-CVAFS-W-1631	37			
1709230-11	Hg-CVAFS-W-1631	38			
1709230-12	Hg-CVAFS-W-1631	39			
1709230-13	Hg-CVAFS-W-1631	40			
1709230-14	Hg-CVAFS-W-1631	41			
7I20005-CCV3	QC	42	1703679		
7I20005-CCB3	QC	43			
7I20005-CCV4	QC	44	1703679		
7I20005-CCB4	QC	45			
1709436-01	Hg-CVAFS-W-1631	46			Scan all data - Level IV
1709436-02	Hg-CVAFS-W-1631	47			Scan all data - Level IV
1709360-02	Hg-CVAFS-W-1631	48			
1709360-04	Hg-CVAFS-W-1631	49			
F709338-DUP1	QC	50			
F709338-MS1	QC	51			
F709338-MSD1	QC	52			
F709338-MS2	QC	53			
F709338-MSD2	QC	54			
7I20005-CCV5	QC	55	1703679		
7I20005-CCB5	QC	56			

Beck 9/20/17

Samples Loaded By

Date

Beck 9/20/17

Data Processed By

Date

107207
9/19/17

PREPARATION BENCH SHEET

F709338

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: AFS - EPA 1631E BrCl Oxidation

Prepared: 9/19/2017

Lab Number	Sample ID and Source Sample	Initial (mL)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709338-BLK1	Blank	100	101					
F709338-BLK2	Blank	100	101					
F709338-BLK3	Blank	100	101					
F709338-BS1	LCS	50	50.5	1705054	100			
F709338-BSD1	LCS Dup	50	50.5	1705054	100			
F709338-DUP1	Duplicate [1709230-10]	100	101					
F709338-MS1	Matrix Spike [1709230-11]	0.4950495	0.5	1704422	100			[Spk] 100mL->101mL; 101mL->101mL; Spiked 0.5mL
F709338-MS2	Matrix Spike [1709187-01RE2]	0.4950495	0.5	1704422	100			[Spk] 100mL->101mL; 101mL->101mL; Spiked 0.5mL
F709338-MSD1	Matrix Spike Dup [1709230-11]	0.4950495	0.5	1704422	100			[Spk] 100mL->101mL; 101mL->101mL; Spiked 0.5mL
F709338-MSD2	Matrix Spike Dup [1709187-01RE2]	0.4950495	0.5	1704422	100			[Spk] 100mL->101mL; 101mL->101mL; Spiked 0.5mL

<u>Standard ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>	<u>Reagent ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>
1704422	THg 10ng/mL Calibration Standard	21-Oct-17 00:00	1703182	25% Hydroxylamine-HCl working solution	24-Nov-17 00:00
1705054	Nist 1641D 200X	21-Aug-18 00:00	1704515	0.2 N BRCL JULY 2017	22-Jan-18 00:00
			1704516	THg Washstation (0.5% BrCl)	24-Nov-17 00:00
			1704517	THg Dilute 1% BrCl	18-Dec-17 00:00
			1705373	3% SnCl2 THg reductant	19-Feb-18 00:00

PREPARATION BENCH SHEET

F709338

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: AFS - EPA 1631E BrCl Oxidation

Prepared: 9/19/2017

Lab Number	Sample ID	Initial (mL)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709187-01	39990.1 Dissolved	100	101	-	-	-		
1709187-01RE1	39990.1 Dissolved	100	101	-	-	-	Added 9/20/2017 by BC	Added 9/20/2017 by BC
1709187-01RE2	39990.1 Dissolved	100	101	-	-	-	Added 9/20/2017 by BC	Added 9/20/2017 by BC
1709187-02	39990.2	100	101	-	-	-		
1709187-02RE1	39990.2	100	101	-	-	-	Added 9/20/2017 by BC	Added 9/20/2017 by BC
1709187-02RE2	39990.2	100	101	-	-	-	Added 9/20/2017 by BC	Added 9/20/2017 by BC
1709187-03	39990.3 Dissolved	100	101	-	-	-		
1709187-03RE1	39990.3 Dissolved	100	101	-	-	-	Added 9/20/2017 by BC	Added 9/20/2017 by BC
1709187-04	39990.4	100	101	-	-	-		
1709187-04RE1	39990.4	100	101	-	-	-	Added 9/20/2017 by BC	Added 9/20/2017 by BC
1709187-05	39989.1	100	101	-	-	-	Field Blank	
1709187-06	39989.2	100	101	-	-	-	Field Blank	
1709187-07	Laboratory Filter Blank	100	101	-	-	-		
1709230-09	G17243 TK21-TSM-1	100	101	-	-	-		
1709230-09RE1	G17243 TK21-TSM-1	100	101	-	-	-	Added 9/20/2017 by BC	Added 9/20/2017 by BC
1709230-10	G17243 TK21-TSM-1 Dissolved	100	101	-	-	-		
1709230-11	G17244 TK21-TSM-2	100	101	-	-	-		
1709230-12	G17244 TK21-TSM-2 Dissolved	100	101	-	-	-		
1709230-13	G17245 TK21-TSM-3	100	101	-	-	-		

PREPARATION BENCH SHEET

F709338

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: AFS - EPA 1631E BrCl Oxidation

Prepared: 9/19/2017

1709230-14	G17245 TK21-TSM-3 Dissolved	100	101	-	-	-		
1709230-15	G17246 TK21-TSM-B	100	101	-	-	-		
1709230-16	G17246 TK21-TSM-B Dissolved	100	101	-	-	-		
1709230-21	Laboratory Filter Blank	100	101	-	-	-		
1709360-02	1710291-02 SW INF-001 COMP B-157124	100	101	-	-	-		
1709360-04	1710291-04 SW EFF-001 COMP B-157131	100	101	-	-	-		
1709436-01	ONHAMLIN_LOW_09112017_SW	100	101	-	-	-	Scan all data - Level IV	
1709436-02	FPCPIER_HIGH_09112017_SW	100	101	-	-	-	Scan all data - Level IV	



PREPARATION BENCH SHEET

F709319

Eurofins Frontier Global Sciences, Inc.

Matrix: Air

Prepared using: AFS - EFGS-009 FSTM Trap Nitric/Sulfuric Digestion

Prepared: 9/18/2017

Lab Number	Sample ID and Source Sample	Initial (Trap)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709319-BLK1	Blank	1	40					
F709319-BLK2	Blank	1	40					
F709319-BLK3	Blank	1	40					
F709319-BS1	LCS	1	40	1701763	200			
F709319-BSD1	LCS Dup	1	40	1701763	200			
F709319-DUP1	Duplicate [1709386-12]	1	40					
F709319-MS1	Matrix Spike [1709386-12]	0.0125	0.5	1704483	125			[Spk] 1Trap->40mL; 20mL->20mL; Spiked 0.5mL
F709319-MSD1	Matrix Spike Dup [1709386-12]	0.0125	0.5	1704483	125			[Spk] 1Trap->40mL; 20mL->20mL; Spiked 0.5mL

<u>Standard ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>	<u>Reagent ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>
1701763	THg 1,000ng/mL Secondary Spiking Standard	22-Sep-17 00:00	1703182	25% Hydroxylamine-HCl working solution	24-Nov-17 00:00
1704483	THg 1ng/mL Calibration Standard	24-Oct-17 00:00	1704097	FSTM Lot 170707B	06-Jul-18 00:00
			1704516	THg Washstation (0.5% BrCl)	24-Nov-17 00:00
			1704517	THg Dilute 1% BrCl	18-Dec-17 00:00
			1705373	3% SnCl2 THg reductant	19-Feb-18 00:00
			1705600	5% BrCl	22-Jan-18 00:00
			1705602	70/30 Digestion Acid	17-Mar-18 00:00

PREPARATION BENCH SHEET

F709319

Eurofins Frontier Global Sciences, Inc.

Matrix: Air

Prepared using: AFS - EFGS-009 FSTM Trap Nitric/Sulfuric Digestion

Prepared: 9/18/2017

Lab Number	Sample ID	Initial (Trap)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709386-12	ASR150-1-11	1	40	-	-	-	No volume listed	
1709387-31	HGS1716-7-15	1	40	-	-	-	No volume listed	
1709387-32	HGS1716-7-16	1	40	-	-	-	No volume listed	
1709387-33	HGS1716-7-17	1	40	-	-	-	No volume listed	
1709387-34	HGS1716-7-18	1	40	-	-	-	No volume listed	
1709388-01	HGS1716-BM-6-7	1	40	-	-	-	Blank - No volume listed	

PREPARATION BENCH SHEET

F709311

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: Trace Metals - EFGS-141 Nitric Acid Bomb Digestion

Prepared: 9/15/2017

Lab Number	Sample ID and Source Sample	Initial (g)	Final (ml)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709311-BLK1	Blank	0.5	50					
F709311-BLK2	Blank	0.5	50					
F709311-BS1	LCS	0.5	50	1705579	50			
F709311-BS2	LCS	0.5	50	1705579	50			
F709311-BSD1	LCS Dup	0.5	50	1705579	50			
F709311-BSD2	LCS Dup	0.5	50	1705579	50			
F709311-DUP1	Duplicate [1709417-01]	2.0609	50					
F709311-MS1	Matrix Spike [1709417-01]	2.0221	50	1705579	50			
F709311-MS2	AS/ASD [1709417-01]	0.041734	1	1704483	125			[Spk] 2.0867g->50ml; 40ml->40ml; Spiked 1ml
F709311-MSD1	Matrix Spike Dup [1709417-01]	2.0814	50	1705579	50			
F709311-MSD2	AS/ASD [1709417-01]	0.041734	1	1704483	125			[Spk] 2.0867g->50ml; 40ml->40ml; Spiked 1ml

<u>Standard ID(s):</u>	<u>Description:</u>
1704483	THg 1ng/mL Calibration Standard
1705579	EFGS-PREPSPIKE1/2, plus Hg

<u>Expiration:</u>
24-Oct-17 00:00
15-Dec-17 00:00

<u>Reagent ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>
1703182	25% Hydroxylamine-HCl working solution	24-Nov-17 00:00
1704516	THg Washstation (0.5% BrCl)	
1704517	THg Dilute 1% BrCl	18-Dec-17 00:00
1705051	Fisher Nitric Acid, Tracemetal Grade	18-Aug-20 00:00
1705145	3% SnCl2 THg reductant	11-Feb-18 00:00

PREPARATION BENCH SHEET

F709311

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: Trace Metals - EFGS-141 Nitric Acid Bomb Digestion

Prepared: 9/15/2017

Lab Number	Sample ID	Initial (g)	Final (ml)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709417-01	740-2017-09140068 EUUSBO2-00093971	2.0867	50	-	-	-	MSM Powder, Lot #1709332/51 QG00	

PREPARATION BENCH SHEET

309/19/17
2600-3

F709338

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: AFS - EPA 1631E BrCl Oxidation

Prepared: 9/19/2017

Lab Number	Sample ID and Source Sample	Initial (mL)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709338-BLK1	Blank	100	101					50mL
F709338-BLK2	Blank	100	101					50mL
F709338-BLK3	Blank	100	101					50mL
F709338-BS1	LCS	100	101	1705054	100			50mL
F709338-BSD1	LCS Dup	100	101	1705054	100			50mL
F709338-DUP1	Duplicate 1709230-10	100	101					500µL
F709338-MS1	Matrix Spike 1709230-11	100	101	1704422	100			500µL
F709338-MS2	Matrix Spike 1709187-0A2	100	101	1704422	100			500µL
F709338-MSD1	Matrix Spike Dup 1709230-11	100	101	1704422	100			500µL
F709338-MSD2	Matrix Spike Dup 1709230-0A2	100	101	1704422	100			500µL

Standard ID(s): Description:

Expiration:

50mL = 1X
500µL = 100X
20µL = 2500X

1705373
1704516
1704517
1704515
1703182

Due Date: 9/22/2017

PREPARATION BENCH SHEET

Bc 9/19/17
2600-3

F709338

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: AFS - EPA 1631E BrCl Oxidation

Prepared: 9/19/2017

Lab Number	Sample ID	Initial (mL)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709187-01	39990.1 Dissolved	100	101	-	-	-		50ml 20ml 500ml TX 2500X 100X
1709187-02	39990.2	100	101	-	-	-		50ml 20ml 500ml TX 2500X 100X
1709187-03	39990.3 Dissolved	100	101	-	-	-		20ml 50ml TX 2500X 100X
1709187-04	39990.4	100	101	-	-	-		20ml 50ml TX 2500X 100X
1709187-05	39989.1	100	101	-	-	-	Field Blank	TX 50ml
1709187-06	39989.2	100	101	-	-	-	Field Blank	TX 50ml
1709187-07	Laboratory Filter Blank	100	101	-	-	-		TX 50ml
1709230-09	G17243 TK21-TSM-1	100	101	-	-	-		20ml 2500X 500ml
1709230-10	G17243 TK21-TSM-1 Dissolved	100	101	-	-	-		500ml
1709230-11	G17244 TK21-TSM-2	100	101	-	-	-		500ml
1709230-12	G17244 TK21-TSM-2 Dissolved	100	101	-	-	-		500ml
1709230-13	G17245 TK21-TSM-3	100	101	-	-	-		500ml
1709230-14	G17245 TK21-TSM-3 Dissolved	100	101	-	-	-		500ml
1709230-15	G17246 TK21-TSM-B	100	101	-	-	-		50ml TX
1709230-16	G17246 TK21-TSM-B Dissolved	100	101	-	-	-		50ml TX
1709230-21	Laboratory Filter Blank	100	101	-	-	-		TX 50ml
1709360-02	1710291-02 SW INF-001 COMP B-157124	100	101	-	-	-		5ml
1709360-04	1710291-04 SW EFF-001 COMP B-157131	100	101	-	-	-		50ml
1709436-01	ONHAMLIN_LOW_09112017_SW	100	101	-	-	-	Scan all data - Level IV	50ml

Due Date: 9/22/2017

PREPARATION BENCH SHEET

BK 9/19/17
2600-3

F709338

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: AFS - EPA 1631E BrCl Oxidation

Prepared: 9/19/2017

1709436-02	FPCPIER_HIGH_09112017_SW	100	101	-	-	-	Scan all data - Level IV	5072
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Total Mercury Preservation Logbook

Initial preservation and/or verification

Technician: CSR Date: 9/7/17 Time Completed: 1507

Work Orders: 1709187

Additional preservation and/or verification (as needed)

Technician: _____ Date: _____ Time Completed: _____
 Technician: _____ Date: _____ Time Completed: _____

BrCl LIMS ID: 1704515

Pipette SN: 507631

Cal. Date: 9/6/17

CSR
9/6/17

Sample ID	Sample Volume (mL)	Reagent added (mL)	Oxidized? Y/N	Additional preservation (as needed)		
				Oxidized? Y/N	Reagent added (mL)	Oxidized? Y/N
1709187-01B	300	3.00	y			
1709187-02A	300	3.00	y			
1709187-03A	300	3.00	y			
1709187-04A	300	3.00	y			
1709187-05A	300	3.00	y			
1709187-06A	300	3.00	y			
1709187-07A	300	3.00	y			

Oxidation with BrCl is confirmed by a yellow color change of the sample and/or a purple color change in KI starch paper.

Comments: _____

Reviewed
9/8/17 DM

Total Mercury Preservation Logbook

Initial preservation and/or verification

Technician: CB Date: 9/15/17 Time Completed: 16:25

Work Orders: 1709436

Additional preservation and/or verification (as needed)

Technician: _____ Date: _____ Time Completed: _____
 Technician: _____ Date: _____ Time Completed: _____

BrCl LIMS ID: 1704515
 Pipette SN: J07631
 Cal. Date: 9/14/17

Sample ID	Sample Volume (mL)	Reagent added (mL)	Oxidized? Y/N	Additional preservation (as needed)		
				Oxidized? Y/N	Reagent added (mL)	Oxidized? Y/N
1709436-01B	100	1.00	Y			
1709436-02B	100	1.00	Y			
<p><u>9/15/17</u> <u>CB</u></p>						

Oxidation with BrCl is confirmed by a yellow color change of the sample and/or a purple color change in KI starch paper.

Comments: _____

Total Mercury Preservation Logbook

Initial preservation and/or verification

Technician: mw Date: 9/14/17 Time Completed: 1510

Work Orders: 1709359
1709360

Additional preservation and/or verification (as needed)

Technician: _____ Date: _____ Time Completed: _____
Technician: _____ Date: _____ Time Completed: _____

BrCl LIMS ID: 507631 1704515
Pipette SN: 507631
Cal. Date: 9/14/17

Sample ID	Sample Volume (mL)	Reagent added (mL)	Oxidized? Y/N	Additional preservation (as needed)		
				Oxidized? Y/N	Reagent added (mL)	Oxidized? Y/N
1709359-02A	300	3.0	Y			
1709359-04B	300	3.0	Y			
1709359-05B	300	3.0	Y			
1709360-02A	300	3.0	Y			
1709360-04A	300	3.0	Y			
<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); opacity: 0.5;"> <p>mw 9/14/17</p> </div>						

Oxidation with BrCl is confirmed by a yellow color change of the sample and/or a purple color change in KI starch paper.

Comments: _____

Reviewed
9/18/17 DM

Total Mercury Preservation Logbook

Initial preservation and/or verification

Technician: CB Date: 9/8/17 Time Completed: 16:39

Work Orders: 1709224, 1709230

Additional preservation and/or verification (as needed)

Technician: _____ Date: _____ Time Completed: _____

BrCl LIMS ID: 1709513

Technician: _____ Date: _____ Time Completed: _____

Pipette SN: J07631

Cal. Date: 9/8/17

Sample ID	Sample Volume (mL)	Reagent added (mL)	Oxidized? Y/N	Additional preservation (as needed)		
				Oxidized? Y/N	Reagent added (mL)	Oxidized? Y/N
1709224-01A	300	3.00	Y			
1709224-02A	300	3.00	Y			
1709224-03A	300	3.00	Y			
1709230-09A	125	1.25	Y			
1709230-10A	125	1.25	Y			
1709230-11A	125	1.25	Y			
1709230-12A	125	1.25	Y			
1709230-13A	125	1.25	Y			
1709230-14A	125	1.25	Y			
1709230-15A	125	1.25	Y			
1709230-16A	250 125	2.50 1.25	Y			
1709230-21A	250	2.50	Y			
<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); opacity: 0.5;"> <p>CB 9/8/17</p> </div>						

Oxidation with BrCl is confirmed by a yellow color change of the sample and/or a purple color change in KI starch paper.

Comments: _____

PREPARATION BENCH SHEET

2400-3

9/19/17 BC

F709319

Eurofins Frontier Global Sciences, Inc.

Matrix: Air

Prepared using: AFS - EFGS-009 FSTM Trap Nitric/Sulfuric Digestion

Prepared: 9/18/2017

Lab Number	Sample ID and Source Sample	Initial (Trap)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709319-BLK1	Blank	1	40					500 µL
F709319-BLK2	Blank	1	40					500 µL
F709319-BLK3	Blank	1	40					500 µL
F709319-BS1	LCS	1	40	1701763	200			400 125 µL
F709319-BSD1	LCS Dup	1	40	1701763	200			400 125 µL
F709319-DUP1	Duplicate 1709387-12	1	40					500 µL
F709319-MS1	Matrix Spike 1709387-12	1	40	1704483	125			500 µL
F709319-MSD1	Matrix Spike Dup 1709387-12	1	40	1704483	125			500 µL

Standard ID(s): 1701763
Description: THg 1,000ng/mL Secondary Spiking Standard

Expiration: 22-Sep-17 00:00

Reagent ID(s): 1704097, 1705600, 1705602
Description: FSTM Lot 170707B, 5% BrCl, 70/30 Digestion Acid

Expiration: 06-Jul-18 00:00, 22-Jan-18 00:00, 17-Mar-18 00:00

500 µL = 100X
125 µL = 400X

1705373
1704516
1704517
1703182

PREPARATION BENCH SHEET

2600-3
9/19/17 BC

F709319

Eurofins Frontier Global Sciences, Inc.

Matrix: Air

Prepared using: AFS - EFGS-009 FSTM Trap Nitric/Sulfuric Digestion

Prepared: 9/18/2017

Lab Number	Sample ID	Initial (Trap)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments ^A	Analysis Comments ^B
1709386-12	ASR150-1-11	1	40	-	-	-	No volume listed 500ul	500ul
1709387-31	HGS1716-7-15	1	40	-	-	-	No volume listed 500ul	500ul
1709387-32	HGS1716-7-16	1	40	-	-	-	No volume listed 500ul	500ul
1709387-33	HGS1716-7-17	1	40	-	-	-	No volume listed 500ul	500ul
1709387-34	HGS1716-7-18	1	40	-	-	-	No volume listed 500ul	500ul
1709388-01	HGS1716-BM-6-7	1	40	-	-	-	Blank - No volume listed 500ul	500ul



Trap Digestions

Name: Cw F

Date: 9/18/17

Batch ID: F709319

Work Order(s): 1709386, 1709387, 1709388

Analysis: Total Hg Other

Sample Matrix: FSTM KCl PHg Plug Other

Prep: 70/30 Digestion, 2 hr. @ ~55°C (EFAFS-T-AFS-SOP2985)

start time: 16:30, start temp (°C): 55.0 (raw) 54.8 (w/ CF)

end time: 18:30, end temp (°C): 64.0 (raw) 63.8 (w/ CF) Timer? Yes No

5% BrCl Oxidation (EFGS-031) start time: AMB 9-18-17 (allow samples to sit for at least 4 hr before analysis)

Other

Sample ID Number	Digest vol. (mL)
F709319	Blk 1 40
F709319	Blk 2 40
F709319	Blk 3 40
F709319	BS 1 40
F709319	BSD1 40
1709386	12A 01A ^{w/CF} 40
1709386	12B 40
1709387	31A 40
1709387	31B 40
1709387	32A 40
1709387	32B 40
1709387	33A 40
1709387	33B 40
1709387	34A 40
1709387	34B 40
1709388	01A 40
1709388	01B 40

Spike ID: 1701763

Spike Amount (µL): 200

Spike Witness: 11/19/17

BrCl ID: 1705600

70/30: 1705602

Other: N/A

Thermometer: 14545

Dispensers: 02K27494

04N73497

Other 15406623

Pipette ID: MU11619

Cal. Date: 9/15/17

Vials and Jars lot# 00068744

Trap Material Lot#: 1704097

Loader Mass Verified: Yes No

Comments: All traps unsplined.

Cw F
9/18/17

PREPARATION BENCH SHEET

BL 9/19/17

F709311

2600-3

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: Trace Metals - EFGS-141 Nitric Acid Bomb Digestion

Prepared: 9/15/2017

Lab Number	Sample ID and Source Sample	Initial (g)	Final (ml)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709311-BLK1	Blank	0.5	50					1 mL 50 µL
F709311-BLK2	Blank	0.5	50					1.0 mL
F709311-BS1	LCS	0.5	50	1705579	50			125 µL
F709311-BSD1	LCS Dup	0.5	50	1705579	50			125 µL
F709311-DUP1	Duplicate [1709417-01]	2.0609	50					1.0 mL
F709311-MS1	Matrix Spike [1709417-01]	2.0221	50	1705579	50			125 µL
F709311-MSD1	Matrix Spike Dup [1709417-01]	2.0814	50	1705579	50			125 µL

<u>Standard ID(s):</u> 1705579	<u>Description:</u> EFGS-PREP SPIKE1/2, plus Hg	<u>Expiration:</u> 15-Dec-17 00:00	<u>Reagent ID(s):</u> 1703182 1704516 1704517 1705051 1705145	<u>Description:</u> 25% Hydroxylamine-HCl working solution THg Washstation (0.5% BrCl) THg Dilute 1% BrCl Fisher Nitric Acid, Tracemetal Grade 3% SnCl2 THg reductant	<u>Expiration:</u> 24-Nov-17 00:00 18-Dec-17 00:00 18-Aug-20 00:00 11-Feb-18 00:00
-----------------------------------	--	---------------------------------------	--	--	--

BS1/BSD1 re run of BS1/BSD1 1.0 mL

MS2/MSD2 (AS/ASD) 1709417-01 125 µL 1704403 1.0 mL

1.0 mL = 50X
125 µL = 400X

1703182
1704516
1704517
170537

PREPARATION BENCH SHEET

2600-3
Bx 9/19/17

F709311

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: Trace Metals - EFGS-141 Nitric Acid Bomb Digestion

Prepared: 9/15/2017

Lab Number	Sample ID	Initial (g)	Final (ml)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709417-01	740-2017-09140068 EUUSBO2-00093971	2.0867	50	-	-	-	MSM Powder, Lot #1709332/51 QG00	1.0 mL



Ceutical Digestions

Batch TM / Hg (circle one): F709306/311

Boiling Chip Lot # 22569094

Batch continued on next page? Yes No

1° Tech.: _____ 2° Tech.: _____ Date/Time In: _____

Spiked By: _____ Spike Witness (SW): _____

Date/Time Out: _____

Balance ID/Cal.? (Y/N): _____

Final Vol. (mL)/Initials/Date: _____

Digestion: Oven ID: _____ Other ID: _____

Vial Type: 50 mL Centrifuge Tube Teflon

Thermometer ID: _____ Initial: Temp. (°C): _____
target raw corrected

Analysis: ICP-MS CV-AFS
 LC-ICP-MS Other: _____

Final: Temp. (°C): _____
target raw corrected

#	Bomb ID		Sample/Batch ID	Bottle ID	Sample Amount (<input checked="" type="checkbox"/> g <input type="checkbox"/> mL)	Matrix (specify)	ID Check	Notes/Comments
	Lid	Bottom						
1	NA	N412	F709306-BLK1	B	0.5930	Boiling (Chips/BC)	/	F709311-BLK1
2	NA	TH002	F709306-BLK2	B	0.5183	BC	/	F709311-BLK2
3	NA	TH048	F709306-BS1	B	0.5670	BC	/	F709311-BS1
4	NA	TH005	F709306-BSD1	B	0.6190	BC	/	F709311-BSD1
5	TH018	X002	F709306-BLK3	NA	0.7247	Liquid (L)	/	
6	NA	N472	F709306-BLK4	NA	1.1506	L	/	
7	N396	X193	1709417-01	A	2.0867	Powder (P)	/	
8	NA	TH046	1709417-01 DUPT	A	2.0609	P	/	
9	NA	N432	1709417-01 MSI	A	2.0221	P	/	

Initials: lw

Spike Name	SW	Volume (µL)	LIMS ID	Pipette ID	Cal. Date
A	<input type="checkbox"/>				
B	<input type="checkbox"/>				
C	<input type="checkbox"/>				
D	<input type="checkbox"/>				
E	<input type="checkbox"/>				

Preparation Method SOP: EFGS-		
Reagent	Volume (mL)	LIMS ID

1 Combined Spike ID: _____ = _____ ; Batches: _____

2 Combined Spike ID: _____ = _____ ; Batches: _____

Batch continued on next page? Yes No

Ceutical Digestions

#	Bomb ID		Sample/Batch ID	Bottle ID	Sample Amount (<input type="checkbox"/> g <input type="checkbox"/> mL)	Matrix (specify)	ID Check	Notes/Comments
	Lid	Bottom						
10	TH022	N416	1709417-01 MSDI	A	2.0814	P	/	
11	TH028	N428	1709384-03	A	1.1292	Food (F)	/	
12	NA	TH004	1709384-03MSZ	A	1.1322	F	/	
13	TH058	X022	1709384-03MSDL	A	1.0868	F	/	
14	NA	X169	1709177-11	B	1.2110	F	/	
15	X057	TH024	1709310-02	A	2.6127	Juice Oil	-	
16	NA	X175	1709311-07	A	1.0417	Juice	-	0.6751
17	NA	TH042	1709322-01	A	1.1311	P	/	2.6127
18	NA	X090	1709325-01	A	1.1706	P	/	
19	TH023	X082	1709325-02	A	1.0048	P	/	
20	X111	N381	1709325-03	A	1.2473	Paste (Pa)	/	
21	NA	N398	1709384-08	A	1.0962	Pa	/	
22	NA	TH013	1709414-01	A	1.1517	P	/	
23	NA	N417	1709367-01	A	1.2885	1 tab	/	
24	488	X178	1709369-01	A	1.1173	1 tab	/	Dry W/P 9/18/2017
25	NA	X043	1709369-02	A	1.0310	P	/	
26	TH045	N396	1709372-01	A	0.9859	2 cap	/	
27	NA	N484	1709374-01	A	0.7597	1 cap	/	
28	N492	TH056	1709374-02	A	0.8541	1 tab	/	
29	NA	X027	1709392-01	A	0.8683	1 tab	/	
30	NA	X181	1709392-02	A	0.8952	1 tab	/	
31	N413	X020	1709392-03	A			/	
32							/	
33							/	
34							/	

Initials: mw

Density by EFGS-019 Required? Yes No

Batch ID: _____ Density = [(D-C)/B]

A: Sample ID / Flask ID	B: Volume (mL)	C: Flask mass (g)	D: Flask + sample (g)	Density (g/mL)
/				
/				
/				
/				

Ceutical Digestions

Batch TM / Hg (circle one) : F709303/304/305/306 Boiling Chip Lot # 22569094

Batch continued on next page? Yes No

1° Tech.: MAP 2° Tech.: W Date/Time In: 9/15/2017 1710

Date/Time Out: 9/16/2017 1110 51 Timer

Spiked By: W Spike Witness (SW): MAP

Final Vol. (mL)/Initials/Date:

Balance ID/Cal.? (N): 20 19/15/2017

50 MAP 9/15/2017

Digestion: Oven ID: CVN-02 Other ID: _____

Vial Type: 50 mL Centrifuge Tube Teflon

Thermometer ID: 1312060130 Initial: Temp. (°C): 160 / 159.0 / 159.3
target raw corrected

Analysis: ICP-MS CV-AFS
 LC-ICP-MS Other: _____

Final: Temp. (°C): 160 / TIMER
target raw corrected

#	Bomb ID		Sample/Batch ID	Bottle ID	Sample Amount (<input checked="" type="checkbox"/> g <input type="checkbox"/> mL)	Matrix (specify)	ID Check	Notes/Comments
	Lid	Bottom						
1	NA	N532	F709303-BLK1	A	0.7325	Boni Chips (BL)	/	Bottom: N554
2	N466	X090	F709303-BLK2	A	0.9075	BL	/	
3	NA	TH010	F709303-BS1	A	0.5744	BL	/	
4	X101	X062	F709303-BSD1	A	0.7765	BL	/	
5	NA	X024	1709404-01	A	1.2412	Powder (P)	/	1.2335g
6	NA	TH007	1709404-01 DUP1	A	1.0448	P	/	1.1332g
7	NA	N484	1709404-01 MSD1	A	1.0345	P	/	1.0532g
8	NA	X107	1709404-01 MSD1	A	1.2028	P	/	1.1263g
9	NA	X044	1709413-01	A	1.1691	P	/	

Initials: W

	Spike Name	SW	Volume (µL)	LIMS ID	Pipette ID	Cal. Date
A	Prep Spike 1	<input type="checkbox"/>	50	1703595	S12664	9/13/2017
B	Prep Spike 2	<input checked="" type="checkbox"/>	50	1703596		
C	TH	<input checked="" type="checkbox"/>	50	1705578		
D		<input type="checkbox"/>				
E		<input type="checkbox"/>				

Preparation Method SOP: EFGS-141		
Reagent	Volume (mL)	LIMS ID
HNO ₃	7.5	1705051

1 Combined Spike ID: A-C = 1705579 ; Batches: F709303/304/305/306/311
 2 Combined Spike ID: _____ ; Batches: MAP 9/15/2017

Batch continued on next page? Yes No

Ceutical Digestions

Batch TM / Hg (circle one) : F709304 Boiling Chip Lot # 22569094 Batch continued on next page? Yes No

1° Tech.: WMP 2° Tech.: W Date/Time In: 9/15/2017 1715 Date/Time Out: 9/16/2017 1115 by Timer

Spiked By: W Spike Witness (SW): WMP Final Vol. (mL)/Initials/Date: 50 WMP 9/15/2017

Balance ID/Cal.? (Y/N): 21 IX Vial Type: 50 mL Centrifuge Tube Teflon

Digestion: Oven ID: OVN03 Other ID: _____ Analysis: ICP-MS CV-AFS

Thermometer ID: 14040255471 Initial: Temp. (°C): 160 / 162.1 / 161.7
target raw corrected

Final: Temp. (°C): 160 / TIMER
target raw corrected

#	Bomb ID		Sample/Batch ID	Bottle ID	Sample Amount (g mL)	Matrix (specify)	ID Check	Notes/Comments
	Lid	Bottom						
1	N417	N245	F709304-BLK1	B	0.7230	Boiling Chips (BC)	/	
2	NA	D02	F709304-BLK2	B	0.5434	BC	/	
3	X006	144	F709304-BS1	B	0.5245	BC	/	
4	NA	D36	F709304-BSD1	B	0.6202	BC	/	
5	NA	P13	1709408-02	A	1.0704	Powder (P)	/	Drug LEL 9-15-17
6	NA	V246	1709408-02 DUPI	A	1.2007	P	/	Decume sample LEL 9-15-17
7	NA	TM025	1709408-02 MSD1	A	1.1860	P	/	
8	NA	N42	1709408-02 MSD1	A	1.0952	P	/	
9	NA	N113	1709409-01	A	1.2126	P	/	

Initials: WEL

Spike Name	SW	Volume (µL)	LIMS ID	Pipette ID	Cal. Date	Preparation Method SOP: EFGS-		
						Reagent	Volume (mL)	LIMS ID
A	<input type="checkbox"/>							
B	<input type="checkbox"/>							
C	<input type="checkbox"/>							
D	<input type="checkbox"/>							
E	<input type="checkbox"/>							

1	Combined Spike ID:	=		; Batches:
2	Combined Spike ID:	=		; Batches:

Batch continued on next page? Yes No

Sample Preparation Review Checklist

Revision: 3
Effective: Dec. 5, 2013

Technician/Date: tw/MSP 9/15/17 Samples to lab: 17W Batch #: F209311
 Upload/Date: tw 9/15/17 Reviewer/Date: BC 9/20/17

- | EFGS Preparation Method | | | |
|-------------------------------------|---------|--|--|
| <input type="checkbox"/> | FGS-032 | Co-APDC | |
| <input type="checkbox"/> | FGS-052 | Oven Digestion (Total Recoverable Metals) | <input type="checkbox"/> ICPMS <input type="checkbox"/> AFS |
| <input type="checkbox"/> | FGS-058 | Nitric Digestion | <input type="checkbox"/> ICPMS <input type="checkbox"/> CVAFS |
| <input type="checkbox"/> | FGS-084 | Modified Aqua Regia (Ag, Sb only) | |
| <input type="checkbox"/> | FGS-108 | Cr+6 Sediments/Tissues | |
| <input type="checkbox"/> | FGS-109 | RP | |
| <input type="checkbox"/> | FGS-111 | HF Bomb Digestion | <input type="checkbox"/> ICPMS <input type="checkbox"/> CVAFS |
| <input checked="" type="checkbox"/> | FGS-141 | Nitric Bomb Digestion | <input type="checkbox"/> ICPMS <input checked="" type="checkbox"/> CVAFS |
| <input type="checkbox"/> | FGS-145 | Oven Digestion (As, Se Speciation) | <input type="checkbox"/> As <input type="checkbox"/> Se |
| <input type="checkbox"/> | FGS-146 | Microwave Digestion (Nutraceuticals) | <input type="checkbox"/> |
| <input type="checkbox"/> | FGS-146 | Microwave Digestion (CPSC-Metal) | |
| <input type="checkbox"/> | FGS-146 | Microwave Digestion (CPSC-Non-Metal/Paint) | |
| <input type="checkbox"/> | FGS-149 | Oven Digestion (Aqueous Nutraceuticals) | |
| <input type="checkbox"/> | NA | Other: | |

Initials	SOP Date	DOC Date
<u>tw</u>	<u>2/2/17</u>	<u>12/7/17</u>
<u>MSP</u>	<u>2/14/17</u>	<u>12/15/17</u>

Comments: _____

Conditionally formatted training files located at:
 \\us34file\General and Admin\Quality Assurance\Training\Training Master
 (Contact QA for any problems regarding these training files.)

Analytes: Hg

- | | Reviewer Initials | Tertiary Review |
|---|--|-------------------------------------|
| 1. Is any SOP/DOC expiring within one week of Submission Date? | <u>BC</u> | <u>DM</u> |
| <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Data cannot be reported without a current IDOC/CDOC. If YES, notify supervisor and technician immediately. | | |
| 2. Check prep method | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (a) For Ceuticals: Is correct Hg code being used in LIMS? <input checked="" type="checkbox"/> ICPMS <input type="checkbox"/> CV-AFS <input type="checkbox"/> 70:30 <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Compare sample ID with benchsheet | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Verify time of submission? (if not met please explain in the comments) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (a) Oven bomb - digestion start time before 14:00? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (b) Microwave - submitted to the lab before 16:00? | <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| 5. Check for transcription errors from benchsheet | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (a) Check and compare initial and final volumes | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (b) Check and compare mass | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (c) Has the number of pills been documented (benchsheet and LIMS)? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (d) Benchsheet prep date MUST match actual prep date | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. Samples per Batch? Check QC Requirements | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (a) PBs per batch? <input type="checkbox"/> ≤ 20 <input type="checkbox"/> ≤ 10 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (b) BS, BS/BSD or CRM in batch? <input type="checkbox"/> 3 PBs <input checked="" type="checkbox"/> 2 PB <input type="checkbox"/> 1 PB | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (c) MS/MSD in batch? <input type="checkbox"/> BS <input checked="" type="checkbox"/> BS/BSD <input type="checkbox"/> CRM | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (d) MD in batch? | <input checked="" type="checkbox"/> YES <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| (e) Client specific WO #'s: _____ | <input checked="" type="checkbox"/> YES <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| (f) Are there any client specific requests and/or alterations? | <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| Document: _____ | | |
| (g) Correct LIMS spike ID included for BS, BS/BSD and/or MS/MSD? | <input checked="" type="checkbox"/> YES <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| (h) Correct 'source' designated for MD/MS/MSD? | <input checked="" type="checkbox"/> YES <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| (i) For EFGS-filtered samples, was a filtration blank included? | <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| 7. Are the samples appropriately spiked? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (a) Is the spike and amount used appropriate and entered into LIMS? | <input checked="" type="checkbox"/> YES <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| (b) For IDOCs, was there a spike witness? (initials <u>must</u> be in logbook) | <input checked="" type="checkbox"/> YES <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| (c) Spikes added: | <input checked="" type="checkbox"/> YES <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |

NOTE: Due to LIMS software constraints, new LIMS IDs need to be created when multiple/ supplemental spikes are used. Enter new LIMS ID below and use table to list all spikes included in it.

Spike LIMS ID: 1705579

Spike Name	LIMS ID	µL	Spike Name	LIMS ID	µL
<u>Prep Spike</u>	<u>1705595</u>	<u>50</u>			
<u>Prep Spike</u>	<u>1705596</u>	<u>50</u>			
<u>IHg</u>	<u>1705579</u>	<u>50</u>			

Peer Review Check List for THg by 2600 CV-AFS (SOP2822) 2016 Rev 1 (04/1/2016)

Analyst:	BC	Sequence(s) #:	7120005, 7120006, 7120007
Reviewer:	DM	Dataset ID(s):	THg26003-170919-1
Date:	9/20/2017	WO (s) #:	VARIOUS
Batch #(s):	F709338, F709311, F709319		

• Select the correct preparation method.

Analyte	Prep Method	Matrix	
<input checked="" type="checkbox"/> THg	EFAFS-T-AFS-SOP2985	FSTM Trap 70:30 Digest	Air/Gas
<input type="checkbox"/> THg	EFAFS-T-AFS-SOP2807	Modified Cold Aqua Regia	Sed/Soil
<input type="checkbox"/> THg	EFAFS-T-AFS-SOP2821	Shared Bomb- HF/HNO3/HCl Digest	Sed/Soil
<input checked="" type="checkbox"/> THg	EFTM-T-TM-SOP2825	Nitric Acid Oven Bomb	Sed/Soil
<input type="checkbox"/> THg	EFAFS-T-AFS-SOP2795	70:30 Digest	Tissue
<input type="checkbox"/> THg	EFAFS-T-AFS-SOP2800	KCl Trap BrCl Oxidation	Air/Gas
<input type="checkbox"/> THg	EFTM-T-TM-SOP2837	Shared Nitric	Tissue
<input checked="" type="checkbox"/> THg	EFSR-P-SP-SOP2796	BrCl Oxidation	Water
<input type="checkbox"/> Hg0	NA	NA	Water
<input type="checkbox"/> Inorg Hg	NA	NA	Water

Analyst Initials: BC **Reviewer Initials:** DM

- | | | | | |
|--|---|--|---|-------------------------------------|
| <p>1. Compare SampleID with Benchsheet/Sequence/Raw Data (Have all samples been imported?)</p> <p>2. Check for transcription errors from Excel spreadsheet (or Prep Benchsheet)/Raw data</p> <p style="margin-left: 20px;">(a) On raw data (instrument print-out), does correct file (dataset ID#) name appear in description?
Naming convention: THg26001-yymmdd-1 or THg26002-yymmdd-1</p> <p style="margin-left: 20px;">(b) Check 5% of transcription from Instrument print-out and Excel file
Compare the "Dilute" and "Peak (raw)" columns to "Dilution" and "Uncorrected Result" in Excel</p> <p style="margin-left: 20px;">(c) Check standards & reagents in sequence & bench sheet for correct usage (expiries).</p> <p style="margin-left: 20px;">(d) Check and compare masses (review prep benchsheet)</p> <p style="margin-left: 20px;">(e) Check & compare initial & final volumes</p> <p style="margin-left: 20px;">(f) Do aliquots and dilutions written on benchsheet match those in Excel?
50 ml / aliquot = Excel dilution value</p> <p style="margin-left: 20px;">(g) Is the sequence #, analyst, date, and instrument # on the QC page?</p> <p style="margin-left: 20px;">(h) Is the analysis status correct? (analyzed/initial review/reviewed)</p> <p style="margin-left: 20px;">(i) Original prep bench sheet added to data package?</p> <p style="margin-left: 20px;">(j) Benchsheet prep date MUST match actual prep date (check if re-shot vs re-extract)</p> <p>3. High QA? WO#(s)/Client(s): _____</p> <p>4. Client specific QC? (if Yes, refer to Project Notes/LIMS)</p> <p style="margin-left: 20px;">(a) Have the QC requirements been met for all WO#s?</p> <p style="margin-left: 20px;">(b) Prep blanks corrections/assigned properly</p> <p>5a. 20 or fewer samples in batch?</p> <p style="margin-left: 20px;">(i) 3 PBs, 1 LCS(or BS), 1 LCSD(or BSD), 1 DUP/Batch 1 MS/MSD (or AS/ASD)/10 samples?</p> <p style="margin-left: 20px;">(ii) 1 CCV and 1 CCB every 10 analytical runs?</p> | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | <input type="checkbox"/> YES <input type="checkbox"/> NO | <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
|--|---|--|---|-------------------------------------|

Peer Review Check List for THg by 2600 CV-AFS (SOP2822) 2016 Rev 1 (04/1/2016)

Analyst: BC	Sequence(s) #: 7120005, 7120006, 7120007
Reviewer: 0	Dataset ID(s): THg26003-170919-1
Date: 9/20/2017	WO (s) #: VARIOUS
Batch #(s): F709338, F709311, F709319	0

Analyst Initials BC **Reviewer Initials** DM

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|--|--|-------------------------------|------------------------------|-------------------------------------|
| 5b. Has the B/C section data been uploaded? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| QA/QC Data Checked | | | | |
| 6. RSD CF (≤ 15%) | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 7. The calibration curve included a minimum of 5 Standards | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 8. 1st Calibration Standard % Recoveries EPA 1631E (75-125%) | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | | <input checked="" type="checkbox"/> |
| 9. ICV and CCV % Recoveries EPA 1631E (77-123%) | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 10. Do all calibration points pass acceptance criteria? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 11. Are qualifiers consistent with the data review flowcharts? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 12. Explain any items on the failed data report from Element | | | | <input type="checkbox"/> |
| Comments: <u>SAMPLE OFF CURVE, BS FAILURE</u> | | | | |
| 13. Are the individual Preparation Blanks < PQL or <2.2xMDL for WI (refer to appropriate prep method PQL list) | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | | <input type="checkbox"/> |
| (a) If not < PQL or <2.2xMDL for WI, note which PB(s) are above control limit: | | | | |
| (b) Is the mean PB < PQL or <2.2xMDL for WI (for appropriate qualification)? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | | <input checked="" type="checkbox"/> |
| (c) Was a BrCl Blank analyzed for each preservation level? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| (d) Are Preparation Blanks summarized on QC page? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | | <input checked="" type="checkbox"/> |
| 14. Filtration Blank Prepared (if yes, use FB qualifier) | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | | <input checked="" type="checkbox"/> |
| (a) Filtration Blank prep date same as associated samples' prep date | | | | |
| (b) Filtration Blank absolute value < PQL or <2.2xMDL for WI | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| 15. IBLs (3 minimum) individually < 0.50 ng/L, mean < 0.25 ng/L and STD of 0.10 ng/L? | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 16. CCBs individually < 0.50 ng/L or 2.2 x MDL for WI? | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 17. Have Total Solids been applied? (If NO, please ensure that they are done or nearly done) | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| 18. Is the correct 'Source' designated for MD/MS/MSD? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | | <input checked="" type="checkbox"/> |
| 19. For digested preps: was there a spike witness signature & date on the prep bench sheet? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |

Peer Review Check List for THg by 2600 CV-AFS (SOP2822) 2016 Rev 1 (04/1/2016)

Analyst:	BC	Sequence(s) #:	7120005, 7120006, 7120007
Reviewer:	0	Dataset ID(s):	THg26003-170919-1
Date:	9/20/2017	WO (s) #:	VARIOUS
Batch #(s):	F709338, F709311, F709319		0

Analyst Initials BC Reviewer Initials DM

- | | | | | |
|--|--|-------------------------------|---|-------------------------------------|
| 20. MS/MSD Spiked at least 1-5 X ambient or 5x MRL (whichever is higher) ? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> | |
| Comments: _____ | | | | |
| 21. Are all samples within instrument calibration range? (or at minimum dilution size) | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input checked="" type="checkbox"/> | |
| Comments: _____ | | | | |
| 22. Are the samples run at the correct dilution level for the method? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> | |
| Comments: _____ | | | | |
| 23. Dissolved < Total (if applicable) | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 24. Effluent < Influent (visually confirm if needed) | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 25. Are re-runs noted with reason? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 26. FSTM Datasets: Check to ensure the 'Response' & 'Initial Result' columns match in both the Excel dataset & LIMS for the FSTM A (in sequence) & B/C (in batch) traps? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 27. Is the B trap <5% A Traps | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 28. Are spiked trap recoveries 75-125% of true value? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 29. Have non-reportable samples been imported into LIMS and clicked to non-reportable? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| Comments: _____ | | | | |
| 30. Have re-extracts been created for non-reportable samples? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| 31. Are there any HIGH QA projects within the data? If so, place data package in QA office before scanning. | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| 32. Does the data set need scanning? | <input checked="" type="checkbox"/> YES | | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| 33. Does the dataset have an LOQ/LOQ or DOC? | <input type="checkbox"/> YES | | <input checked="" type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| 34. Water samples: has the preservation log been included in dataset for final volume verification? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| 35. Water samples-is the final volume correct in the sequence? | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> N/A | <input checked="" type="checkbox"/> |
| Files located at: \\Cuprum\gen_admin\Quality Assurance\Training Master\DOCs | | | | |
| 36. Date of analyst IDOC/CDOC: _____ 1/11/2017 _____ IDOC/CDOC within last 12 months? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | | <input checked="" type="checkbox"/> |
| 37. Date of analyst's SOP reading for method: _____ 5/20/2017 _____ Current SOP revision read? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | | <input checked="" type="checkbox"/> |
| 38. Date of LOD: _____ 4/27/2017 _____ LOD within last 3 months? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | | <input checked="" type="checkbox"/> |
| 39. Date of LOQ: _____ 4/27/2017 _____ LOQ within last 3 months? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | | <input checked="" type="checkbox"/> |

Data can not be reported without a current IDOC/CDOC, LOD or LOQ.

Peer Review Check List for THg by 2600 CV-AFS (SOP2822) 2016 Rev 1 (04/1/2016)

Analyst:	BC	Sequence(s) #:	7120005, 7120006, 7120007
Reviewer:	0	Dataset ID(s):	THg26003-170919-1
Date:	9/20/2017	WO (s) #:	VARIOUS
Batch #(s):	F709338, F709311, F709319		0

40. Peer Reviewer's comments (use Peer Review Checklist Additional Comments form if necessary):

Be DM

Additional Page (s)? YES



Analysis Datasheet for Methyl Mercury in Waters

Date of Analysis: September 27, 2017

Instrument #: Hg2700-1

LIMS Sequence #: 7128014

Analyst: DM2

Units ng/L

Calibration Statistics:

LabNumber	n	True Val	Area	Uncorrected Response Factor	Corrected Peak Height	Corrected Response Factor	% Recovery
SEQ-CAL1	1	0.05 ng/L	19.47 units	389.45	19.47 units	389.45	92.1 %Rec
SEQ-CAL2	1	0.20 ng/L	77.12 units	385.58	77.12 units	385.58	91.2 %Rec
SEQ-CAL3	1	1.00 ng/L	410.94 units	410.94	410.94 units	410.94	97.2 %Rec
SEQ-CAL4	1	2.00 ng/L	849.48 units	424.74	849.48 units	424.74	100.5 %Rec
SEQ-CAL5	1	4.00 ng/L	2011.84 units	502.96	2011.84 units	502.96	119.0 %Rec
SEQ-CAL6	0						
SEQ-CAL7	0						
SEQ-CAL8	0						
SEQ-CAL9	0						
Corr. Mean RF	Corr. St Dev RF	Corr. RSD CF	Uncorr. Mean RF	Eff Factor			
422.73	+/- 47.61	11.3% RSD	422.73	0.8690			

MDN Only

- SEQ-CAL1
- SEQ-CAL2
- SEQ-CAL3
- SEQ-CAL4
- SEQ-CAL5
- SEQ-CAL6 NA
- SEQ-CAL7 NA
- SEQ-CAL8 NA
- SEQ-CAL9 NA
- SEQ-ICV/CCV
- Acetate Buffer
- Ethylating Agent

Blanks:

LabNumber	n	Mean	Std Dev	Mean (ng/L)	Std Dev (ng/L)
SEQ-IBL	1	0.00 units		0.00 ng/L	#VALUE!

Preparation Blanks

Sample Type	Batch ID	n	Mean	Std Dev
BLK	1	3	0.000 ng/L	±0.000
BLK	2	0	0.000 ng/L	
BLK	3	0	0.000 ng/L	
BLK	4	0	0.000 ng/L	
BLK	5	0	0.000 ng/L	

QUALITY ASSURANCE
PEER-REVIEWED

INITIALS: DM DM2

Instrument	Analyst	Sample		Dilution	Analyzed	FileID	Run End	Uncorrected Response	Batch ID	No PB			InitialUnits	Comments	
		Type	LabNumber							Correction?	RESP	InitialResult			FinalResult
Hq2700-1	DM2	CAL	SEQ-IBL1	1	9/27/17 12:28	26066-1.RAW	12:28	0.00			0.0	0.000	0.000	ng/L	
Hq2700-1	DM2	CAL	SEQ-CAL1	1	9/27/17 12:39	26067-1.RAW	#####	19.47			19.5	0.046	0.046	ng/L	
Hq2700-1	DM2	CAL	SEQ-CAL2	1	9/27/17 12:49	26068-1.RAW	#####	77.12			77.1	0.182	0.182	ng/L	
Hq2700-1	DM2	CAL	SEQ-CAL3	1	9/27/17 13:00	26069-1.RAW	#####	410.94			410.9	0.972	0.972	ng/L	
Hq2700-1	DM2	CAL	SEQ-CAL4	1	9/27/17 13:10	26070-1.RAW	#####	849.48			849.5	2.009	2.009	ng/L	
Hq2700-1	DM2	CAL	SEQ-CAL5	1	9/27/17 13:21	26071-1.RAW	#####	2011.84			2011.8	4.759	4.759	ng/L	
Hq2700-1	DM2	CAL	SEQ-ICV1	1	9/27/17 13:31	26072-1.RAW	#####	222.72			222.7	0.527	0.527	ng/L	
Hq2700-1	DM2	CAL	SEQ-ICB1	1	9/27/17 13:42	26073-1.RAW	#####	1.50			1.5	0.004	0.004	ng/L	
Hq2700-1	DM2	BLK	F709431-BLK1	1.25	9/27/17 13:52	26074-1.RAW	#####	0.00	1		0.0	0.000	0.000	ng/L	
Hq2700-1	DM2	BLK	F709431-BLK2	1.25	9/27/17 14:03	26075-1.RAW	#####	0.00	1		0.0	0.000	0.000	ng/L	
Hq2700-1	DM2	BLK	F709431-BLK3	1.25	9/27/17 14:13	26076-1.RAW	#####	0.00	1		0.0	0.000	0.000	ng/L	
Hq2700-1	DM2	SAM	F709431-BS1	1.25	9/27/17 14:24	26077-1.RAW	#####	324.65	1		324.6	0.884	1.105	ng/L	
Hq2700-1	DM2	SAM	F709431-BSD1	1.25	9/27/17 14:34	26078-1.RAW	#####	353.24	1		353.2	0.962	1.202	ng/L	
Hq2700-1	DM2	SAM	F709431-DUP1	1.25	9/27/17 14:45	26079-1.RAW	#####	24.09	1		24.1	0.066	0.082	ng/L	
Hq2700-1	DM2	SAM	F709431-MS1	1.25	9/27/17 14:55	26080-1.RAW	#####	394.30	1		394.3	1.073	1.342	ng/L	
Hq2700-1	DM2	SAM	F709431-MSD1	1.25	9/27/17 15:06	26081-1.RAW	#####	371.74	1		371.7	1.012	1.265	ng/L	
Hq2700-1	DM2	SAM	F709431-MS2	1.25	9/27/17 15:16	26082-1.RAW	#####	428.95	1		429.0	1.168	1.460	ng/L	
Hq2700-1	DM2	SAM	F709431-MSD2	1.25	9/27/17 15:27	26083-1.RAW	#####	426.99	1		427.0	1.162	1.453	ng/L	
Hq2700-1	DM2	CAL	SEQ-CCV1	1	9/27/17 15:37	26084-1.RAW	#####	215.80			215.8	0.510	0.510	ng/L	
Hq2700-1	DM2	CAL	SEQ-CCB1	1	9/27/17 15:48	26085-1.RAW	#####	0.00			0.0	0.000	0.000	ng/L	
Hq2700-1	DM2	SAM	1709607-01	1.25	9/27/17 15:58	26086-1.RAW	#####	0.00	1		0.0	0.000	0.000	ng/L	
Hq2700-1	DM2	SAM	1709607-02	1.25	9/27/17 16:09	26087-1.RAW	#####	0.00	1		0.0	0.000	0.000	ng/L	
Hq2700-1	DM2	SAM	1709607-03	1.25	9/27/17 16:19	26088-1.RAW	#####	3.96	1		4.0	0.011	0.013	ng/L	
Hq2700-1	DM2	SAM	1709607-04	1.25	9/27/17 16:30	26089-1.RAW	#####	281.44	1		281.4	0.766	0.958	ng/L	
Hq2700-1	DM2	SAM	1709607-05	1.25	9/27/17 16:41	26090-1.RAW	#####	1314.94	1		1314.9	3.579	4.474	ng/L	
Hq2700-1	DM2	SAM	1709607-06	1.25	9/27/17 16:51	26091-1.RAW	#####	680.41	1		680.4	1.852	2.315	ng/L	
Hq2700-1	DM2	SAM	1709607-07	1.25	9/27/17 17:02	26092-1.RAW	#####	35.58	1		35.6	0.097	0.121	ng/L	
Hq2700-1	DM2	SAM	1709607-08	1.25	9/27/17 17:12	26093-1.RAW	#####	33.87	1		33.9	0.092	0.115	ng/L	
Hq2700-1	DM2	SAM	1709607-09	1.25	9/27/17 17:23	26094-1.RAW	#####	33.50	1		33.5	0.091	0.114	ng/L	
Hq2700-1	DM2	SAM	1709607-10	1.25	9/27/17 17:33	26095-1.RAW	#####	2020.67	1		2020.7	5.501	6.876	ng/L	
Hq2700-1	DM2	CAL	SEQ-CCV2	1	9/27/17 17:44	26096-1.RAW	#####	203.96			204.0	0.482	0.482	ng/L	
Hq2700-1	DM2	CAL	SEQ-CCB2	1	9/27/17 17:54	26097-1.RAW	#####	1.64			1.6	0.004	0.004	ng/L	
Hq2700-1	DM2	SAM	1709607-11	1.25	9/27/17 18:05	26098-1.RAW	#####	3021.39	1		3021.4	8.225	10.281	ng/L	
Hq2700-1	DM2	SAM	1709607-12	1.25	9/27/17 18:15	26099-1.RAW	#####	2219.83	1		2219.8	6.043	7.553	ng/L	
Hq2700-1	DM2	SAM	1709608-01	1.25	9/27/17 18:26	26100-1.RAW	#####	44.68	1		44.7	0.122	0.152	ng/L	
Hq2700-1	DM2	SAM	1709608-03	1.25	9/27/17 18:36	26101-1.RAW	#####	69.49	1		69.5	0.189	0.236	ng/L	
Hq2700-1	DM2	SAM	1709609-02	1.25	9/27/17 18:47	26102-1.RAW	#####	2.11	1		2.1	0.006	0.007	ng/L	
Hq2700-1	DM2	SAM	1709609-03	1.25	9/27/17 18:57	26103-1.RAW	#####	1.47	1		1.5	0.004	0.005	ng/L	
Hq2700-1	DM2	SAM	1709609-04	1.25	9/27/17 19:08	26104-1.RAW	#####	18.90	1		18.9	0.051	0.064	ng/L	
Hq2700-1	DM2	SAM	1709609-05	1.25	9/27/17 19:18	26105-1.RAW	#####	21.23	1		21.2	0.058	0.072	ng/L	
Hq2700-1	DM2	SAM	1709609-06	1.25	9/27/17 19:29	26106-1.RAW	#####	11.38	1		11.4	0.031	0.039	ng/L	
Hq2700-1	DM2	SAM	1709609-08	1.25	9/27/17 19:39	26107-1.RAW	#####	11.47	1		11.5	0.031	0.039	ng/L	
Hq2700-1	DM2	CAL	SEQ-CCV3	1	9/27/17 19:50	26108-1.RAW	#####	195.85			195.9	0.463	0.463	ng/L	
Hq2700-1	DM2	CAL	SEQ-CCB3	1	9/27/17 20:00	26109-1.RAW	#####	0.00			0.0	0.000	0.000	ng/L	

Analysis Datasheet for Methyl Mercury in Soil/Tissue

Date of Analysis: September 27, 2017

Analyst: DM2

Instrument #: Hg2700-1

Units ng/L

LIMS Sequence #: 7I28016

Calibration Statistics:

LabNumber	n	True Val	Area	Uncorrected Response Factor	Corrected Peak Height	Corrected Response Factor	% Recovery
SEQ-CAL1	1	0.05 ng/L	19.47 units	389.45	19.47 units	389.45	92.1 %Rec
SEQ-CAL2	1	0.20 ng/L	77.12 units	385.58	77.12 units	385.58	91.2 %Rec
SEQ-CAL3	1	1.00 ng/L	410.94 units	410.94	410.94 units	410.94	97.2 %Rec
SEQ-CAL4	1	2.00 ng/L	849.48 units	424.74	849.48 units	424.74	100.5 %Rec
SEQ-CAL5	1	4.00 ng/L	2011.84 units	502.96	2011.84 units	502.96	119.0 %Rec
SEQ-CAL6	0						
SEQ-CAL7	0						
SEQ-CAL8	0						
SEQ-CAL9	0						

Corr. Mean RF	Corr. St Dev RF	Corr. RSD CF	Uncorr. Mean RF
422.73	+/- 47.61	11.3% RSD	422.73

Blanks:

LabNumber	n	Mean	Std Dev	Mean (ng/L)	Std Dev (ng/L)
SEQ-IBL	1	0.00 units		0.00 ng/L	#VALUE!

QUALITY ASSURANCE
PEER-REVIEWED

INITIALS: A. gharo

Preparation Blanks

Sample Type	Batch ID	n	Mean	Std Dev
BLK	1	3	0.377 ng/L	±0.653
BLK	2	0	0.000 ng/L	
BLK	3	0	0.000 ng/L	
BLK	4	0	0.000 ng/L	
BLK	5	0	0.000 ng/L	

Instrument	Analyst	Sample		Dilution	Analyzed	FileID	Run End	Uncorrected Response	Batch ID	No PB				Comments	
		Type	LabNumber							Correction?	RESP	InitialResult	FinalResult		InitialUnits
Hg2700-1	DM2	CAL	SEQ-IBL1	1	9/27/17 12:28	26066-1.RAW	12:28:42	0.00			0.0	0.000	0.000	ng/L	
Hg2700-1	DM2	CAL	SEQ-CAL1	1	9/27/17 12:39	26067-1.RAW	12:39:13	19.47			19.5	0.046	0.046	ng/L	
Hg2700-1	DM2	CAL	SEQ-CAL2	1	9/27/17 12:49	26068-1.RAW	12:49:43	77.12			77.1	0.182	0.182	ng/L	
Hg2700-1	DM2	CAL	SEQ-CAL3	1	9/27/17 13:00	26069-1.RAW	13:00:14	410.94			410.9	0.972	0.972	ng/L	
Hg2700-1	DM2	CAL	SEQ-CAL4	1	9/27/17 13:10	26070-1.RAW	13:10:45	849.48			849.5	2.009	2.009	ng/L	
Hg2700-1	DM2	CAL	SEQ-CAL5	1	9/27/17 13:21	26071-1.RAW	13:21:16	2011.84			2011.8	4.759	4.759	ng/L	
Hg2700-1	DM2	CAL	SEQ-ICV1	1	9/27/17 13:31	26072-1.RAW	13:31:46	222.72			222.7	0.527	0.527	ng/L	
Hg2700-1	DM2	CAL	SEQ-ICB1	1	9/27/17 13:42	26073-1.RAW	13:42:17	1.50			1.5	0.004	0.004	ng/L	
Hg2700-1	DM2	BLK	F709431-BLK1	1.25	9/27/17 13:52	26074-1.RAW	13:52:48	0.00		X	0.0	0.000	0.000	ng/L	
Hg2700-1	DM2	BLK	F709431-BLK2	1.25	9/27/17 14:03	26075-1.RAW	14:03:18	0.00		X	0.0	0.000	0.000	ng/L	
Hg2700-1	DM2	BLK	F709431-BLK3	1.25	9/27/17 14:13	26076-1.RAW	14:13:49	0.00		X	0.0	0.000	0.000	ng/L	
Hg2700-1	DM2	SAM	F709431-BS1	1.25	9/27/17 14:24	26077-1.RAW	14:24:20	324.65		X	324.6	0.768	0.960	ng/L	
Hg2700-1	DM2	SAM	F709431-BSD1	1.25	9/27/17 14:34	26078-1.RAW	14:34:50	353.24		X	353.2	0.836	1.045	ng/L	
Hg2700-1	DM2	SAM	F709431-DUP1	1.25	9/27/17 14:45	26079-1.RAW	14:45:21	24.09		X	24.1	0.057	0.071	ng/L	
Hg2700-1	DM2	SAM	F709431-MS1	1.25	9/27/17 14:55	26080-1.RAW	14:55:52	394.30		X	394.3	0.933	1.166	ng/L	
Hg2700-1	DM2	SAM	F709431-MSD1	1.25	9/27/17 15:06	26081-1.RAW	15:06:23	371.74		X	371.7	0.879	1.099	ng/L	
Hg2700-1	DM2	SAM	F709431-MS2	1.25	9/27/17 15:16	26082-1.RAW	15:16:54	428.95		X	429.0	1.015	1.268	ng/L	
Hg2700-1	DM2	SAM	F709431-MSD2	1.25	9/27/17 15:27	26083-1.RAW	15:27:25	426.99		X	427.0	1.010	1.263	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCV1	1	9/27/17 15:37	26084-1.RAW	15:37:56	215.80			215.8	0.510	0.510	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCB1	1	9/27/17 15:48	26085-1.RAW	15:48:26	0.00			0.0	0.000	0.000	ng/L	
Hg2700-1	DM2	SAM	1709607-01	1.25	9/27/17 15:58	26086-1.RAW	15:58:57	0.00		X	0.0	0.000	0.000	ng/L	
Hg2700-1	DM2	SAM	1709607-02	1.25	9/27/17 16:09	26087-1.RAW	16:09:28	0.00		X	0.0	0.000	0.000	ng/L	
Hg2700-1	DM2	SAM	1709607-03	1.25	9/27/17 16:19	26088-1.RAW	16:19:59	3.96		X	4.0	0.009	0.012	ng/L	
Hg2700-1	DM2	SAM	1709607-04	1.25	9/27/17 16:30	26089-1.RAW	16:30:29	281.44		X	281.4	0.666	0.832	ng/L	
Hg2700-1	DM2	SAM	1709607-05	1.25	9/27/17 16:41	26090-1.RAW	16:41:00	1314.94		X	1314.9	3.111	3.888	ng/L	
Hg2700-1	DM2	SAM	1709607-06	1.25	9/27/17 16:51	26091-1.RAW	16:51:31	680.41		X	680.4	1.610	2.012	ng/L	
Hg2700-1	DM2	SAM	1709607-07	1.25	9/27/17 17:02	26092-1.RAW	17:02:02	35.58		X	35.6	0.084	0.105	ng/L	
Hg2700-1	DM2	SAM	1709607-08	1.25	9/27/17 17:12	26093-1.RAW	17:12:32	33.87		X	33.9	0.080	0.100	ng/L	
Hg2700-1	DM2	SAM	1709607-09	1.25	9/27/17 17:23	26094-1.RAW	17:23:03	33.50		X	33.5	0.079	0.099	ng/L	
Hg2700-1	DM2	SAM	1709607-10	1.25	9/27/17 17:33	26095-1.RAW	17:33:34	2020.67		X	2020.7	4.780	5.975	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCV2	1	9/27/17 17:44	26096-1.RAW	17:44:05	203.96			204.0	0.482	0.482	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCB2	1	9/27/17 17:54	26097-1.RAW	17:54:35	1.64			1.6	0.004	0.004	ng/L	
Hg2700-1	DM2	SAM	1709607-11	1.25	9/27/17 18:05	26098-1.RAW	18:05:06	3021.39		X	3021.4	7.147	8.934	ng/L	
Hg2700-1	DM2	SAM	1709607-12	1.25	9/27/17 18:15	26099-1.RAW	18:15:37	2219.83		X	2219.8	5.251	6.564	ng/L	
Hg2700-1	DM2	SAM	1709608-01	1.25	9/27/17 18:26	26100-1.RAW	18:26:07	44.68		X	44.7	0.106	0.132	ng/L	
Hg2700-1	DM2	SAM	1709608-03	1.25	9/27/17 18:36	26101-1.RAW	18:36:38	69.49		X	69.5	0.164	0.205	ng/L	
Hg2700-1	DM2	SAM	1709609-02	1.25	9/27/17 18:47	26102-1.RAW	18:47:09	2.11		X	2.1	0.005	0.006	ng/L	
Hg2700-1	DM2	SAM	1709609-03	1.25	9/27/17 18:57	26103-1.RAW	18:57:40	1.47		X	1.5	0.003	0.004	ng/L	
Hg2700-1	DM2	SAM	1709609-04	1.25	9/27/17 19:08	26104-1.RAW	19:08:10	18.90		X	18.9	0.045	0.056	ng/L	
Hg2700-1	DM2	SAM	1709609-05	1.25	9/27/17 19:18	26105-1.RAW	19:18:41	21.23		X	21.2	0.050	0.063	ng/L	
Hg2700-1	DM2	SAM	1709609-06	1.25	9/27/17 19:29	26106-1.RAW	19:29:12	11.38		X	11.4	0.027	0.034	ng/L	
Hg2700-1	DM2	SAM	1709609-08	1.25	9/27/17 19:39	26107-1.RAW	19:39:43	11.47		X	11.5	0.027	0.034	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCV3	1	9/27/17 19:50	26108-1.RAW	19:50:13	195.85			195.9	0.463	0.463	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCB3	1	9/27/17 20:00	26109-1.RAW	20:00:44	0.00			0.0	0.000	0.000	ng/L	
Hg2700-1	DM2	BLK	F709436-BLK1	500	9/27/17 20:11	26110-1.RAW	20:11:15	0.96		1	1.0	0.002	1.131	ng/L	
Hg2700-1	DM2	BLK	F709436-BLK2	500	9/27/17 20:21	26111-1.RAW	20:21:46	0.00		1	0.0	0.000	0.000	ng/L	

Instrument	Analyst	Sample		Dilution	Analyzed	FileID	Run End	Uncorrected Response	Batch ID	No PB				Comments	
		Type	LabNumber							Correction?	RESP	InitialResult	FinalResult		InitialUnits
Hg2700-1	DM2	BLK	F709436-BLK3	500	9/27/17 20:32	26112-1.RAW	20:32:16	0.00	1		0.0	0.000	0.000	ng/L	
Hg2700-1	DM2	SAM	F709436-BS1	1000	9/27/17 20:42	26113-1.RAW	20:42:47	580.56	1		580.6	1.373	1372.967	ng/L	
Hg2700-1	DM2	SAM	F709436-BS1	1000	9/27/17 20:53	26114-1.RAW	20:53:18	633.79	1		633.8	1.499	1498.880	ng/L	
Hg2700-1	DM2	SAM	1709529-01	500	9/27/17 21:03	26115-1.RAW	21:03:49	36.24	1		36.2	0.085	42.482	ng/L	
Hg2700-1	DM2	SAM	1709529-02	500	9/27/17 21:14	26116-1.RAW	21:14:19	35.00	1		35.0	0.082	41.022	ng/L	
Hg2700-1	DM2	SAM	1709529-03	500	9/27/17 21:24	26117-1.RAW	21:24:50	37.86	1		37.9	0.089	44.407	ng/L	
Hg2700-1	DM2	SAM	1709529-04	500	9/27/17 21:35	26118-1.RAW	21:35:21	69.67	1		69.7	0.164	82.028	ng/L	
Hg2700-1	DM2	SAM	1709529-05	500	9/27/17 21:45	26119-1.RAW	21:45:52	66.58	1		66.6	0.157	78.376	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCV4	1	9/27/17 21:56	26120-1.RAW	21:56:22	180.47			180.5	0.427	0.427	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCB4	1	9/27/17 22:06	26121-1.RAW	22:06:53	0.00			0.0	0.000	0.000	ng/L	
Hg2700-1	DM2	SAM	1709529-06	500	9/27/17 22:17	26122-1.RAW	22:17:24	75.88	1		75.9	0.179	89.377	ng/L	
Hg2700-1	DM2	SAM	1709583-01	500	9/27/17 22:27	26123-1.RAW	22:27:55	28.61	1		28.6	0.067	33.467	ng/L	
Hg2700-1	DM2	SAM	1709583-02	500	9/27/17 22:38	26124-1.RAW	22:38:25	22.70	1		22.7	0.053	26.473	ng/L	
Hg2700-1	DM2	SAM	1709583-03	500	9/27/17 22:48	26125-1.RAW	22:48:56	27.55	1		27.5	0.064	32.204	ng/L	
Hg2700-1	DM2	SAM	1709607-13	500	9/27/17 22:59	26126-1.RAW	22:59:27	57.28	1		57.3	0.135	67.374	ng/L	
Hg2700-1	DM2	SAM	1709607-14	500	9/27/17 23:09	26127-1.RAW	23:09:58	35.45	1		35.4	0.083	41.548	ng/L	
Hg2700-1	DM2	SAM	1709607-15	500	9/27/17 23:20	26128-1.RAW	23:20:28	55.04	1		55.0	0.129	64.725	ng/L	
Hg2700-1	DM2	SAM	1709607-16	500	9/27/17 23:30	26129-1.RAW	23:30:59	46.35	1		46.3	0.109	54.440	ng/L	
Hg2700-1	DM2	SAM	1709607-17	500	9/27/17 23:41	26130-1.RAW	23:41:30	42.75	1		42.7	0.100	50.182	ng/L	
Hg2700-1	DM2	SAM	1709607-18	500	9/27/17 23:52	26131-1.RAW	23:52:01	53.56	1		53.6	0.126	62.970	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCV5	1	9/27/17 0:02	26132-1.RAW	0:02:30	203.56			203.6	0.482	0.482	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCB5	1	9/27/17 0:13	26133-1.RAW	0:13:00	0.00			0.0	0.000	0.000	ng/L	
Hg2700-1	DM2	SAM	1709609-13	500	9/27/17 0:23	26134-1.RAW	0:23:31	33.20	1		33.2	0.078	38.890	ng/L	
Hg2700-1	DM2	SAM	1709609-14	500	9/27/17 0:34	26135-1.RAW	0:34:01	22.99	1		23.0	0.054	26.816	ng/L	
Hg2700-1	DM2	SAM	1709609-15	500	9/27/17 0:44	26136-1.RAW	0:44:32	15.01	1		15.0	0.035	17.373	ng/L	
Hg2700-1	DM2	SAM	1709609-16	500	9/27/17 0:55	26137-1.RAW	0:55:03	22.35	1		22.4	0.052	26.062	ng/L	
Hg2700-1	DM2	SAM	1709609-17	500	9/27/17 1:05	26138-1.RAW	1:05:34	20.42	1		20.4	0.048	23.776	ng/L	
Hg2700-1	DM2	SAM	F709436-DUP1	500	9/27/17 1:16	26139-1.RAW	1:16:04	35.19	1		35.2	0.082	41.241	ng/L	
Hg2700-1	DM2	SAM	F709436-MS1	500	9/27/17 1:26	26140-1.RAW	1:26:35	529.41	1		529.4	1.252	625.794	ng/L	
Hg2700-1	DM2	SAM	F709436-MSD1	500	9/27/17 1:37	26141-1.RAW	1:37:06	571.09	1		571.1	1.350	675.093	ng/L	
Hg2700-1	DM2	SAM	F709436-MS2	500	9/27/17 1:47	26142-1.RAW	1:47:36	585.75	1		585.8	1.385	692.436	ng/L	
Hg2700-1	DM2	SAM	F709436-MSD2	500	9/27/17 1:58	26143-1.RAW	1:58:07	591.28	1		591.3	1.398	698.970	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCV6	1	9/27/17 2:08	26144-1.RAW	2:08:38	213.87			213.9	0.506	0.506	ng/L	
Hg2700-1	DM2	CAL	SEQ-CCB6	1	9/27/17 2:19	26145-1.RAW	2:19:08	0.00			0.0	0.000	0.000	ng/L	

ANALYSIS SEQUENCE

7I28014

QUALITY ASSURANCE
PEER-REVIEWED

Instrument: Hg2700-1

Calibration ID: UNASSIGNED

INITIALS: *R 9/29/17* Analyzed: 9/27/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
7I28014-IBL1 ✓	QC	1			
7I28014-CAL1 ✓	QC	2	1704180	✓	
7I28014-CAL2 ✓	QC	3	1704181	✓	
7I28014-CAL3 ✓	QC	4	1704182	✓	
7I28014-CAL4 ✓	QC	5	1704183	✓	
7I28014-CAL5 ✓	QC	6	1704184	✓	
7I28014-ICV1 ✓	QC	7	1705084	✓	
7I28014-ICB1 ✓	QC	8			
F709431-BLK1 ✓	QC	9			
F709431-BLK2 ✓	QC	10			
F709431-BLK3 ✓	QC	11			
F709431-BS1 ✓	QC	12			
F709431-BSD1 ✓	QC	13			
F709431-DUP1 ✓	QC	14			
F709431-MS1 ✓	QC	15			
F709431-MSD1 ✓	QC	16			
F709431-MS2 ✓	QC	17			
F709431-MSD2 ✓	QC	18			
7I28014-CCV1 ✓	QC	19	1705084	✓	
7I28014-CCB1 ✓	QC	20			
1709607-01 ✓	MHg-CVAFS-W-Dist	21			
1709607-02 ✓	MHg-CVAFS-W-Dist	22			
1709607-03 ✓	MHg-CVAFS-W-Dist	23			
1709607-04 ✓	MHg-CVAFS-W-Dist	24			
1709607-05 ✓	MHg-CVAFS-W-Dist	25			
1709607-06 ✓	MHg-CVAFS-W-Dist	26			
1709607-07 ✓	MHg-CVAFS-W-Dist	27			
1709607-08 ✓	MHg-CVAFS-W-Dist	28			
1709607-09 ✓	MHg-CVAFS-W-Dist	29			
1709607-10 ✓	MHg-CVAFS-W-Dist	30			
7I28014-CCV2 ✓	QC	31	1705084	✓	
7I28014-CCB2 ✓	QC	32			
1709607-11 ✓	MHg-CVAFS-W-Dist	33			
1709607-12 ✓	MHg-CVAFS-W-Dist	34			
1709608-01 ✓	MHg-CVAFS-W-Dist	35			Scan all data for level IV report

Due Date: 10/6/2017

ANALYSIS SEQUENCE

7I28014

Instrument: Hg2700-1

Calibration ID: UNASSIGNED

Analyzed: 9/27/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
1709608-03 ✓	MHg-CVAFS-W-Dist	36			Scan all data for level IV report
1709609-02 ✓	MHg-CVAFS-W-Dist	37			
1709609-03 ✓	MHg-CVAFS-W-Dist	38			
1709609-04 ✓	MHg-CVAFS-W-Dist	39			
1709609-05 ✓	MHg-CVAFS-W-Dist	40			
1709609-06 ✓	MHg-CVAFS-W-Dist	41			
1709609-08 ✓	MHg-CVAFS-W-Dist	42			
7I28014-CCV3 ✓	QC	43	1705084 ✓		
7I28014-CCB3 ✓	QC	44			

 Dan Makem 9/27/17
 Samples Loaded By Date

 Dan Makem 9/28/17
 Data Processed By Date

PREPARATION BENCH SHEET

F709431

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: Hg Aquatic/Solids - EFGS-013 Methyl Hg Distillation for Water

Prepared: 9/26/2017

Lab Number	Sample ID and Source Sample	Initial (mL)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709431-BLK1	Blank	45	40					
F709431-BLK2	Blank	45	40					
F709431-BLK3	Blank	45	40					
F709431-BS1	Blank Spike	45	40	1704143	45			
F709431-BSD1	Blank Spike	45	40	1704143	45			
F709431-DUP1	Duplicate [1709608-01]	45	40					
F709431-MS1	Matrix Spike [1709608-01]	45	40	1704143	45			
F709431-MS2	Matrix Spike [1709608-03]	45	40	1704143	45			
F709431-MSD1	Matrix Spike Dup [1709608-01]	45	40	1704143	45			
F709431-MSD2	Matrix Spike Dup [1709608-03]	45	40	1704143	45			

<u>Standard ID(s):</u> 1704143	<u>Description:</u> MHg New Primary 1.0 ng/mL CAL	<u>Expiration:</u> 10-Oct-17 00:00	<u>Reagent ID(s):</u> 1704707	<u>Description:</u> Acetate Buffer	<u>Expiration:</u> 29-Jan-18 00:00
			1705248	Ethylating Agent (For Methyl Mercury Analysis)	03-Feb-18 00:00
			1705774	APDC	03-Oct-17 00:00
			1705775	0.4% HCl Distillation Dilute (Made Daily)	27-Sep-17 00:00
			1705795	2.5% Ascorbic Acid	04-Oct-17 00:00

PREPARATION BENCH SHEET

F709431

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: Hg Aquatic/Solids - EFGS-013 Methyl Hg Distillation for Water

Prepared: 9/26/2017

Lab Number	Sample ID	Initial (mL)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709607-01	WW1A BU51_09122017_Leach_EHS_R1	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-02	WW1B BU51_09122017_Leach_EHS_R2	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-03	WW1C BU51_09122017_Leach_EHS_R3	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-04	WW1D BU51_09122017_Leach_EHS_R4	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-05	WW1E BU51_09122017_Leach_EHS_R5	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-06	WW1F BU51_09122017_Leach_EHS_R6	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-07	WW1G BU51_09122017_Leach_ELS_R1	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-08	WW1H BU51_09122017_Leach_ELS_R2	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-09	WW1I BU51_09122017_Leach_ELS_R3	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-10	WW1J BU51_09122017_Leach_ELS_R4	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-11	WW1K BU51_09122017_Leach_ELS_R5	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-12	WW1L BU51_09122017_Leach_ELS_R6	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709608-01	OL-2761-01	45	40	-	-	-	2 Preservation blanks created due to >2	
1709608-03	OL-2761-02	45	40	-	-	-	2 Preservation blanks created due to >2	
1709609-02	WW2B FF52_091317_Leach_EHS_R2	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-03	WW2C FF52_091317_Leach_EHS_R3	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-04	WW2D FF52_091317_Leach_EHS_R4	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-05	WW2E FF52_091317_Leach_EHS_R5	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-06	WW2F FF52_091317_Leach_EHS_R6	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	

Due Date: 10/6/2017

PREPARATION BENCH SHEET

F709431

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: Hg Aquatic/Solids - EFGS-013 Methyl Hg Distillation for Water

Prepared: 9/26/2017

1709609-08	WW2H FF52_091317_Leach_ELS_R2	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6
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PREPARATION BENCH SHEET

F709431

Eurofins Frontier Global Sciences, Inc.

2700-1
9/27/17 DM

Matrix: Water

Prepared using: Hg Aquatic/Solids - EFGS-013 Methyl Hg Distillation for Water

Prepared: 9/26/2017

Lab Number	Sample ID and Source Sample	Initial (mL)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709431-BLK1	Blank	45	40					1.25X
F709431-BLK2	Blank	45	40					1.25X
F709431-BLK3	Blank	45	40					1.25X
F709431-BS1	Blank Spike	45	40	1704143	45			1.25X
F709431-BSD1	Blank Spike	45	40	1704143	45			1.25X
F709431-DUP1	Duplicate [1709608-01]	45	40					1.25X
F709431-MS1	Matrix Spike [1709608-01]	45	40	1704143	45			1.25X
F709431-MS2	Matrix Spike [1709608-03]	45	40	1704143	45			1.25X
F709431-MSD1	Matrix Spike Dup [1709608-01]	45	40	1704143	45			1.25X
F709431-MSD2	Matrix Spike Dup [1709608-03]	45	40	1704143	45			1.25X

Standard ID(s): 1704143
Description: MHg New Primary 1.0 ng/mL CAL

Expiration: 10-Oct-17 00:00

Reagent ID(s): 1705774, 1705775
Description: APDC, 0.4% HCl Distillation Dilute (Made Daily)

Expiration: 03-Oct-17 00:00, 27-Sep-17 00:00

1705795
1704707
1705248

Due Date: 10/6/2017

PREPARATION BENCH SHEET

F709431

Eurofins Frontier Global Sciences, Inc.

2720-1
9/27/17 DM

Matrix: Water

Prepared using: Hg Aquatic/Solids - EFGS-013 Methyl Hg Distillation for Water

Prepared: 9/26/2017

Lab Number	Sample ID	Initial (mL)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709607-01	WW1A BU51_09122017_Leach_EHS_R1	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709607-02	WW1B BU51_09122017_Leach_EHS_R2	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709607-03	WW1C BU51_09122017_Leach_EHS_R3	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709607-04	WW1D BU51_09122017_Leach_EHS_R4	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709607-05	WW1E BU51_09122017_Leach_EHS_R5	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709607-06	WW1F BU51_09122017_Leach_EHS_R6	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709607-07	WW1G BU51_09122017_Leach_ELS_R1	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709607-08	WW1H BU51_09122017_Leach_ELS_R2	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709607-09	WW1I BU51_09122017_Leach_ELS_R3	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709607-10	WW1J BU51_09122017_Leach_ELS_R4	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709607-11	WW1K BU51_09122017_Leach_ELS_R5	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709607-12	WW1L BU51_09122017_Leach_ELS_R6	45	40	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1.25X
1709608-01	OL-2761-01	45	40	-	-	-	2 Preservation blanks created due to >2	1.25X
1709608-03	OL-2761-02	45	40	-	-	-	2 Preservation blanks created due to >2	1.25X
1709609-02	WW2B FF52_091317_Leach_EHS_R2	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1.25X
1709609-03	WW2C FF52_091317_Leach_EHS_R3	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1.25X
1709609-04	WW2D FF52_091317_Leach_EHS_R4	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1.25X
1709609-05	WW2E FF52_091317_Leach_EHS_R5	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1.25X
1709609-06	WW2F FF52_091317_Leach_EHS_R6	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1.25X

Due Date: 10/6/2017

PREPARATION BENCH SHEET

2700-1
9/27/17 DM

F709431

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: Hg Aquatic/Solids - EFGS-013 Methyl Hg Distillation for Water

Prepared: 9/26/2017

1709609-08	WW2H FF52_091317_Leach_ELS_R2	45	40	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1.25X
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Methyl Mercury Distillations (EPA 1630)

Name: Duyen Date: 9-26-17 Batch #: F709431 Sample Matrix: Water
 WO#: 1709607, 1709608, 1709609

The pH of the preserved sample must be documented before an aliquot is removed for preparation.

Digest #	Sample ID Number	Preserved pH	Sample Size (mL)	Final pH (≥3)	Time first sample distillation completed:
Blk1	F709431 Blk1	1.0	45	3.0	Spike ID: <u>1704143</u> Spike Amount: <u>45</u> µL Spike Witness: <u>Ber/26/17</u> Balance #: <u>2</u> Calibrated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Pipette #: <u>NW09653</u> Cal. Date: <u>9/20/17</u> Pipette #: <u>NW09643</u> Cal. Date: <u>9/26/17</u> Pipette #: <u>NW01152</u> Cal. Date: <u>9/19/17</u> APDC ID: <u>1705774</u> HCl ID: <u>1705775</u> Temperature: No set range as the temp. may be changed to keep flow rate of ≥10 mL per hour. Temperature is recorded for informational purposes only. Unit 1: <u>121.6</u> Unit 2: <u>122.0</u> Unit 3: <u>120.1</u> Unit 4: <u>121.3</u> Unit 5: <u>122.0</u> Unit 6: <u>122.0</u> Filtration sample is off 13:30 9/26/17 <u>us</u> Comments: <u>1709607.0 4, 5, 06 10, 11, 12, six samples was brown color 9/26/17 us</u> <u>F709431 Dup1 MS01 1709608 01 F709431 MS2 MS02 1709608-03 9/26/17 us</u>
Blk2	F709431 Blk2	1.0	45	3.0	
Blk3	F709431 Blk3	1.0	45	3.0	
BS1	F709431 BS1	1.0	45	3.0	
BS0	F709431 BS0	1.0	45	3.0	
1	1709607-01 B	1.0	45	3.0	
2	1709607-02 B	1.0	45	3.0	
3	1709607-03 B	1.0	45	3.0	
4	1709607-04 B	1.0	45	3.0	
5	1709607-05 B	1.0	45	3.0	
6	1709607-06 B	1.0	45	3.0	
7	1709607-07 B	1.0	45	3.0	
8	1709607-08 B	1.0	45	3.0	
9	1709607-09 B	1.0	45	3.0	
10	1709607-10 B	1.0	45	3.0	
11	1709607-11 B	1.0	45	3.0	
12	1709607-12 B	1.0	45	3.0	
13	1709608-01 B	1.0	45	3.0	
MS1	F709431-MS1	1.0	45	3.0	
MS01	F709431-MS01	1.0	45	3.0	
14	1709608-03 B	1.0	45	3.0	
MS2	F709431-MS2	1.0	45	3.0	
MS02	F709431-MS02	1.0	45	3.0	
15	1709609-01 B	1.0	45	3.0	
Dup	F709431-Dup1	1.0	45	3.0	
16	1709609-03 B	1.0	45	3.0	
17	1709609-04 B	1.0	45	3.0	
18	1709609-05 B	1.0	45	3.0	
19	1709609-06 B	1.0	45	3.0	
20	1709609-08 B	1.0	45	3.0	

Failing Data Report - 7I28014

Sample ID	Analysis	Result	MRL	Dup Result	Source Result	True Value	Units	% Rec.	Rec. LCL	Rec. UCL	RPD	RPD Limit	Over Cal	Failure	Qualifier
1709607-10	MHg-CVAFS-W-Dist	6.11	0.050				ng/L						FAIL-OVER	PASS	E -
1709607-11	MHg-CVAFS-W-Dist	9.14	0.050				ng/L						FAIL-OVER	PASS	E -
1709607-12	MHg-CVAFS-W-Dist	6.71	0.050				ng/L						FAIL-OVER	PASS	E -
F709431-DUP1	MHg-CVAFS-W-Dist	0.073	0.050	0.135	0.135		ng/L				59.9	35.00	PASS-OVER	FAIL-DUP	QR-07-

Don Mazem 9/28/17
 Analyst Reviewed By Date

[Signature] 9/29/17
 Peer Reviewed By Date

Peer Review Check List for MHg for CV-GC-AFS (SOP2808) 2017 Rev 6 (02/22/17)

Analyst: DON MORAN	Sequence #: 7I28014, 7I28016
Reviewer: <i>R 9/29/17</i>	Dataset ID #: MHG27001-170927-1, MHG27001-170927-2
Date: <i>9-28-17</i>	WO #: [REDACTED]
Batch #(s): F709431, F709436	Client(s): [REDACTED]

• Select the correct preparation method.

Additional Comments:

Analyte	Prep Method	Matrix
<input checked="" type="checkbox"/> MHg	SOP2797 MHg Distillation	Water
<input checked="" type="checkbox"/> MHg	SOP2986 KOH/MeOH Digest	Tissue
<input type="checkbox"/> MHg	SOP5134 MeCl Extraction	Sed/Soil
<input type="checkbox"/> DMHg	SOP2816 (None Accredited method)	ALL

Redigmt: F709436

*Redigmt: 1709607-10, 11, 12
1709608-01*

	Analyst Initials: <i>Dm</i>	Reviewer Initials: <i>R 9/29/17</i>
1. Compare Sample ID with Bench sheet/Sequence/Raw Data (Have all samples been imported?)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
2. Check for transcription errors from Excel spreadsheet (or Prep Bench sheet)/Raw data	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
(a) Reviewer: 100% of peak heights checked	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
(b) Are there peak height errors?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
(c) Error on a sample: Do peak heights, responses, & initial results match corrected data?	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/>
(d) Error on a Cal Pt, ICB/CCB, or PB: Has the data been reimported?	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/>
(e) Check standards & reagents in sequence & bench sheet for correct usage (i.e. expiries).	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> N/A <input checked="" type="checkbox"/>
(f) Check and compare masses (review-prep bench sheet)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> N/A <input checked="" type="checkbox"/>
(g) Check and compare initial and final volumes	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> N/A <input checked="" type="checkbox"/>
(h) Do aliquots and dilutions written on benchsheet match those in Excel?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> N/A <input checked="" type="checkbox"/>
(i) Is the pH>3.0 for all distilled samples? _____	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> N/A <input checked="" type="checkbox"/>
(j) Is the sequence #, analyst, date, and instrument # on the QC page?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
(k) Is the analysis status correct? (analyzed/initial review/reviewed)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
(l) Original prep bench sheet added to data package?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
(m) Benchsheet prep date MUST match actual prep date (check if re-shot vs re-extract)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
3. High QA? WO#(s)/Client(s): _____	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	<input checked="" type="checkbox"/>
4. Client specific QC? (if Yes, refer to Project Notes/LIMS)	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	<input checked="" type="checkbox"/>
(a) Have the QC requirements been met for all WO#s?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
5. 20 or fewer samples in batch? _____	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
(a) 3 PBs, 1 LCS/LCSD (or BS/BSD), 2 MS/MSD/MD per batch?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
(b) 1 CCV and 1 CCB every 10 analytical runs? _____	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/>
QA/QC Data Checked		
6. The calibration curve included a minimum of 5 Standards	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> N/A	<input checked="" type="checkbox"/>
Comments: _____		
7. 1st Calibration Standard % Recoveries (65-135%)	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> N/A	<input checked="" type="checkbox"/>
Comments: _____		
8. RSD CF (≤ 15%)	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL	<input checked="" type="checkbox"/>
Comments: _____		

Peer Review Check List for MHG for CV-GC-AFS (SOP2808) 2017 Rev 6 (02/22/17)

Analyst:	DON MORAN	Sequence #:	7I28014, 7I28016
Reviewer:	0 <i>A 9/29/17</i>	Dataset ID #:	MHG27001-170927-1, MHG27001-170927-2
Date:	9/28/2017	WO #:	
Batch #(s):	F709431, F709436	Client(s):	

Analyst Initials:

DM

Reviewer Initials:

AL 9/29/17

- | | | | |
|--|--|--|---|
| 9. ICV % Recoveries 67-133% | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input checked="" type="checkbox"/> |
| Comments: _____ | | | |
| 10. CCV % Recoveries 67-133% | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input checked="" type="checkbox"/> |
| Comments: _____ | | | |
| 11. Are the absolute value of the ICB and CCBs < PQL? | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input checked="" type="checkbox"/> |
| Comments: _____ | | | |
| 12. LCS/LCSD/CRM/BS/BSD % Recoveries (70-130%) | <input checked="" type="checkbox"/> PASS | <input checked="" type="checkbox"/> FAIL | <input checked="" type="checkbox"/> |
| Comments: F709436-BS1 FAILED. LOW RECOVERY | | | |
| 13. LCS/LCSD or BS/BSD RPD (< 25%) | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input checked="" type="checkbox"/> |
| Comments: _____ | | | |
| 14. Water: Average of Preparation Blanks < 0.045 ng/L and standard deviation of 0.015 ng/L? | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| Comments: _____ | | | |
| 15. Sediment/Tissue: Individually, are the Preparation Blanks < PQL for the matrix? | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| Comments: _____ | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input checked="" type="checkbox"/> |
| 16. Have Total Solids been applied? (If NO, please ensure that they are done or nearly done) | <input type="checkbox"/> YES | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| 17. Is the correct 'Source' designated for MD/MS/MSD? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> |
| 18. For digested preps: was there a spike witness signature & date on the prep bench sheet? | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| 19. MD RPD/MT RSD(< 35%) | <input checked="" type="checkbox"/> PASS | <input checked="" type="checkbox"/> FAIL | <input checked="" type="checkbox"/> |
| Comments: F709431-DUP1 FAILED. HIGH RPD | | | |
| 20. Is there one set of MS/MSD per every 10 samples? | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input checked="" type="checkbox"/> |
| Comments: _____ | | | |
| 21. MS/MSD RPD(< 35%) | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input checked="" type="checkbox"/> |
| Comments: _____ | | | |
| 22. MS (AS) % Recoveries (65-130%) | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input checked="" type="checkbox"/> |
| Comments: _____ | | | |
| 23. MSD (ASD) % Recoveries (65-130%) | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> FAIL | <input checked="" type="checkbox"/> |
| Comments: _____ | | | |
| 24. Spiked 1-5X ambient or 1-5X PQL (whichever is higher) (from EPA 1630) | <input checked="" type="checkbox"/> YES | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> |
| 25. Are all samples within instrument calibration range (or at maximum aliquot size)? | <input checked="" type="checkbox"/> YES | <input checked="" type="checkbox"/> NO | <input checked="" type="checkbox"/> |
| Comments: 1709607-10, 11, 12 ABOVE CALS. | | | |
| 26. For instrumental dilutions, is the dilution factor in excel correct? | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> NO | <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| Is the sample volume, diluents, and final volume of the dilution noted on benchsheet? | <input checked="" type="checkbox"/> PASS | <input type="checkbox"/> NO | <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| 27. Dissolved < Total metals (if applicable) | <input type="checkbox"/> PASS | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| Comments: _____ | | | |
| 28. Effluent < Influent metals (visually confirm if needed) | <input type="checkbox"/> PASS | <input type="checkbox"/> NO | <input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| Comments: _____ | | | |

Peer Review Check List for MHg for CV-GC-AFS (SOP2808) 2017 Rev 6 (02/22/17)

Analyst:	DON MORAN	Sequence #:	7I28014, 7I28016
Reviewer:	0 <i>R. G. [Signature]</i>	Dataset ID #:	MHG27001-170927-1, MHG27001-170927-2
Date:	9/28/2017	WO #:	[REDACTED]
Batch #(s):	F709431, F709436	Client(s):	[REDACTED]

Analyst Initials:

DM

Reviewer Initials:

R. G. [Signature]

29. Are re-runs noted with reason? Comments: _____	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> N/A	<input checked="" type="checkbox"/>
30. For failing QC (CCV, CCB, PB, BS/BSD, CAL): Was a bubbler and trap test run before the analytical run continued? Comments: _____	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> N/A	<input checked="" type="checkbox"/>
31. Do re-run results compare to initial analysis (< 35% RPD)? Comments: _____	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> N/A	<input checked="" type="checkbox"/>
32. Are qualifiers consistent with the data review flowcharts? Comments: _____	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/>
33. Have non-reportable samples been imported into LIMS and clicked to non-reportable? Comments: _____	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/>
34. Have re-extracts been created for non-reportable samples?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/>
35. Narrations in MMO box in LIMS? Comments: _____				
36. Are there any HIGH QA projects within the data? If so, place dataset to the QA office.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO		
37. Does the data set need scanning?	<input checked="" type="checkbox"/> YES		<input type="checkbox"/> N/A	<input checked="" type="checkbox"/>
Files located at: \\Cuprum\gen_admin\Quality Assurance\Training Master\DOCs				
38. Date of analyst IDOC/CDOC: <u>6/13/2017</u> IDOC/CDOC within last 12 months?	<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
39. Date of analyst's SOP reading: <u>5/23/2016</u> Current SOP revision?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>
40. Date of LOD: <u>4-24-17, 5-8-17</u> LOD within last 3 months (within 12 months for MDN)?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/>
41. Date of LOQ: <u>4-24-17, 5-8-17</u> LOQ within last 3 months (within 12 months for MDN)?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/>
42. If MDN samples, date of last MDL study: _____				
43. MDL study within last 12 months?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/>
Data can not be reported without a current IDOC/CDOC, LOD or LOQ.				
Additional Comments:	<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input checked="" type="checkbox"/>

ANALYSIS SEQUENCE

7128016

QUALITY ASSURANCE
PEER-REVIEWED

Instrument: Hg2700-1

Calibration ID: UNASSIGNED

INITIALS: a. ahm Analyzed: 9/27/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
7128016-IBL1 ✓	QC	1			
7128016-CAL1 ✓	QC	2	1704180 ✓		
7128016-CAL2 ✓	QC	3	1704181 ✓		
7128016-CAL3 ✓	QC	4	1704182 ✓		
7128016-CAL4 ✓	QC	5	1704183 ✓		
7128016-CAL5 ✓	QC	6	1704184 ✓		
7128016-ICV1 ✓	QC	7	1705084 ✓		
7128016-ICB1 ✓	QC	8			
7128016-CCV1	QC	9	1705084 ✓		
7128016-CCB1 ✓	QC	10			
7128016-CCV2 ✓	QC	11	1705084 ✓		
7128016-CCB2 ✓	QC	12			
7128016-CCV3 ✓	QC	13	1705084 ✓		
7128016-CCB3 ✓	QC	14			
F709436-BLK1 ✓	QC	15			
F709436-BLK2 ✓	QC	16			
F709436-BLK3 ✓	QC	17			
F709436-BS1 ✓	QC	18			
F709436-BSD1 ✓	QC	19			
1709529-01 ✓	MHg-CVAFS-S-KOH	20			
1709529-02 ✓	MHg-CVAFS-S-KOH	21			
1709529-03 ✓	MHg-CVAFS-S-KOH	22			
1709529-04 ✓	MHg-CVAFS-S-KOH	23			
1709529-05 ✓	MHg-CVAFS-S-KOH	24			
7128016-CCV4 ✓	QC	25	1705084 ✓		
7128016-CCB4 ✓	QC	26			
1709529-06 ✓	MHg-CVAFS-S-KOH	27			
1709583-01 ✓	MHg-CVAFS-S-KOH	28			
1709583-02 ✓	MHg-CVAFS-S-KOH	29			
1709583-03 ✓	MHg-CVAFS-S-KOH	30			
1709607-13 ✓	MHg-CVAFS-S-KOH	31			
1709607-14 ✓	MHg-CVAFS-S-KOH	32			
1709607-15 ✓	MHg-CVAFS-S-KOH	33			
1709607-16 ✓	MHg-CVAFS-S-KOH	34			
1709607-17 ✓	MHg-CVAFS-S-KOH	35			

Due Date: 10/11/2017

ANALYSIS SEQUENCE

7I28016

Instrument: Hg2700-1

Calibration ID: UNASSIGNED

Analyzed: 9/27/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
1709607-18 ✓	MHg-CVAFS-S-KOH	36			
7I28016-CCV5 ✓	QC	37	1705084 ✓		
7I28016-CCB5 ✓	QC	38			
1709609-13 ✓	MHg-CVAFS-S-KOH	39			
1709609-14 ✓	MHg-CVAFS-S-KOH	40			
1709609-15 ✓	MHg-CVAFS-S-KOH	41			
1709609-16 ✓	MHg-CVAFS-S-KOH	42			
1709609-17 ✓	MHg-CVAFS-S-KOH	43			
F709436-DUP1 ✓	QC	44			
F709436-MS1 ✓	QC	45			
F709436-MSD1 ✓	QC	46			
F709436-MS2 ✓	QC	47			
F709436-MSD2 ✓	QC	48			
7I28016-CCV6 ✓	QC	49	1705084		
7I28016-CCB6 ✓	QC	50			

Dan Moxem 9/27/17
Samples Loaded By Date

Dan Moxem 9/28/17
Data Processed By Date

PREPARATION BENCH SHEET

F709436

Euofins Frontier Global Sciences, Inc.

Matrix: Tissue

Prepared using: AFS - EFGS-010 KOH/Methanol Hg Digestion

Prepared: 9/26/2017

Lab Number	Sample ID and Source Sample	Initial (g)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709436-BLK1	Blank	0.25	20					
F709436-BLK2	Blank	0.25	20					
F709436-BLK3	Blank	0.25	20					
F709436-BS1	LCS	0.128	20	1703305	128			
F709436-BSD1	LCS Dup	0.128	20	1703305	128			
F709436-DUP1	Duplicate [1709529-01]	0.2732	20					
F709436-MS1	Matrix Spike [1709529-01]	0.2727	20	1605978	100			
F709436-MS2	Matrix Spike [1709529-04]	0.2565	20	1605978	100			
F709436-MSD1	Matrix Spike Dup [1709529-01]	0.2598	20	1605978	100			
F709436-MSD2	Matrix Spike Dup [1709529-04]	0.2656	20	1605978	100			

<u>Standard ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>	<u>Reagent ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>
1605978	MHg New Primary 100 ng/mL spike	15-Oct-17 00:00	1702696	Methanol, HPLC Grade	28-Apr-20 00:00
1703305	DORM-4	29-May-20 00:00	1704424	Boiling Chips for AFS prep	21-Jan-18 00:00
			1704707	Acetate Buffer	29-Jan-18 00:00
			1705052	25% KOH/Methanol	18-Feb-18 00:00
			1705248	Ethylating Agent (For Methyl Mercury Analysis)	03-Feb-18 00:00

PREPARATION BENCH SHEET

F709436

Eurofins Frontier Global Sciences, Inc.

Matrix: Tissue

Prepared using: AFS - EFGS-010 KOH/Methanol Hg Digestion

Prepared: 9/26/2017

Lab Number	Sample ID	Initial (g)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709529-01	FFBU_60WCH_091317_SED_05_R1	0.2724	20	-	-	-		
1709529-02	FFBU_60WCH_091317_SED_05_R2	0.2567	20	-	-	-		
1709529-03	FFBU_60WCH_091317_SED_05_R3	0.2659	20	-	-	-		
1709529-04	VN_25WCH_091217_SED_05_R1	0.2654	20	-	-	-		
1709529-05	VN_25WCH_091217_SED_05_R2	0.2554	20	-	-	-		
1709529-06	VN_25WCH_091217_SED_05_R3	0.2721	20	-	-	-		
1709583-01	BU_WCH_09122017_03_R1	0.2664	20	-	-	-		
1709583-02	BU_WCH_09122017_03_R2	0.2535	20	-	-	-		
1709583-03	BU_WCH_09122017_03_R3	0.2661	20	-	-	-		
1709607-13	WW1D BU51_09122017_Leach_EHS_R4	0.2573	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-14	WW1E BU51_09122017_Leach_EHS_R5	0.2793	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-15	WW1F BU51_09122017_Leach_EHS_R6	0.2607	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-16	WW1J BU51_09122017_Leach_ELS_R4	0.2606	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-17	WW1K BU51_09122017_Leach_ELS_R5	0.2653	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-18	WW1L BU51_09122017_Leach_ELS_R6	0.2786	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709609-13	WW2D FF52_091317_Leach_EHS_R4	0.2591	20	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-14	WW2E FF52_091317_Leach_EHS_R5	0.2731	20	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-15	WW2F FF52_091317_Leach_EHS_R6	0.2579	20	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-16	WW2J FF52_091317_Leach_ELS_R4	0.2545	20	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	

Due Date: 10/11/2017

PREPARATION BENCH SHEET

F709436

Eurofins Frontier Global Sciences, Inc.

Matrix: Tissue

Prepared using: AFS - EFGS-010 KOH/Methanol Hg Digestion

Prepared: 9/26/2017

1709609-17	WW2K FF52_091317_Leach_ELS_R5	0.2611	20	-	-	-	Wood Chip 1709529-01->03 - FFBU_6
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PREPARATION BENCH SHEET

2700-1
9/27/17 DM

F709436

Eurofins Frontier Global Sciences, Inc.

Matrix: Tissue

Prepared using: AFS - EFGS-010 KOH/Methanol Hg Digestion

Prepared: 9/26/2017

Lab Number	Sample ID and Source Sample	Initial (g)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709436-BLK1	Blank	0.25	20					500X
F709436-BLK2	Blank	0.25	20					500X
F709436-BLK3	Blank	0.25	20					500X
F709436-BS1	LCS	0.128	20	1703305	128			1000X
F709436-BSD1	LCS Dup	0.128	20	1703305	128			1000X
F709436-DUP1	Duplicate [1709529-01]	0.2732	20					500X
F709436-MS1	Matrix Spike [1709529-01]	0.2727	20	1605978	100			500X
F709436-MS2	Matrix Spike [1709529-04]	0.2565	20	1605978	100			500X
F709436-MSD1	Matrix Spike Dup [1709529-01]	0.2598	20	1605978	100			500X
F709436-MSD2	Matrix Spike Dup [1709529-04]	0.2656	20	1605978	100			500X

<u>Standard ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>	<u>Reagent ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>
1605978	MHg New Primary 100 ng/mL spike	15-Oct-17 00:00	1702696	Methanol, HPLC Grade	28-Apr-20 00:00
1703305	DORM-4	29-May-20 00:00	1704424	Boiling Chips for AFS prep	21-Jan-18 00:00
			1705052	25% KOH/Methanol	18-Feb-18 00:00

1704707
1705248

PREPARATION BENCH SHEET

2700-1
9/27/17 DM

F709436

Eurofins Frontier Global Sciences, Inc.

Matrix: Tissue

Prepared using: AFS - EFGS-010 KOH/Methanol Hg Digestion

Prepared: 9/26/2017

Lab Number	Sample ID	Initial (g)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709529-01	FFBU_60WCH_091317_SED_05_R1	0.2724	20	-	-	-		500x
1709529-02	FFBU_60WCH_091317_SED_05_R2	0.2567	20	-	-	-		500x
1709529-03	FFBU_60WCH_091317_SED_05_R3	0.2659	20	-	-	-		500x
1709529-04	VN_25WCH_091217_SED_05_R1	0.2654	20	-	-	-		500x
1709529-05	VN_25WCH_091217_SED_05_R2	0.2554	20	-	-	-		500x
1709529-06	VN_25WCH_091217_SED_05_R3	0.2721	20	-	-	-		500x
1709583-01	BU_WCH_09122017_03_R1	0.2664	20	-	-	-		500x
1709583-02	BU_WCH_09122017_03_R2	0.2535	20	-	-	-		500x
1709583-03	BU_WCH_09122017_03_R3	0.2661	20	-	-	-		500x
1709607-13	WW1D BU51_09122017_Leach_EHS_R4	0.2573	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	500x
1709607-14	WW1E BU51_09122017_Leach_EHS_R5	0.2793	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	500x
1709607-15	WW1F BU51_09122017_Leach_EHS_R6	0.2607	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	500x
1709607-16	WW1J BU51_09122017_Leach_ELS_R4	0.2606	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	500x
1709607-17	WW1K BU51_09122017_Leach_ELS_R5	0.2653	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	500x
1709607-18	WW1L BU51_09122017_Leach_ELS_R6	0.2786	20	-	-	-	Wood Chip 1709583-01->03 - BU_WC	500x
1709609-13	WW2D FF52_091317_Leach_EHS_R4	0.2591	20	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	500x
1709609-14	WW2E FF52_091317_Leach_EHS_R5	0.2731	20	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	500x
1709609-15	WW2F FF52_091317_Leach_EHS_R6	0.2579	20	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	500x
1709609-16	WW2J FF52_091317_Leach_ELS_R4	0.2545	20	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	500x

Due Date: 10/11/2017

PREPARATION BENCH SHEET

2700-1
9/27/17 DM

F709436

Eurofins Frontier Global Sciences, Inc.

Matrix: Tissue

Prepared using: AFS - EFGS-010 KOH/Methanol Hg Digestion

Prepared: 9/26/2017

1709609-17	WW2K FF52_091317_Leach_ELS_R5	0.2611	20	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	50X
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Technician: WRF Batch#: F 709436 Date: 9/26/17

- EFAFS-T-AFS-SOP2986** Tissues - Methyl Mercury - KOH/Methanol: **Hot plate 75±5°C for 2-4 hours.**
- EFAFS-T-AFS-SOP2795** Tissues - Total Mercury - 70:30: **Hot plate 75±5°C for two hours.**
- EFAFS-T-AFS-SOP5134** Sediments - Methyl Mercury - KBr/CH₂Cl₂: **Heat Block 45°C (nitrogen purge for 30 minutes).**
- EFAFS-T-AFS-SOP2807** Solids - Total Mercury - Cold AR: **18-25°C for over four hours.**

Other: _____ Vial Type: Glass Teflon
 Balance#: 19 Calibrated? Yes No Therm.#: 13698 Calibrated? Yes No
 *Time in: 18:00 Actual Temp. (raw): 76.0 °C w/ CF: 76.0 °C
 Time out: 21:00 Actual Temp. (raw): Timer °C w/ CF: Timer °C
 *Time in can't begin before target temperature is reached

Final vol.: 20 mL (LIMS ID: 1702696) Spike vol.: 100 µL (LIMS ID: 1605978)
 Spike Witness: AMB 9/26/17 (initial and date)

HCl LIMS ID: N/A Pipette SN#: NU09653 Calibration Date: 9/20/17
 HNO₃ LIMS ID: N/A Pipette SN#: NU01158 Calibration Date: 9/1 9/26/17
 70/30 LIMS ID: N/A Dispenser #: 02N48426 Calibrated? Yes No
 Other Acid LIMS ID: KOH/Methanol: 1705052 Dispenser #: N/A
 Glass Vial # 00D65276 Boiling Chip lot # 704424 *Hotblock Position: H4

Vial #	Sample ID Number	Sample Size <input type="checkbox"/> mL <input checked="" type="checkbox"/> g	Vial #	Sample ID Number	Sample Size <input type="checkbox"/> mL <input checked="" type="checkbox"/> g	CRM LIMS ID <input type="checkbox"/> NA
1	F709436 - Blk1	0.2620	23	1709607 - 16	0.2606	BS/BSD = DORM-4
2	F709436 - Blk2	0.2581	24	1709607 - 17	0.2653	LIMS = 1703305
3	F709436 - Blk3	0.2539	25	1709607 - 18	0.2786	
4	F709436 - BS1	0.1280	26	1709609 - 13	0.2591	Comments
5	F709436 - BSD1	0.1280	27	1709609 - 14	0.2731	DVPI, MSD1, MS1
6	1709529 - 01	0.2724	28	1709609 - 15	0.2579	source = 1709529-01
7	F709436 - DVPI	0.2732	29	1709609 - 16	0.2545	MS2, MS D2 source =
8	F709436 - MS1	0.2727	30	1709609 - 17	0.2611	1709529-04
9	F709436 - MSD1	0.2598	31			
10	1709529 - 02	0.2567	32			
11	1709529 - 03	0.2659	33			
12	1709529 - 04	0.2654	34			
13	F709436 - MS2	0.2565	35			
14	F709436 - MSD2	0.2656	36			
15	1709529 - 05	0.2554	37			
16	1709529 - 06	0.2721	38			
17	1709583 - 01	0.2664	39			
18	1709583 - 02	0.2535	40			
19	1709583 - 03	0.2661	41			
20	1709607 - 13	0.2573	42			
21	1709607 - 14	0.2793	43			
22	1709607 - 15	0.2607	44			

Failing Data Report - 7I28016

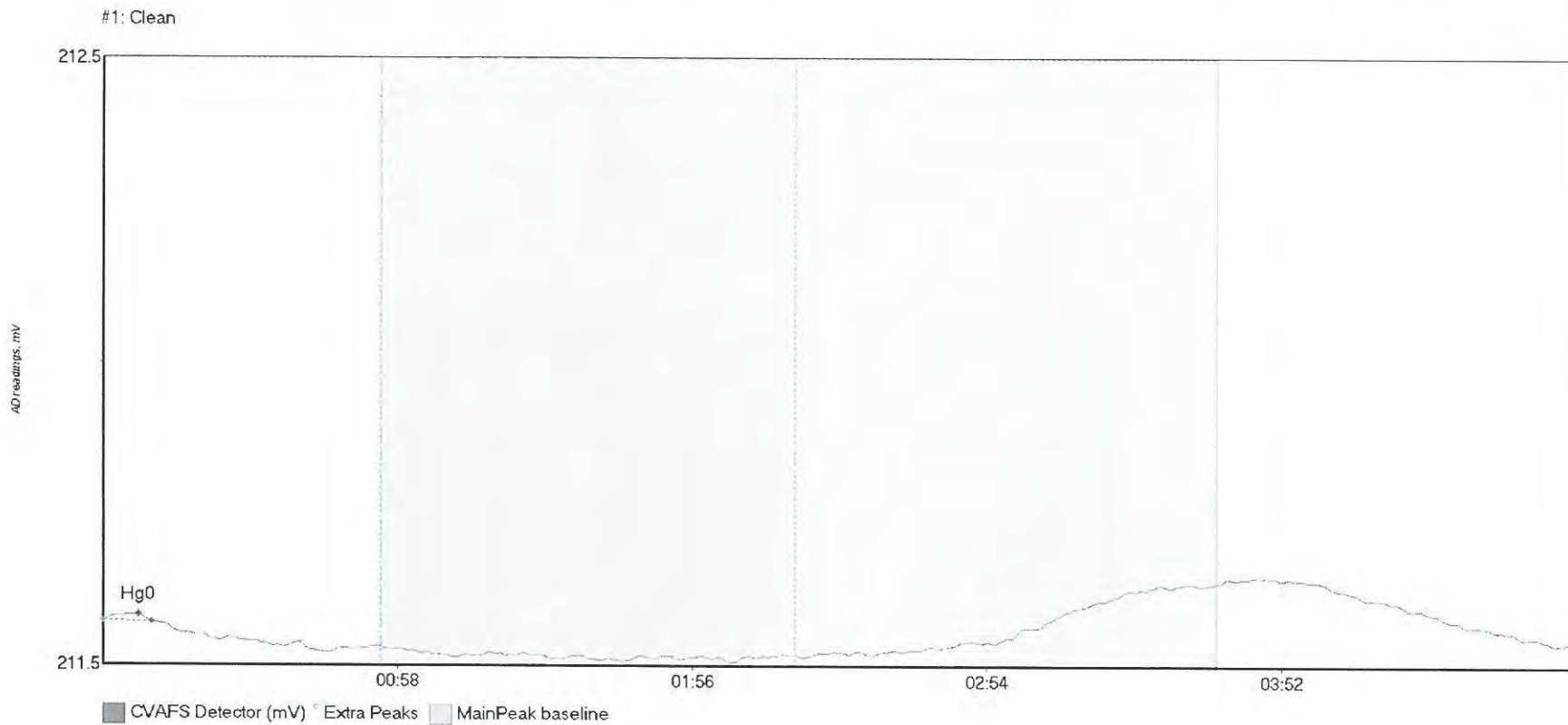
Sample ID	Analysis	Result	MRL	Dup Result	Source Result	True Value	Units	% Rec.	Rec. LCL	Rec. UCL	RPD	RPD Limit	Over Cal	Failure	Qualifier
F709436-BS1	MHg-CVAFS-S-KOH	214.5	7.8			330.28	ng/g	65.0	70.00	130.00			PASS-OVER	FAIL-BS	Redyit

Don Moeem 9/28/17
 Analyst Reviewed By Date

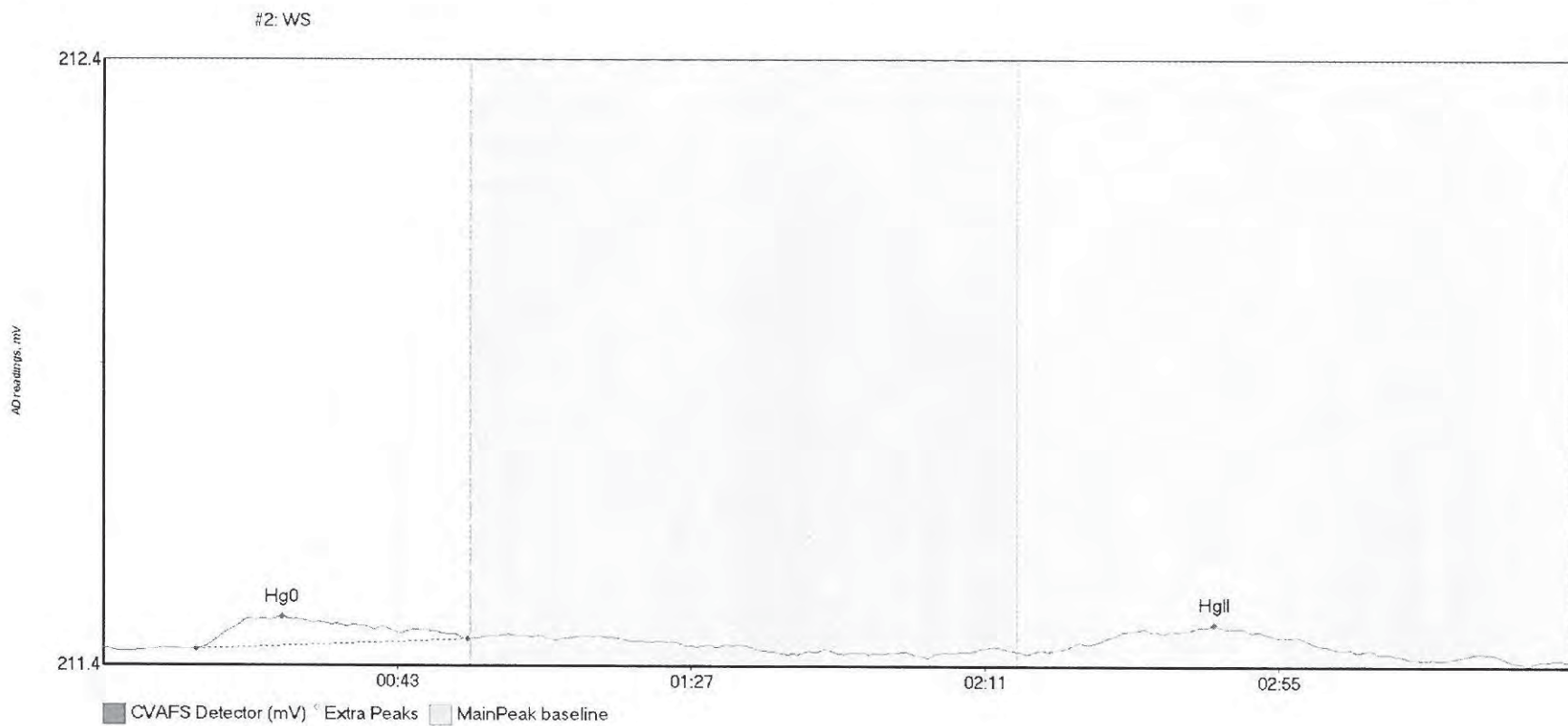
[Signature] 9/29/17
 Peer Reviewed By Date

1709609-17	A11	500
F709436-DUP1	A12	500
F709436-MS1	A13	500
F709436-MSD1	A14	500
F709436-MS2	A15	500
F709436-MSD2	A16	500
SEQ-CCV6	A17	1
SEQ-CCB6	A18	1

26138-1.RAW	1:05:34	26.36	20.42	1845.26	0.00	psample10	CT	1
26139-1.RAW	1:16:04	28.19	35.19	1486.50	0.00	psample10	CT	1
26140-1.RAW	1:26:35	24.40	529.41	1547.43	0.00	psample10	CT	1
26141-1.RAW	1:37:06	28.49	571.09	2061.06	0.00	psample10	CT	1
26142-1.RAW	1:47:36	21.39	585.75	1558.42	0.00	psample10	CT	1
26143-1.RAW	1:58:07	29.96	591.28	1377.39	0.00	psample10	OK	1
26144-1.RAW	2:08:38	12.88	713.87	12.85	0.00	psample10	CT	1
26145-1.RAW	2:19:08	8.16	0.00	6.05	0.00	psample10	OK	1

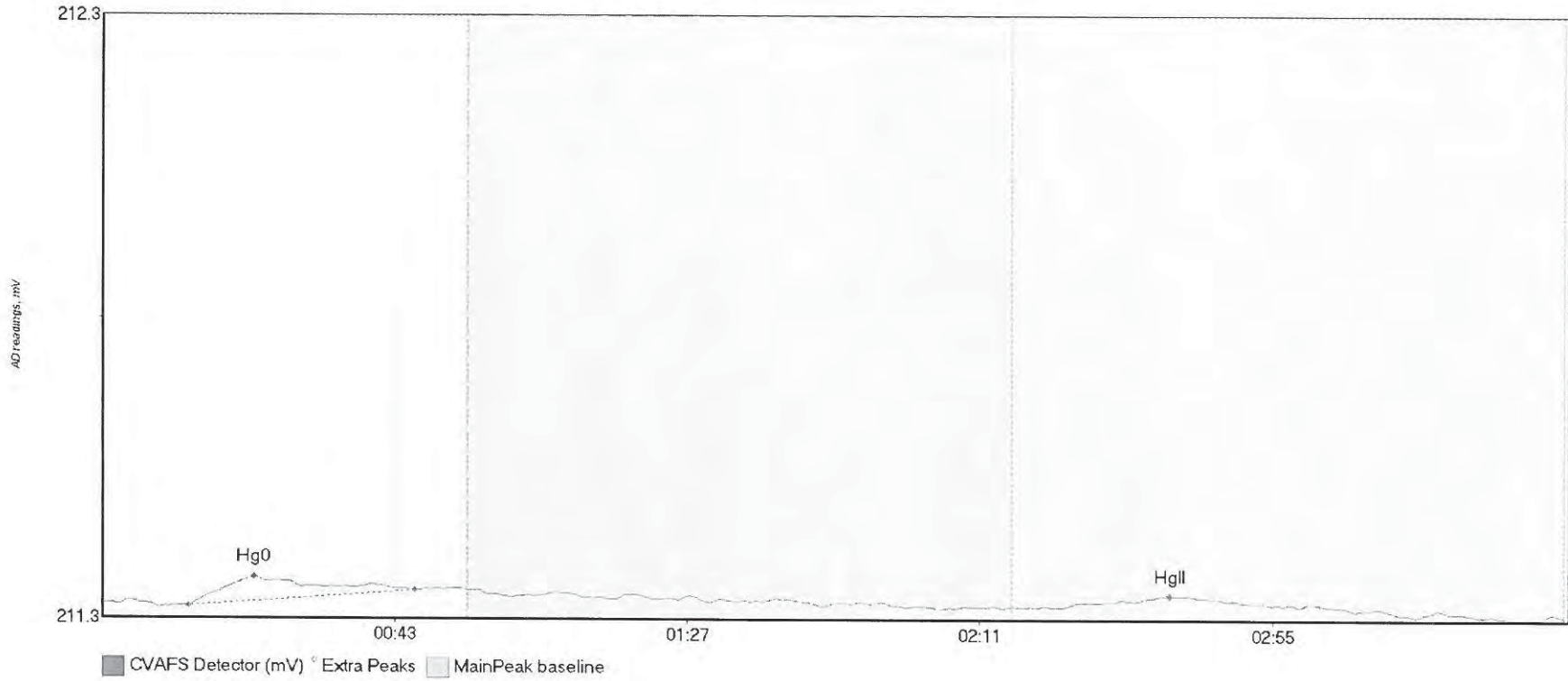


Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
Clean	0.744	0.0	9.7	211.58	211.58	6.9	0.011	NP	211.5799	0.00	-0.03	017



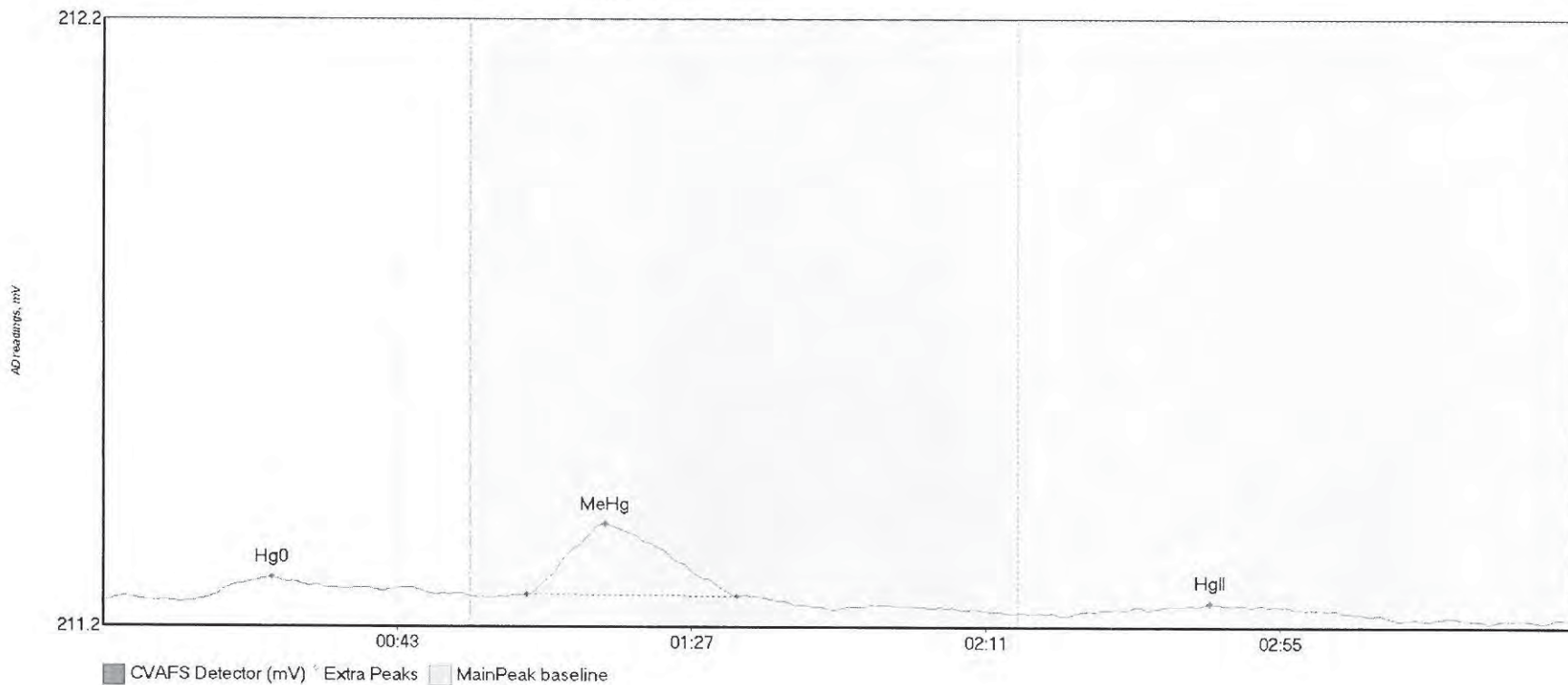
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
WS Hg0	11.154	13.9	54.6	211.41	211.43	26.7	0.053	OK	211.4118	0.00	-0.02	
WS HgII	9.783	143.1	184.9	211.41	211.41	166.3	0.040	OK	211.4118	0.00	-0.02	017

#3: SEQ-IBL1



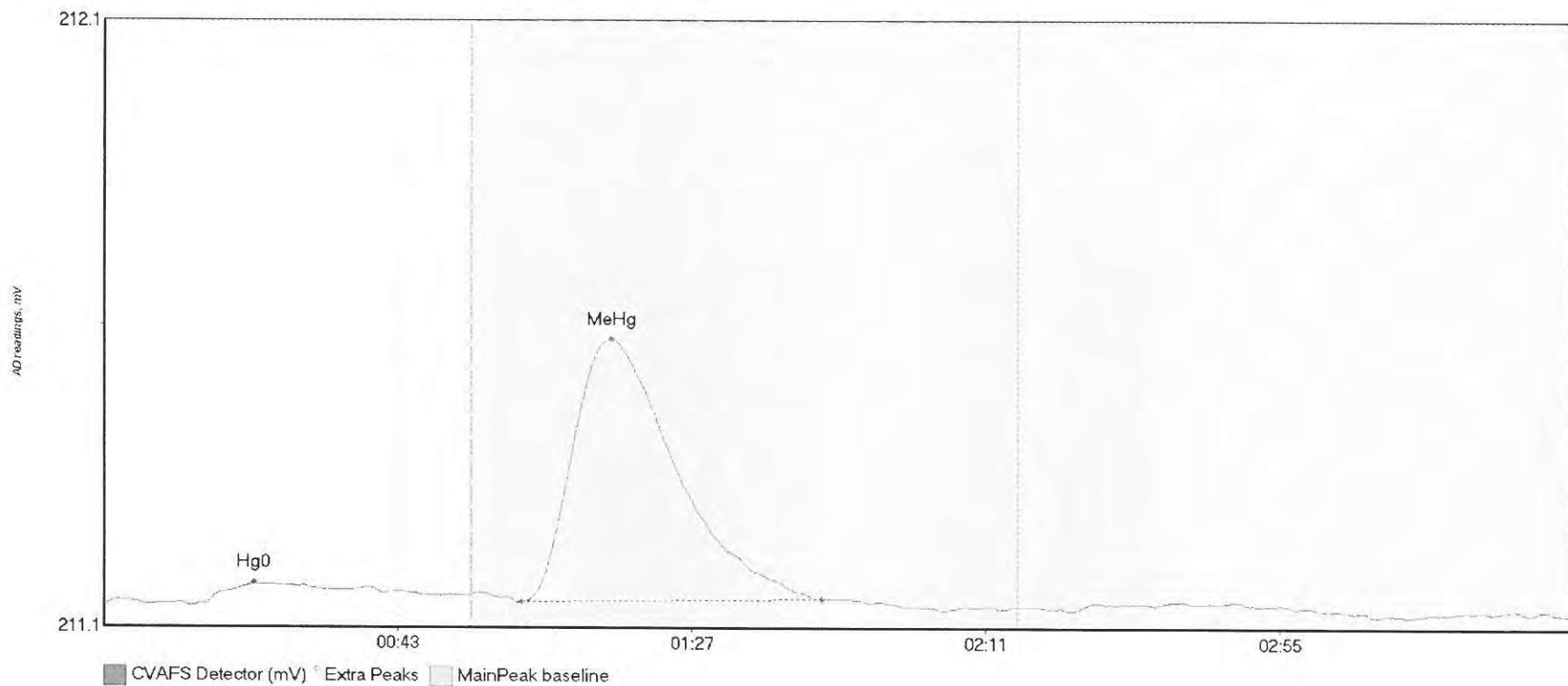
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-IBL1 Hg0	6.540	13.0	47.0	211.33	211.36	22.9	0.048	OK	211.3394	0.00	-0.02	
SEQ-IBL1 HgII	3.015	144.7	175.9	211.33	211.34	160.6	0.020	OK	211.3394	0.00	-0.02	017

#4: SEQ-CAL1



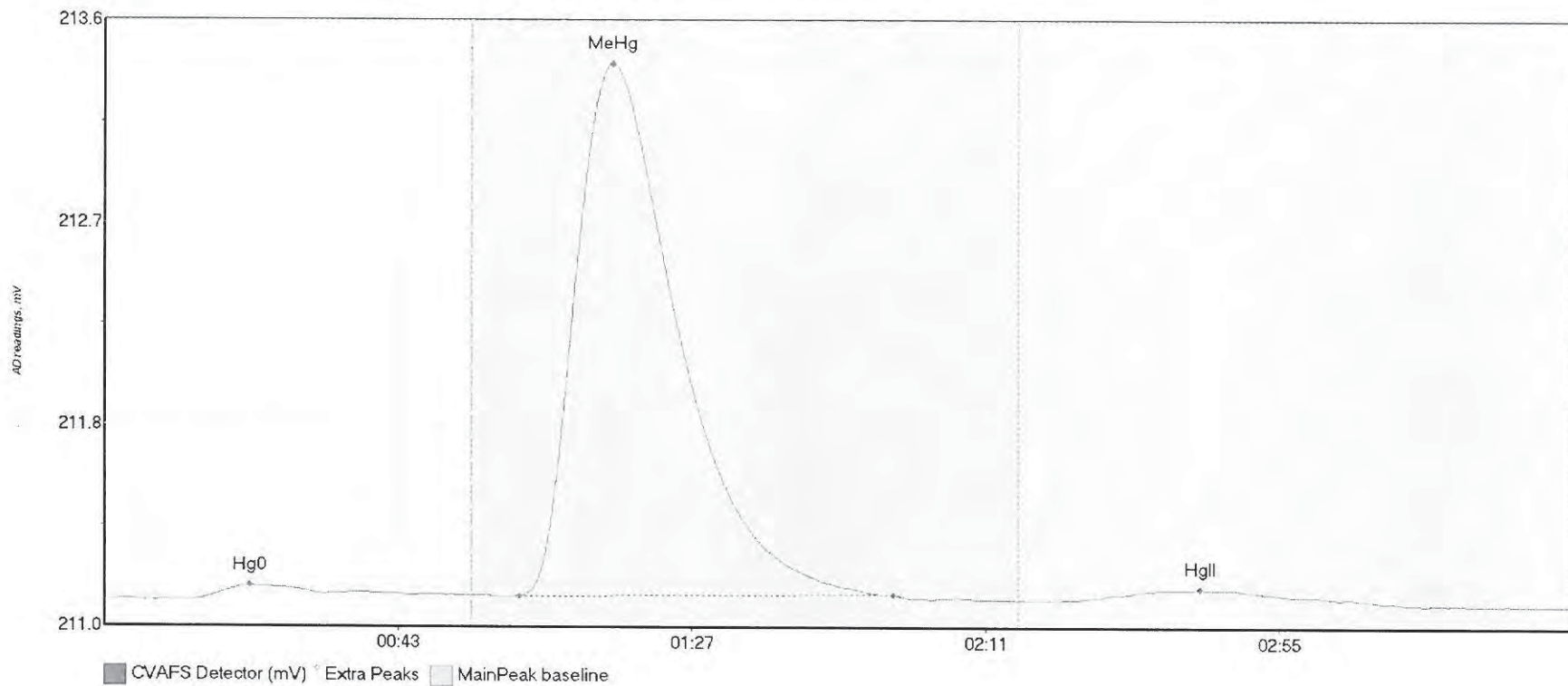
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CAL1 Hg0	6.471	14.9	55.0	211.26	211.27	25.3	0.034	CT	211.2618	0.00	-0.03	
SEQ-CAL1 MeHg	19.472	63.4	94.9	211.27	211.27	75.1	0.118	OK	211.2618	0.00	-0.03	017
SEQ-CAL1 HgII	2.221	148.4	182.9	211.24	211.24	165.6	0.013	OK	211.2618	0.00	-0.03	

#5: SEQ-CAL2



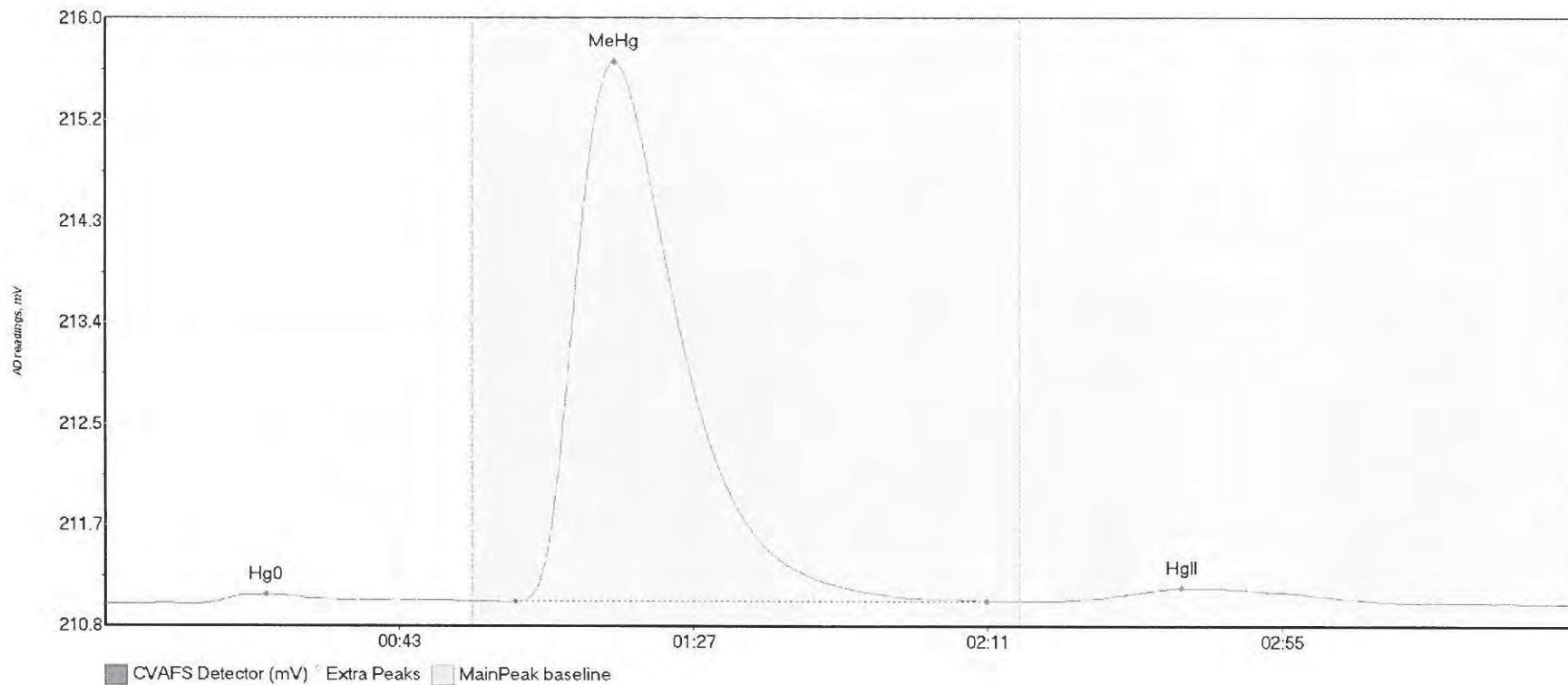
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CAL2 Hg0	5.940	15.1	54.1	211.16	211.17	22.5	0.032	OK	211.1602	0.00	-0.02	
SEQ-CAL2 MeHg	77.117	62.4	107.4	211.16	211.17	76.0	0.433	OK	211.1602	0.00	-0.02	017

#6: SEQ-CAL3



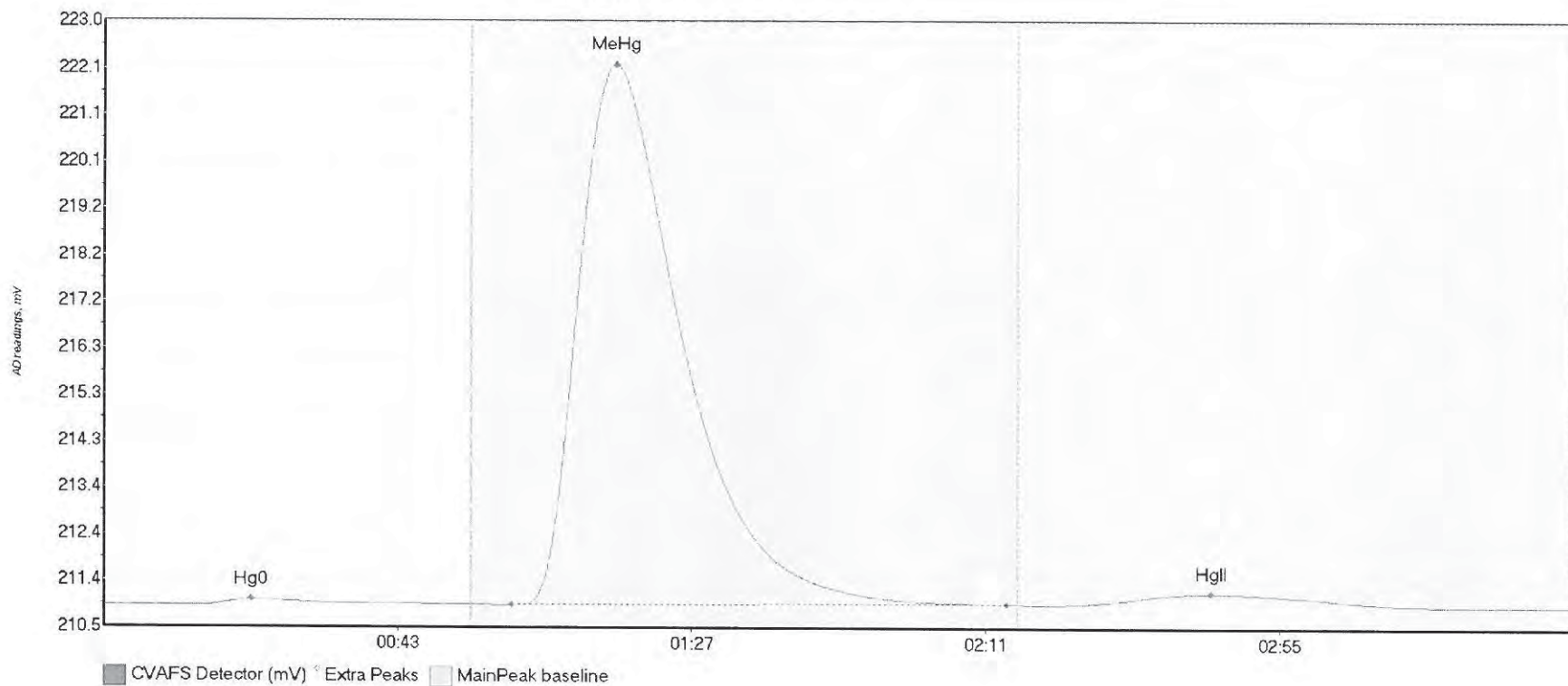
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CAL3 Hg0	9.992	12.8	54.9	211.07	211.09	21.8	0.063	OK	211.0693	0.00	-0.02	
SEQ-CAL3 MeHg	410.937	62.1	118.1	211.09	211.09	76.1	2.311	OK	211.0693	0.00	-0.02	
SEQ-CAL3 HgII	10.217	145.4	185.0	211.08	211.08	164.2	0.045	OK	211.0693	0.00	-0.02	

#7: SEQ-CAL4



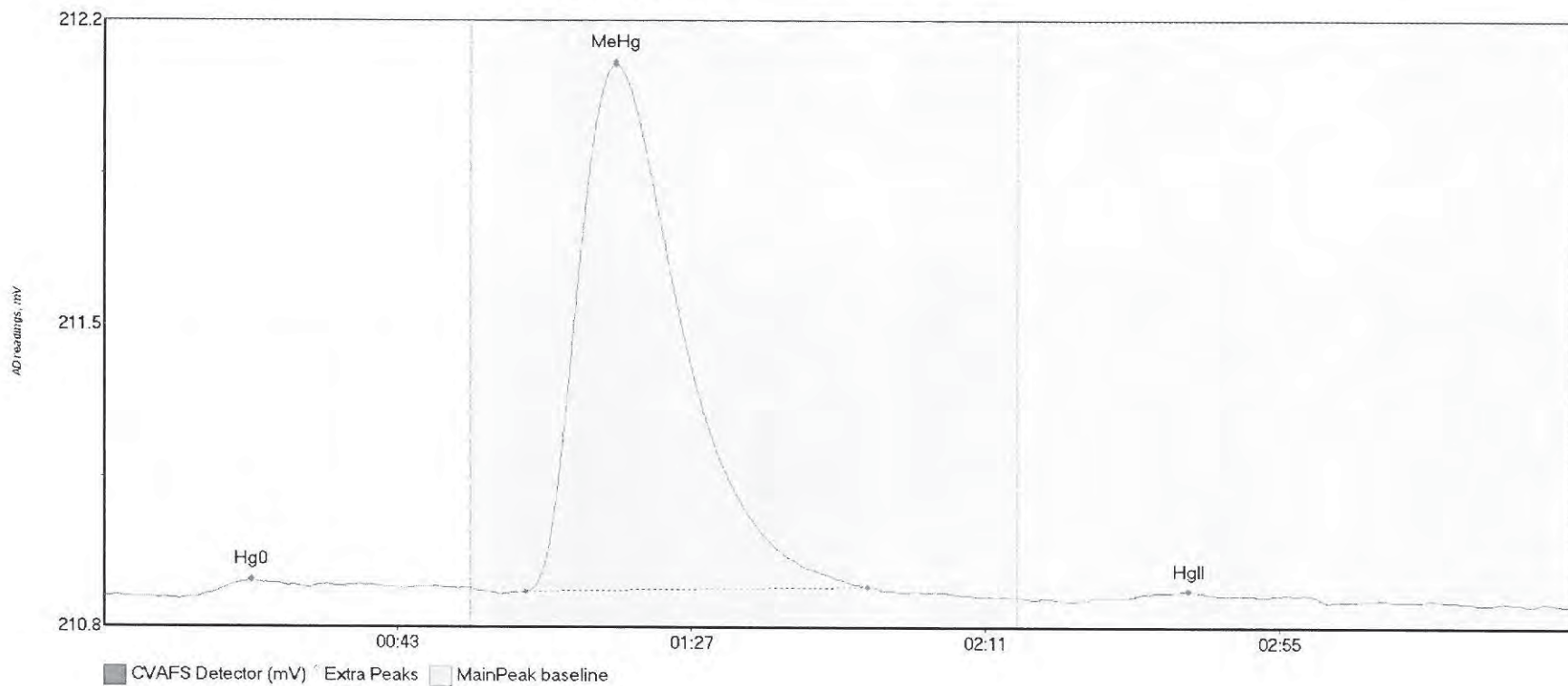
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CAL4 Hg0	12.407	13.4	54.3	210.98	211.01	24.2	0.078	OK	210.9812	0.00	0.00	
SEQ-CAL4 MeHg	849.483	61.5	131.9	211.00	211.01	76.1	4.652	OK	210.9812	0.00	0.00	
SEQ-CAL4 HgII	30.993	142.5	191.8	211.01	211.00	161.1	0.110	OK	210.9812	0.00	0.00	

#8: SEQ-CAL5



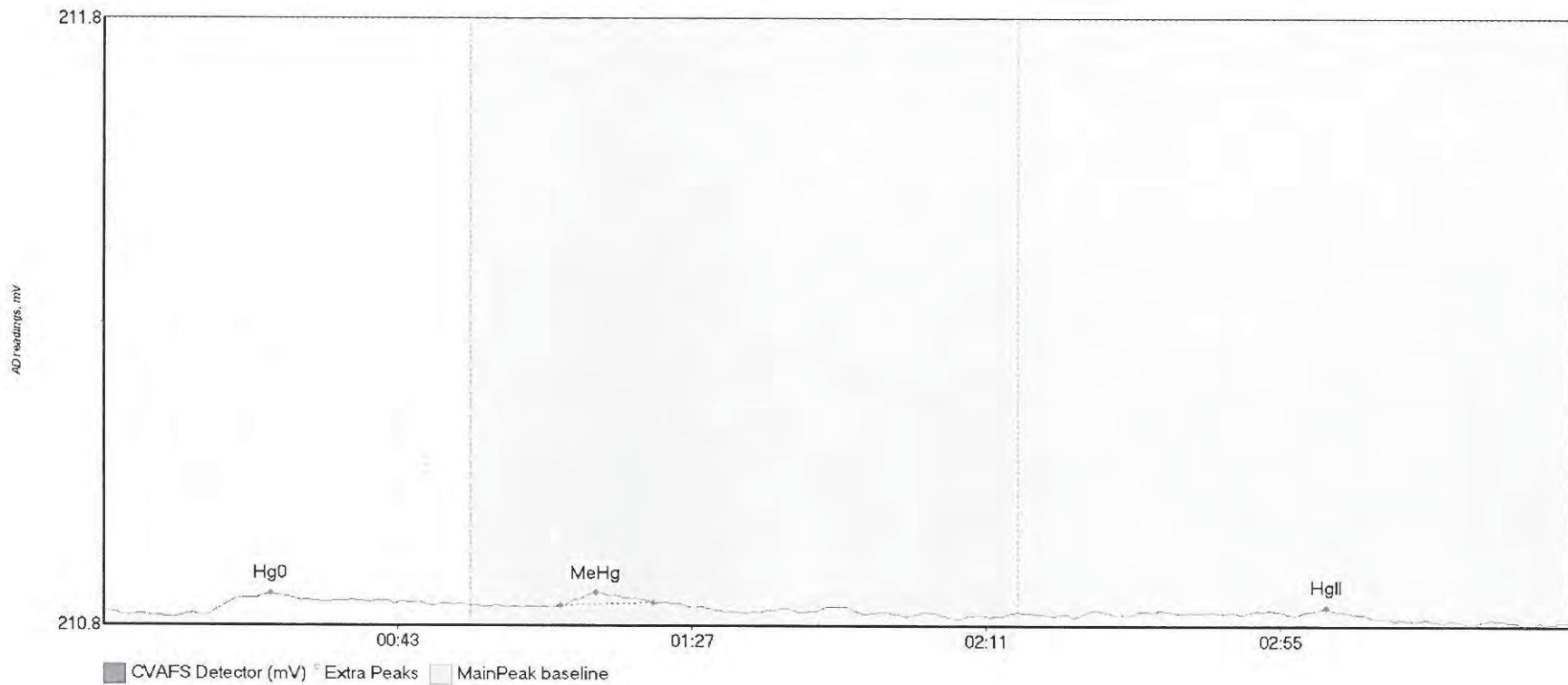
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CAL5 Hg0	18.670	13.9	55.0	210.91	210.94	22.0	0.120	CT	210.9183	0.00	0.00	
SEQ-CAL5 MeHg	2011.839	61.0	135.1	210.93	210.95	76.7	11.195	OK	210.9183	0.00	0.00	
SEQ-CAL5 HgII	66.772	144.6	195.9	210.95	210.94	165.8	0.235	OK	210.9183	0.00	0.00	

#9: SEQ-ICV1



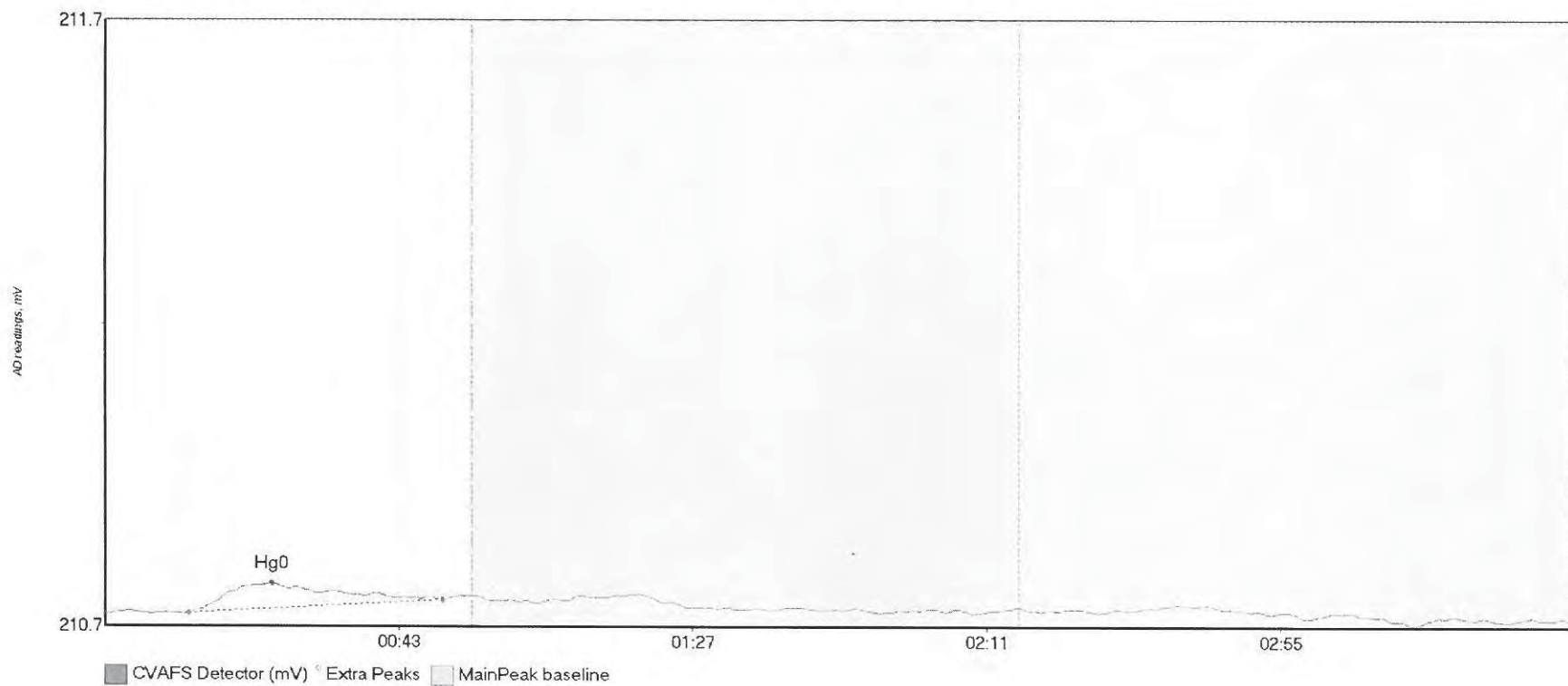
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-ICV1 Hg0	5.173	13.5	45.1	210.86	210.88	22.2	0.040	OK	210.8612	0.00	-0.02	
SEQ-ICV1 MeHg	222.717	63.3	114.5	210.87	210.88	76.8	1.250	OK	210.8612	0.00	-0.02	
SEQ-ICV1 HgII	1.039	153.4	167.1	210.86	210.86	162.5	0.016	OK	210.8612	0.00	-0.02	

#10: SEQ-ICB1



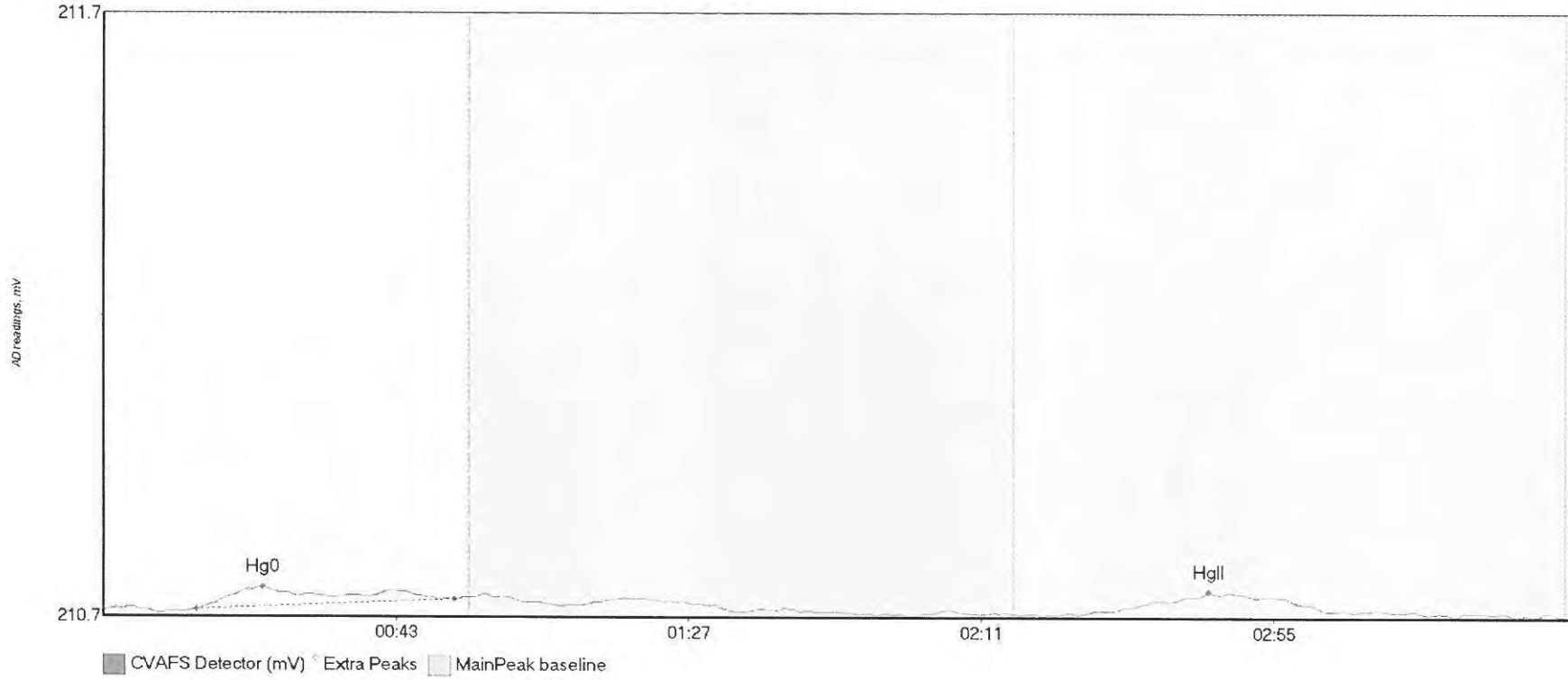
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-ICB1 Hg0	5.303	15.4	49.1	210.80	210.82	25.0	0.036	OK	210.8047	0.00	-0.02	
SEQ-ICB1 MeHg	1.502	68.5	82.3	210.81	210.82	73.8	0.022	OK	210.8047	0.00	-0.02	
SEQ-ICB1 HgII	0.273	178.1	185.1	210.80	210.80	182.9	0.011	OK	210.8047	0.00	-0.02	

#11: F709431-BLK1



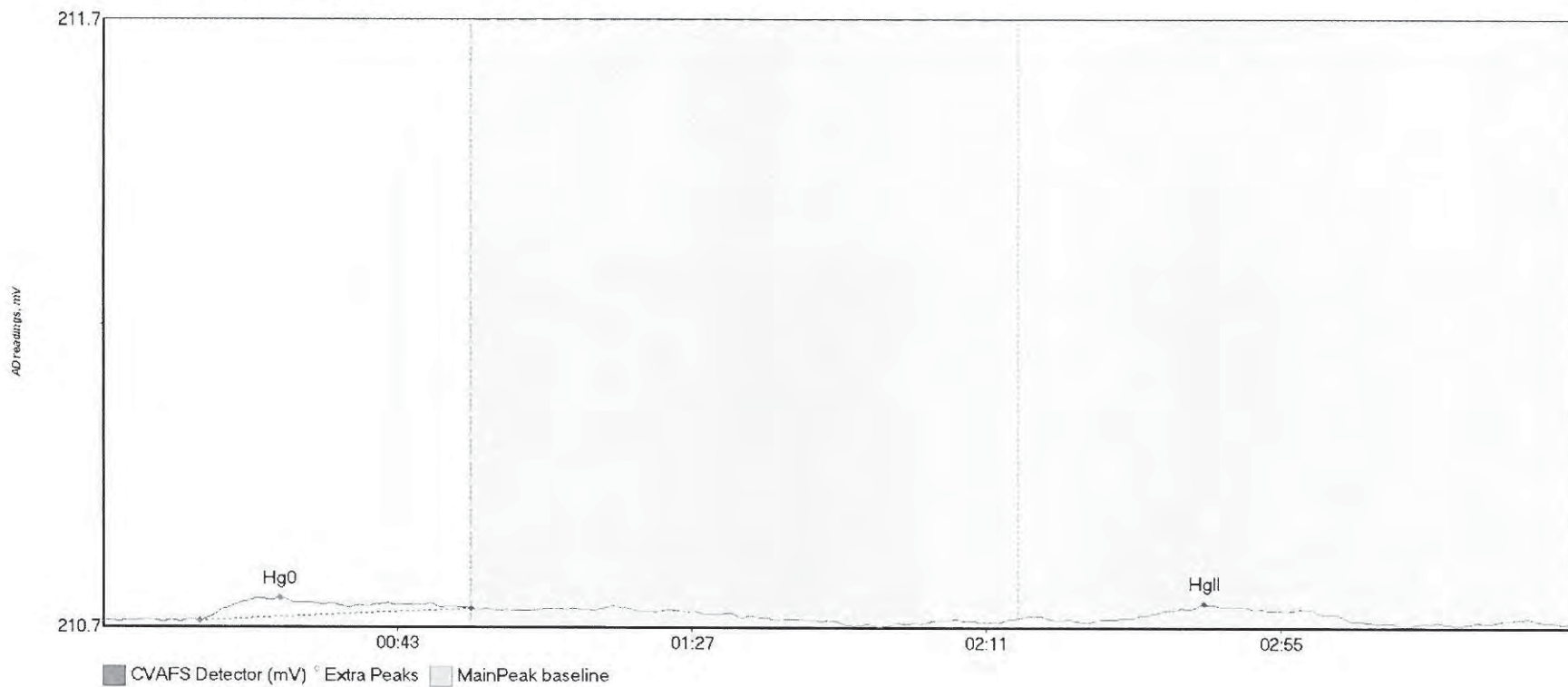
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	B1Dev	B1Shift	Comment
F709431-BLK1	8.077	12.6	50.6	210.76	210.78	25.0	0.050	OK	210.7549	0.00	-0.01	017

#12: F709431-BLK2



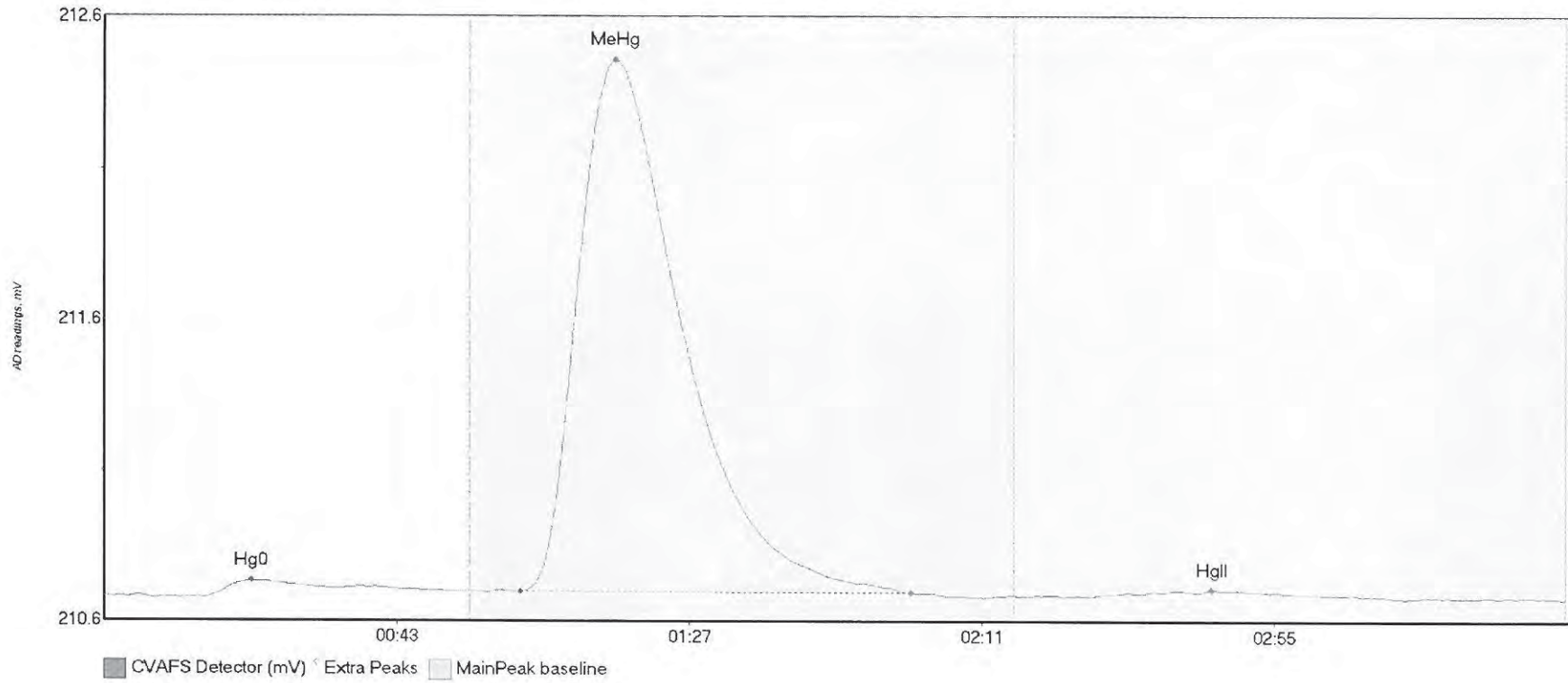
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709431-BLK2 Hg	6.010	14.0	52.7	210.73	210.75	24.0	0.038	OK	210.7302	0.00	-0.01	
F709431-BLK2 Hg	6.034	151.2	184.0	210.73	210.73	166.2	0.032	OK	210.7302	0.00	-0.01	017

#13: F709431-BLK3



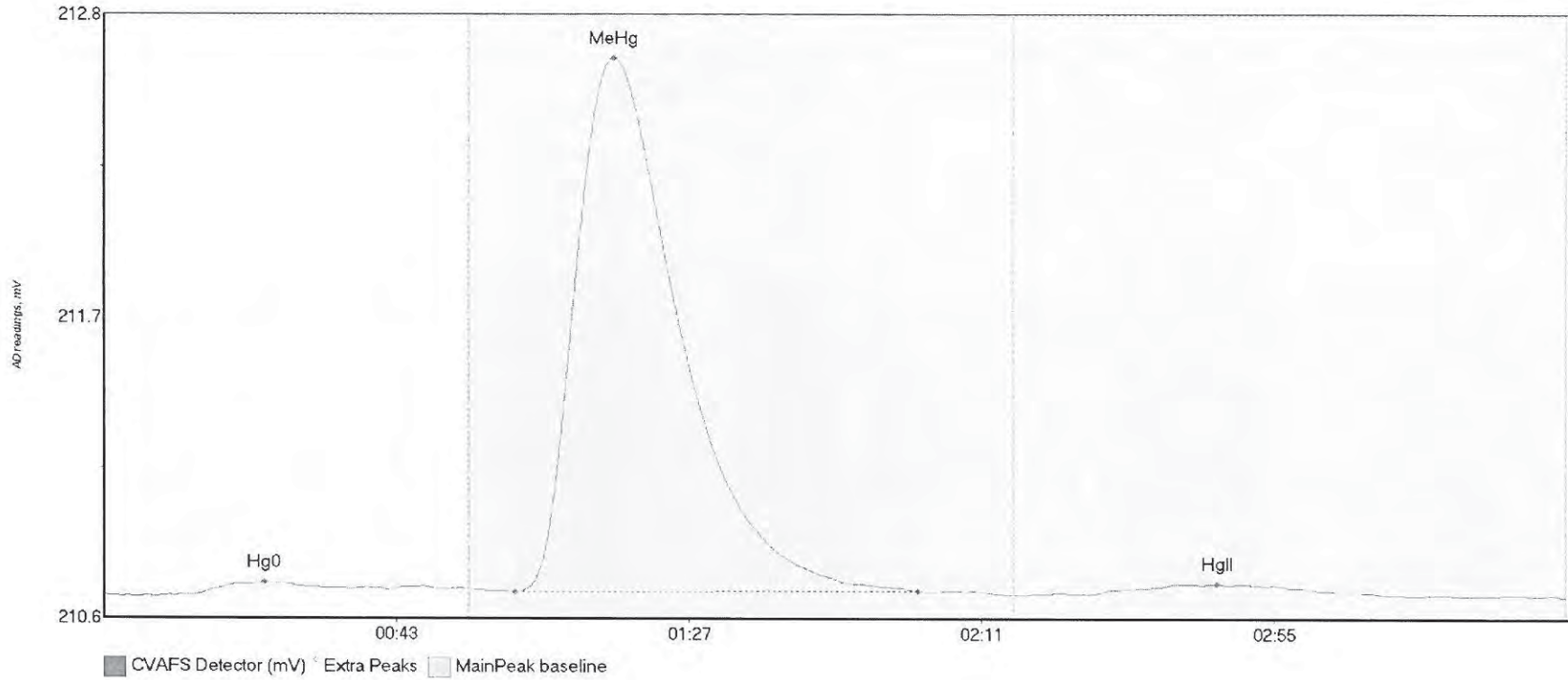
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709431-BLK3 Hg	6.680	14.5	55.0	210.71	210.73	26.5	0.038	CT	210.7060	0.00	0.00	017
F709431-BLK3 Hg	4.201	155.6	186.7	210.72	210.71	164.6	0.019	OK	210.7060	0.00	0.00	

#14: F709431-BS1



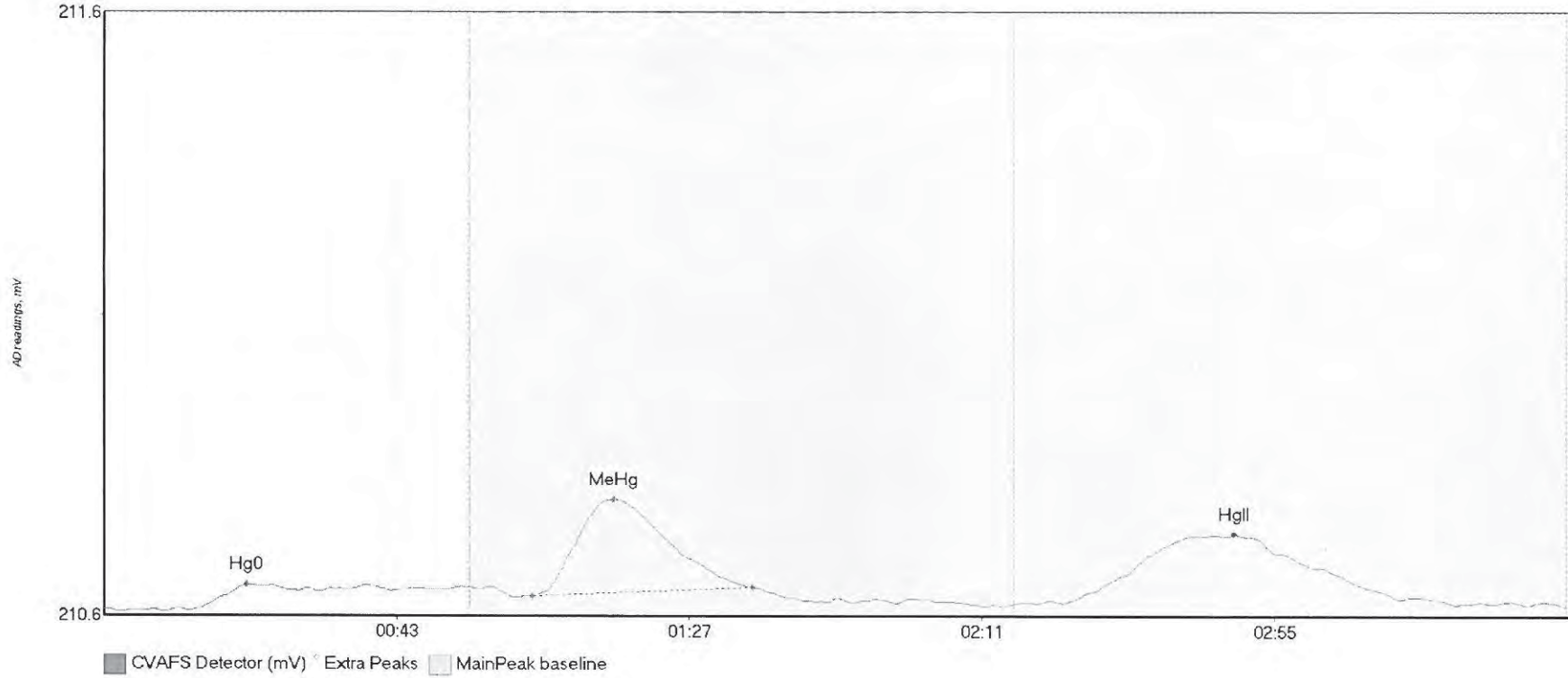
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709431-BS1 Hg0	9.539	14.9	54.8	210.68	210.70	22.1	0.056	OK	210.6820	0.00	-0.01	
F709431-BS1 MeH	324.649	62.6	121.3	210.70	210.69	76.9	1.789	OK	210.6820	0.00	-0.01	
F709431-BS1 HgI	2.445	151.4	179.5	210.69	210.69	166.6	0.016	OK	210.6820	0.00	-0.01	

#15: F709431-BSD1



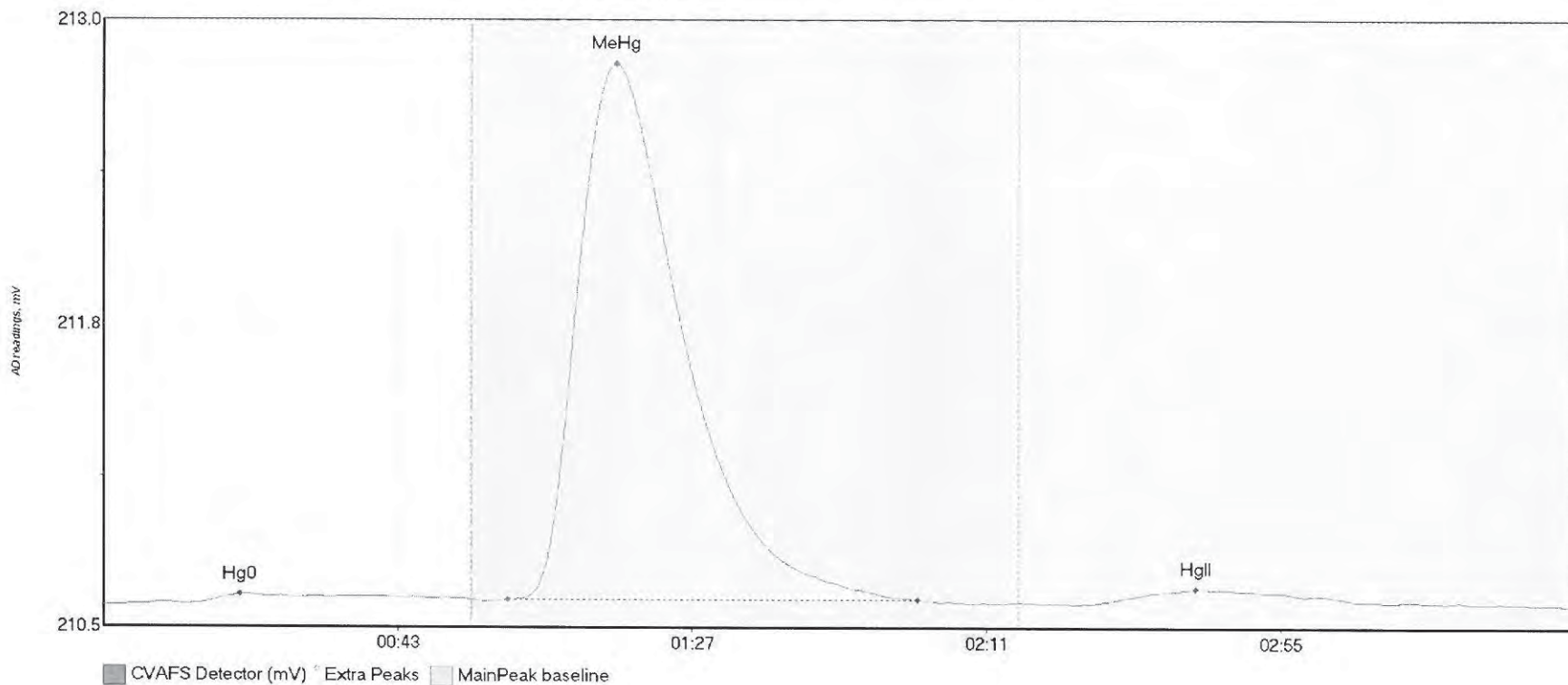
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709431-BSD1 Hg	5.747	12.8	42.7	210.67	210.69	24.2	0.045	OK	210.6647	0.00	0.00	
F709431-BSD1 Me	353.241	61.8	122.5	210.68	210.68	76.7	1.954	OK	210.6647	0.00	0.00	
F709431-BSD1 Hg	9.960	148.1	191.7	210.67	210.67	167.5	0.039	OK	210.6647	0.00	0.00	

#16: F709431-DUP1



Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709431-DUP1 Hg	2.606	13.8	32.4	210.64	210.67	21.5	0.040	OK	210.6439	0.00	0.01	
F709431-DUP1 Me	24.085	64.5	97.6	210.67	210.68	76.7	0.160	OK	210.6439	0.00	0.01	
F709431-DUP1 Hg	31.834	144.2	201.3	210.65	210.66	169.9	0.113	OK	210.6439	0.00	0.01	

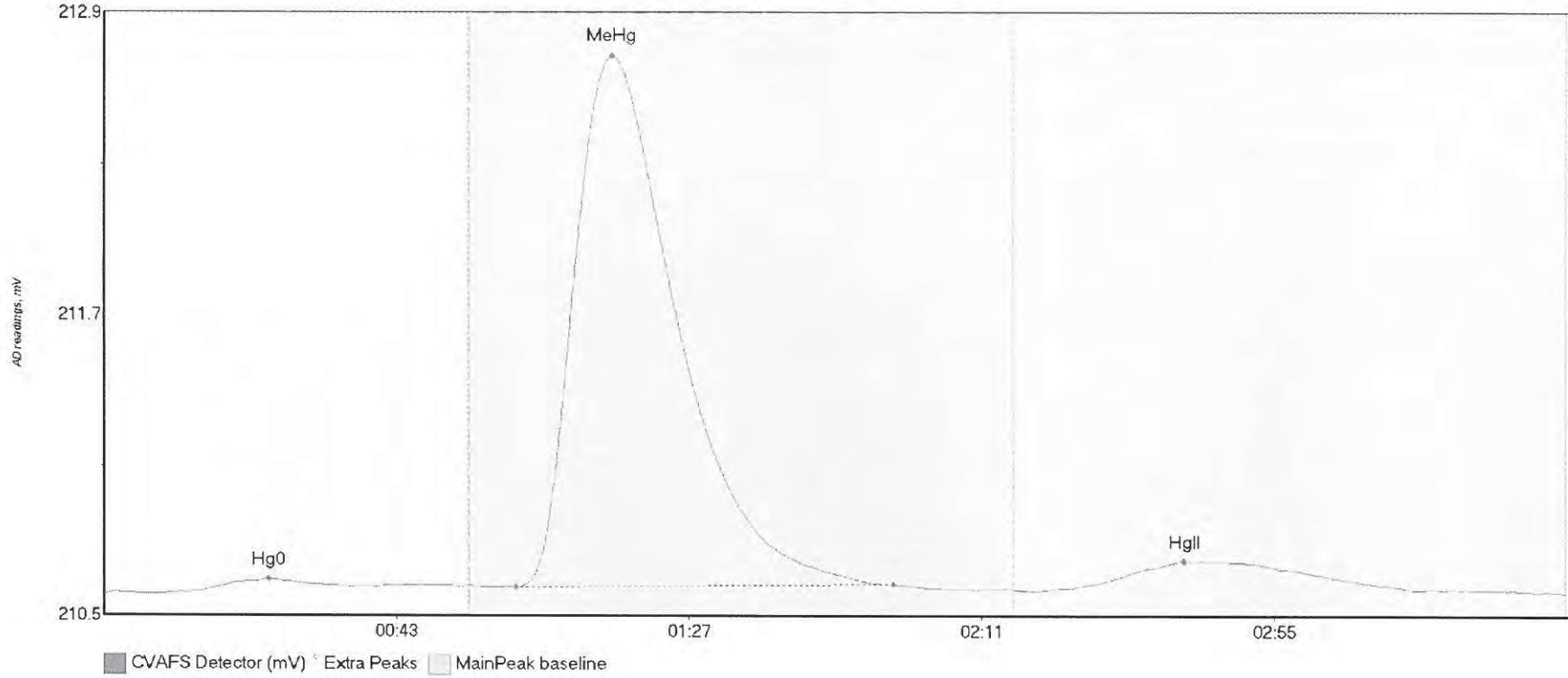
#17: F709431-MS1



Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment	
F709431-MS1	Hg0	7.139	5.9	55.0	210.64	210.66	20.5	0.038	CT	210.6325	0.00	0.00	
F709431-MS1	MeH	394.302	60.5	121.7	210.65	210.66	76.7	2.168	OK	210.6325	0.00	0.00	
F709431-MS1	HgI	13.624	147.5	188.0	210.64	210.65	163.3	0.060	OK	210.6325	0.00	0.00	

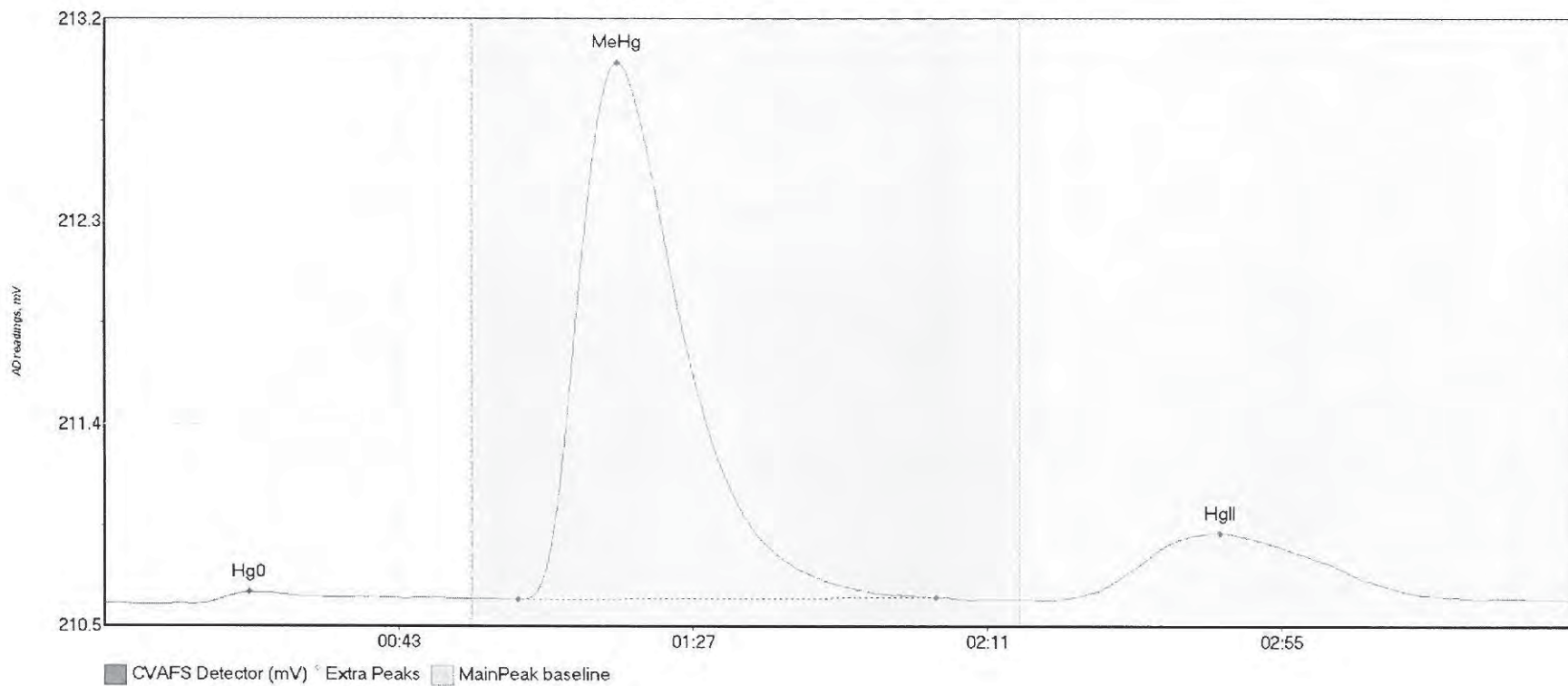
017

#18: F709431-MSD1



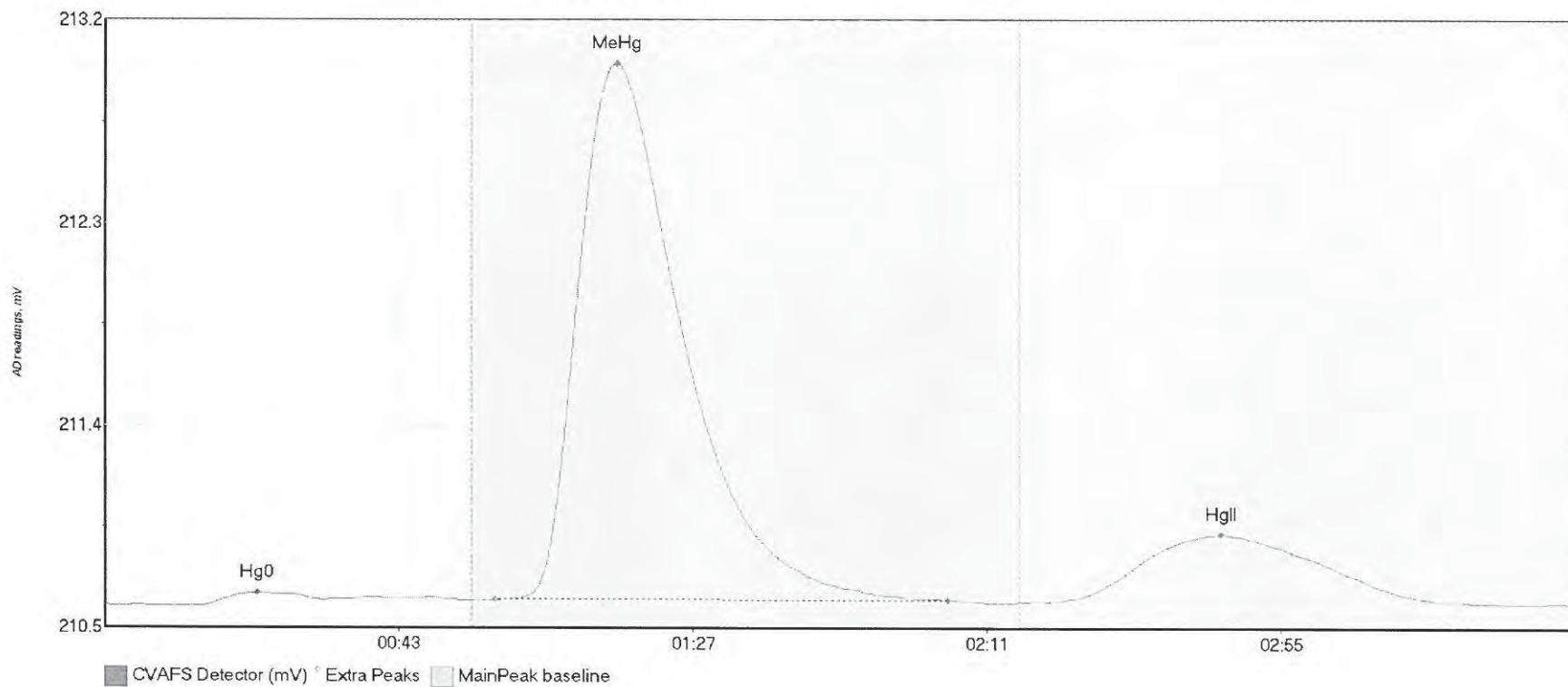
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709431-MSD1 Hg	5.616	12.5	40.8	210.63	210.65	24.9	0.052	OK	210.6227	0.00	0.00	
F709431-MSD1 Me	371.741	62.0	118.7	210.65	210.66	76.5	2.082	OK	210.6227	0.00	0.00	
F709431-MSD1 Hg	31.952	143.6	196.8	210.64	210.64	162.6	0.109	OK	210.6227	0.00	0.00	

#19: F709431-MS2



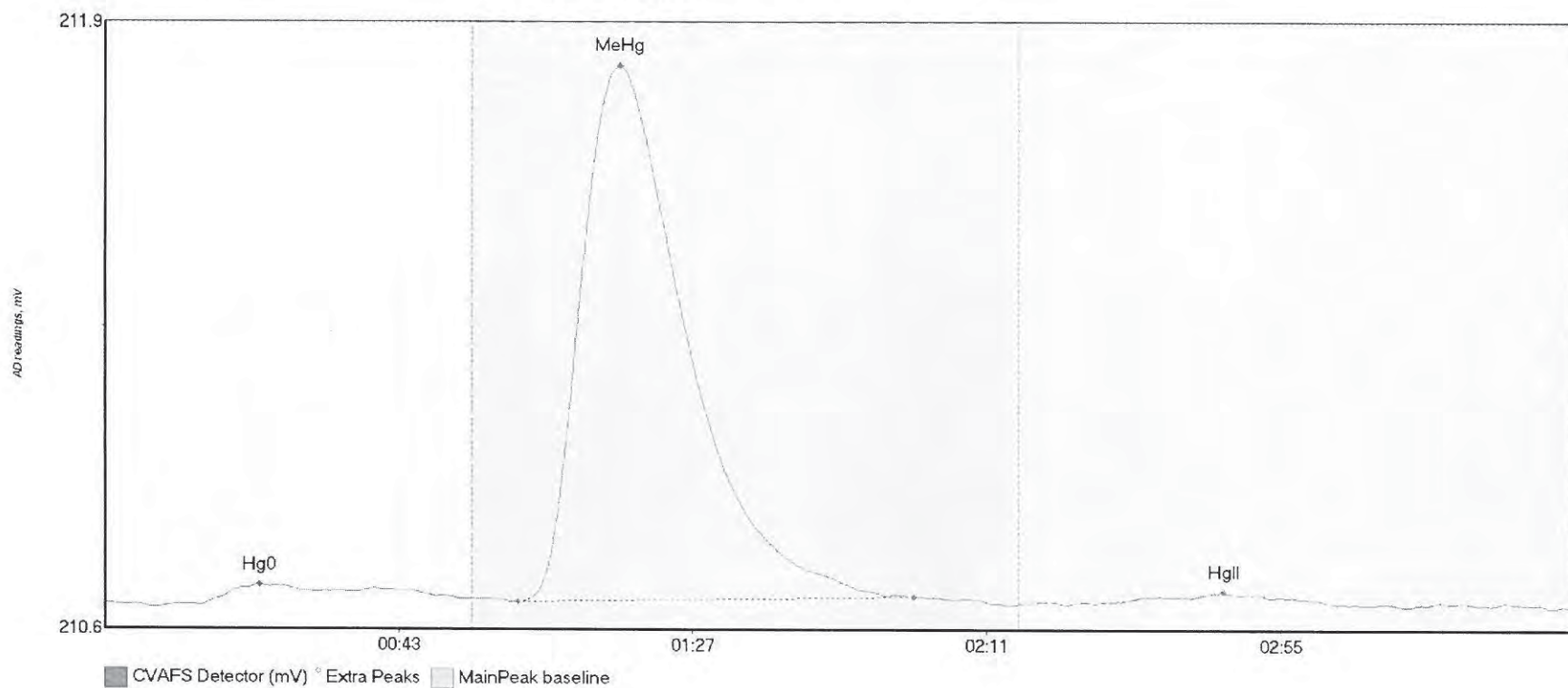
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709431-MS2 Hg0	7.706	14.6	55.0	210.62	210.64	21.7	0.050	CT	210.6248	0.00	0.01	
F709431-MS2 MeH	428.954	61.9	124.4	210.64	210.65	76.7	2.384	OK	210.6248	0.00	0.01	
F709431-MS2 HgI	87.656	141.2	204.7	210.64	210.64	166.9	0.302	OK	210.6248	0.00	0.01	

#20: F709431-MSD2

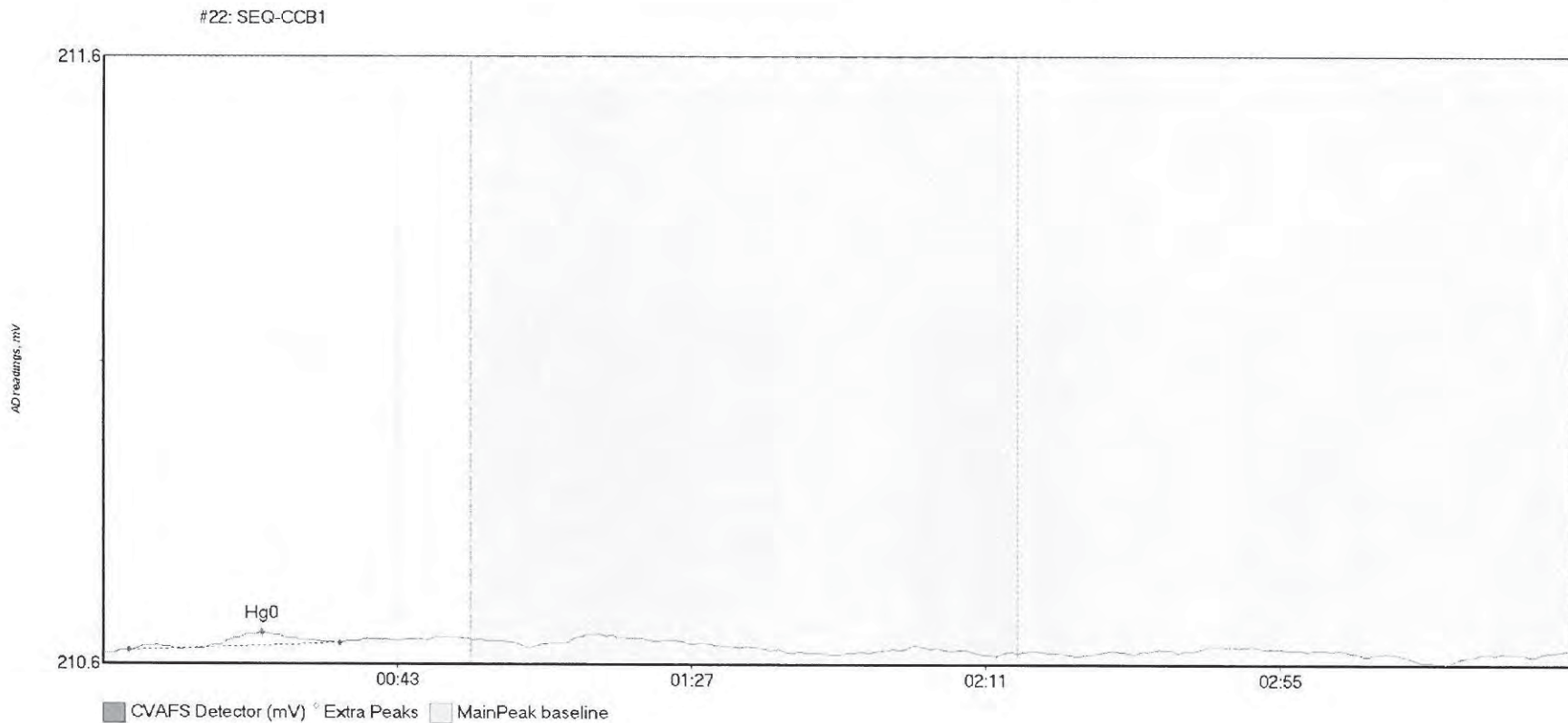


Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709431-MSD2 Hg	9.691	14.4	55.0	210.62	210.65	22.8	0.057	CT	210.6246	0.00	0.01	
F709431-MSD2 Me	426.990	58.4	126.1	210.65	210.65	76.7	2.368	OK	210.6246	0.00	0.01	
F709431-MSD2 Hg	88.770	141.2	204.8	210.64	210.63	167.0	0.297	OK	210.6246	0.00	0.01	

#21: SEQ-CCV1

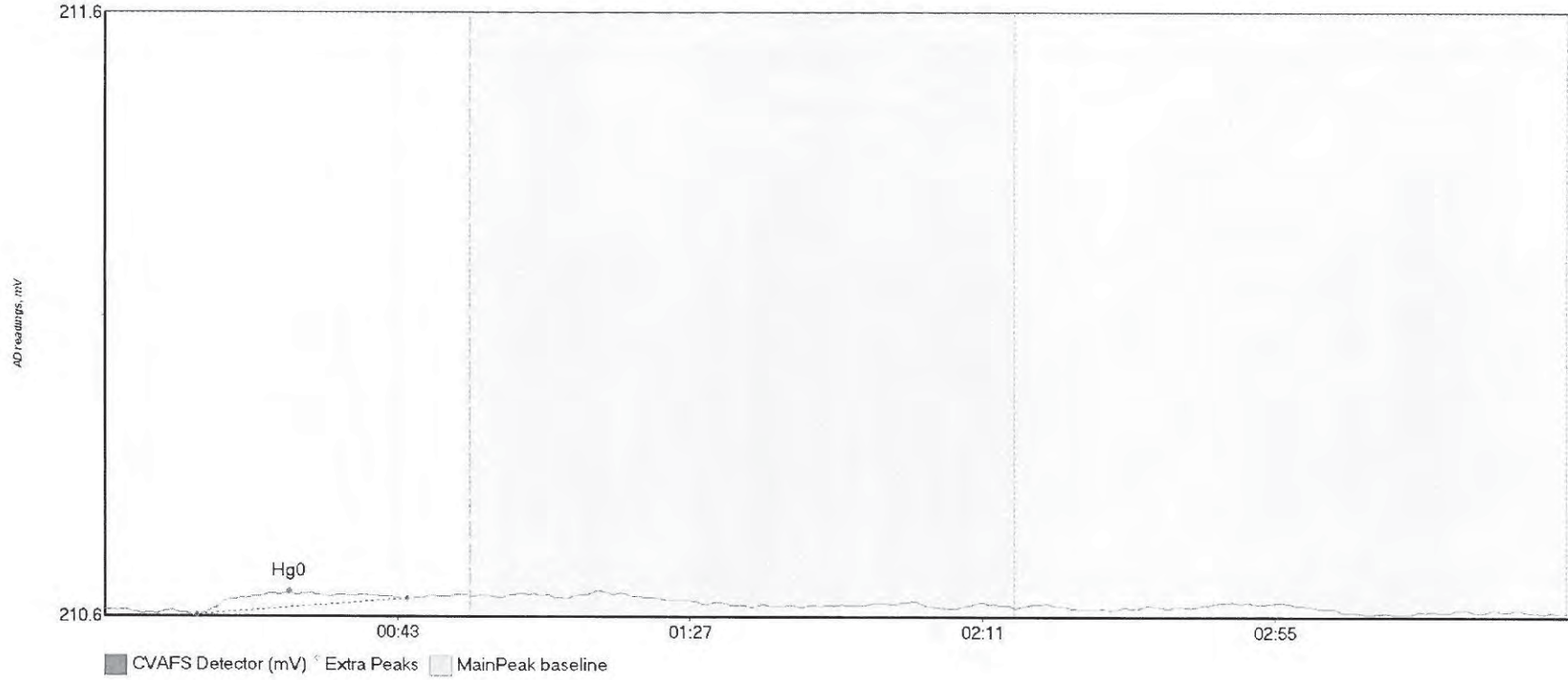


Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCV1 Hg0	9.162	14.3	54.9	210.61	210.63	23.2	0.045	OK	210.6182	0.00	-0.01	
SEQ-CCV1 MeHg	215.803	61.9	121.1	210.62	210.63	77.1	1.180	OK	210.6182	0.00	-0.01	
SEQ-CCV1 HgII	4.084	152.0	184.3	210.62	210.62	167.4	0.020	OK	210.6182	0.00	-0.01	



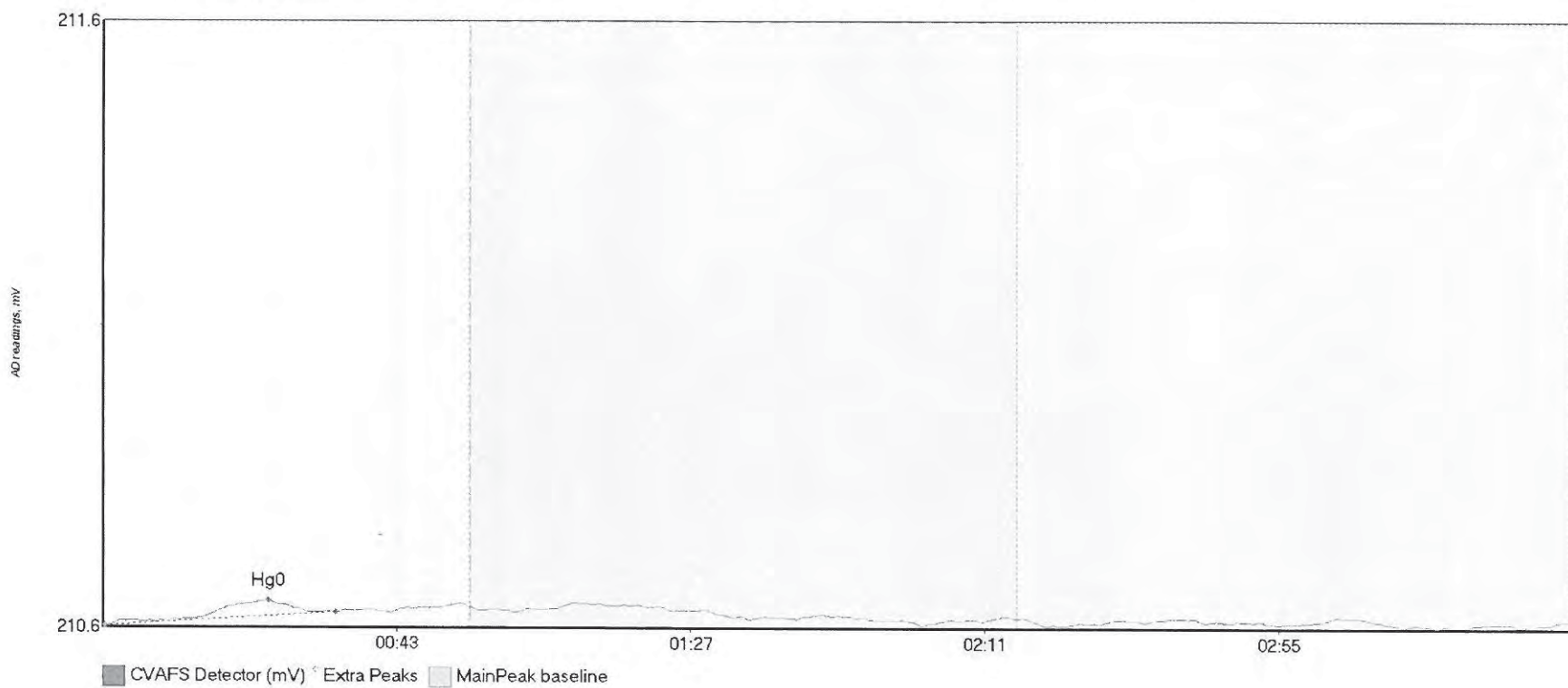
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCB1	2.439	3.9	35.4	210.61	210.63	23.9	0.030	OK	210.6102	0.00	0.00	017

#23: 1709607-01



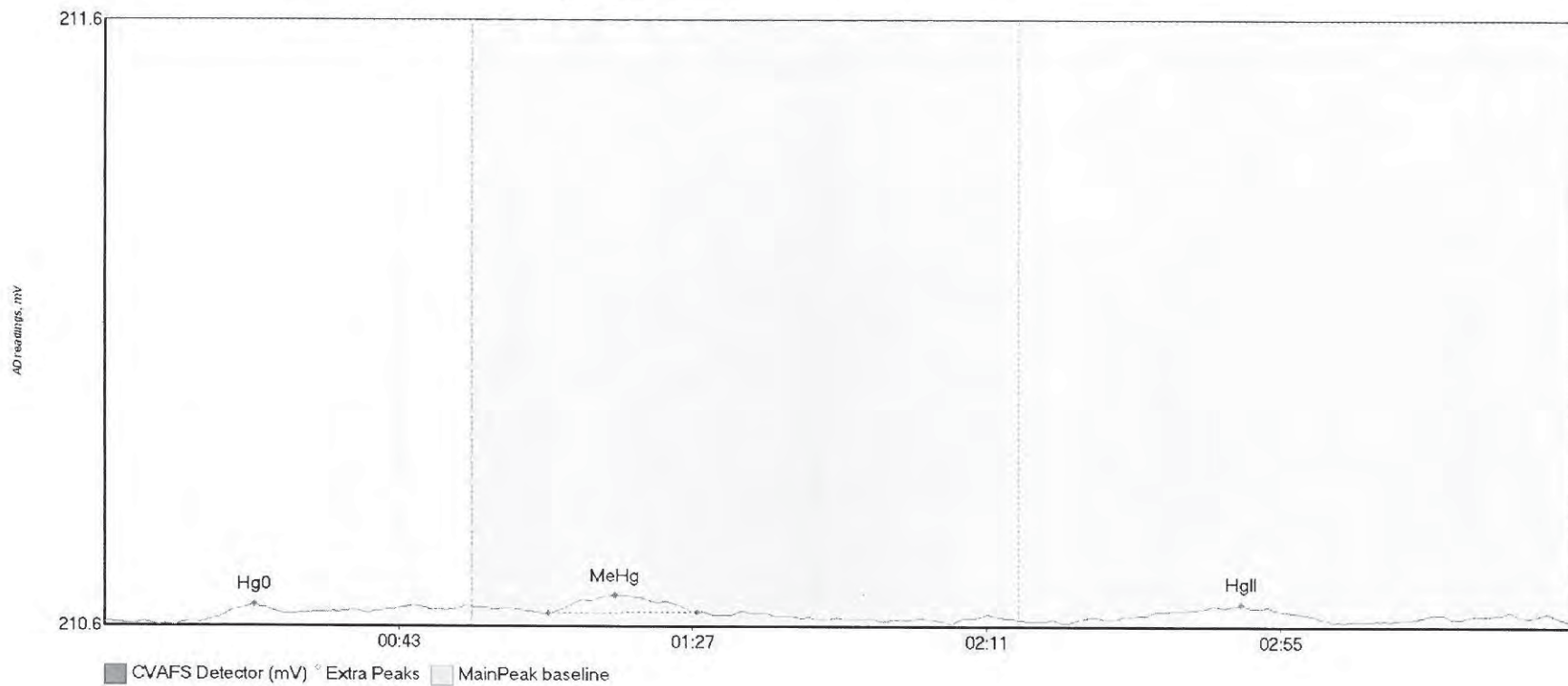
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-01	5.057	13.8	45.4	210.59	210.62	27.7	0.038	OK	210.6011	0.00	-0.01	017

#24: 1709607-02



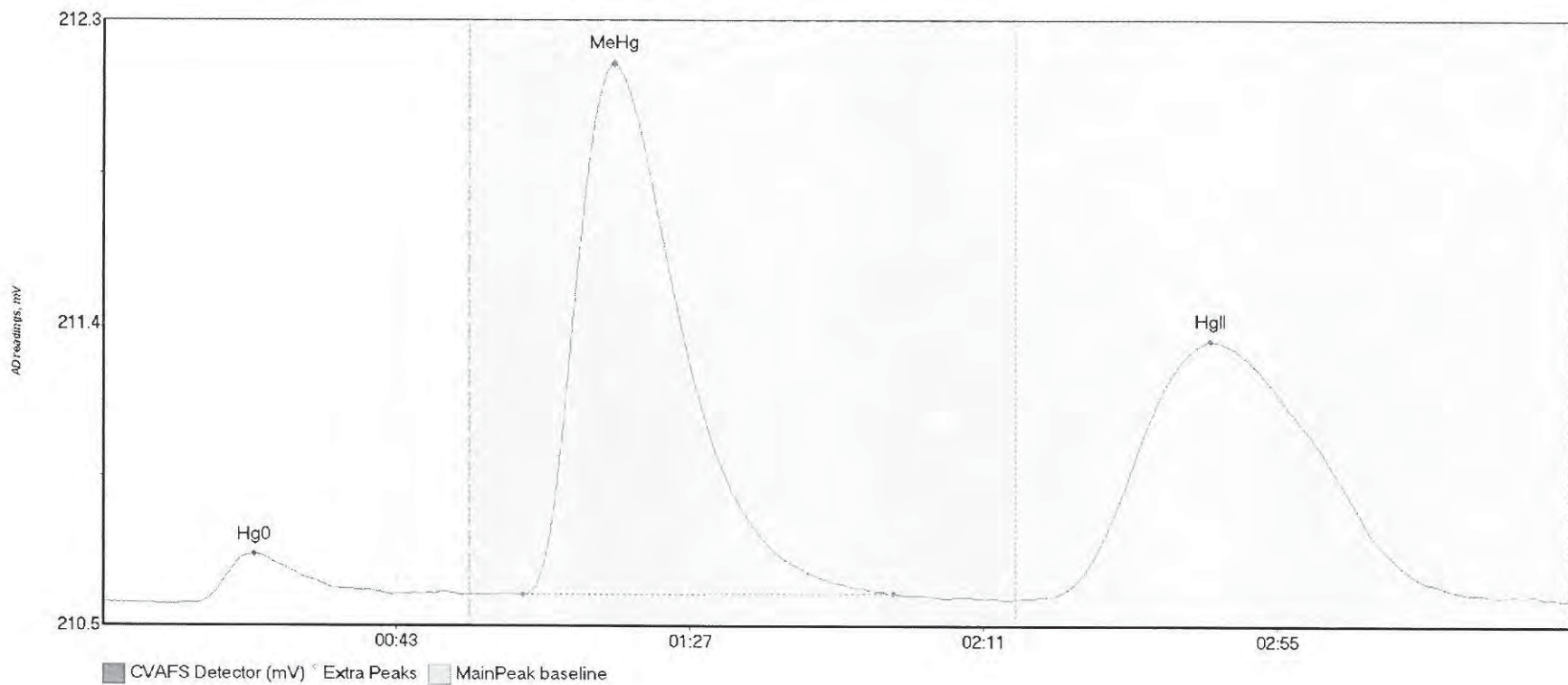
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-02	3.432	0.3	34.8	210.59	210.61	24.8	0.041	OK	210.5903	0.00	0.01	017

#25: 1709607-03



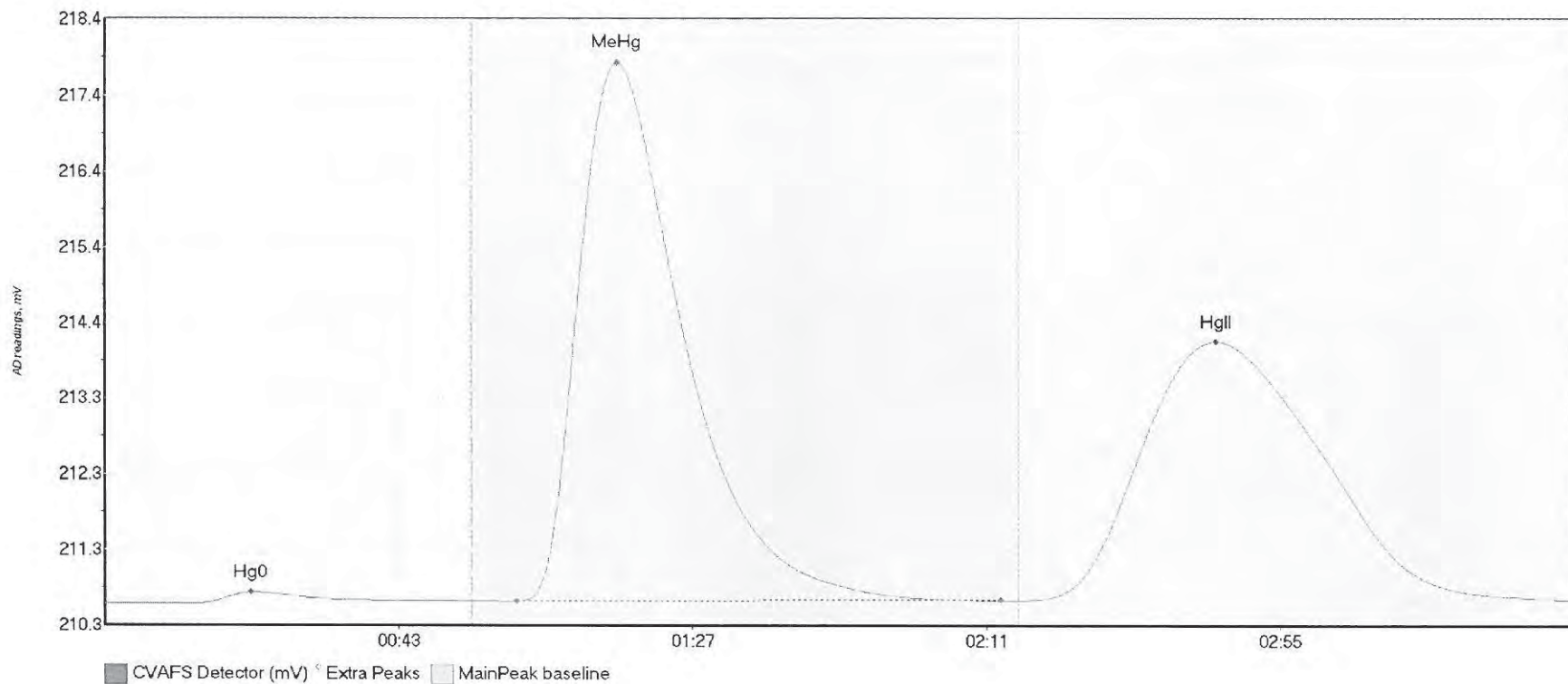
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-03 Hg0	1.365	14.4	27.5	210.60	210.61	22.4	0.029	OK	210.5972	0.00	0.00	
1709607-03 MeHg	3.963	66.5	88.7	210.61	210.61	76.4	0.029	OK	210.5972	0.00	0.00	
1709607-03 HgII	4.263	151.1	182.4	210.60	210.60	170.2	0.024	OK	210.5972	0.00	0.00	

#26: 1709607-04



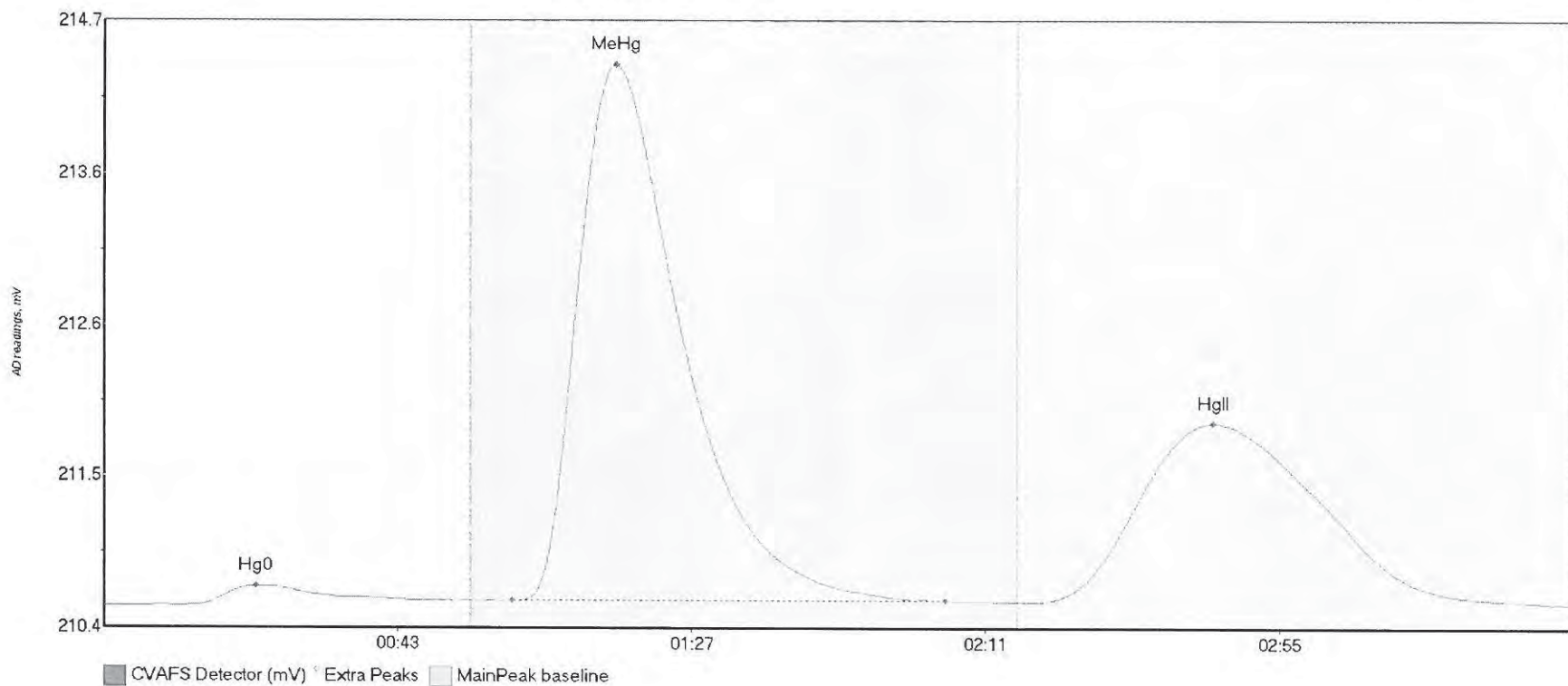
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-04 Hg0	18.936	14.2	53.9	210.60	210.62	22.7	0.142	OK	210.5990	0.00	0.01	
1709607-04 MeHg	281.440	63.0	118.6	210.62	210.62	76.7	1.550	OK	210.5990	0.00	0.01	
1709607-04 HgII	226.572	139.8	216.6	210.61	210.61	166.1	0.749	OK	210.5990	0.00	0.01	

#27: 1709607-05



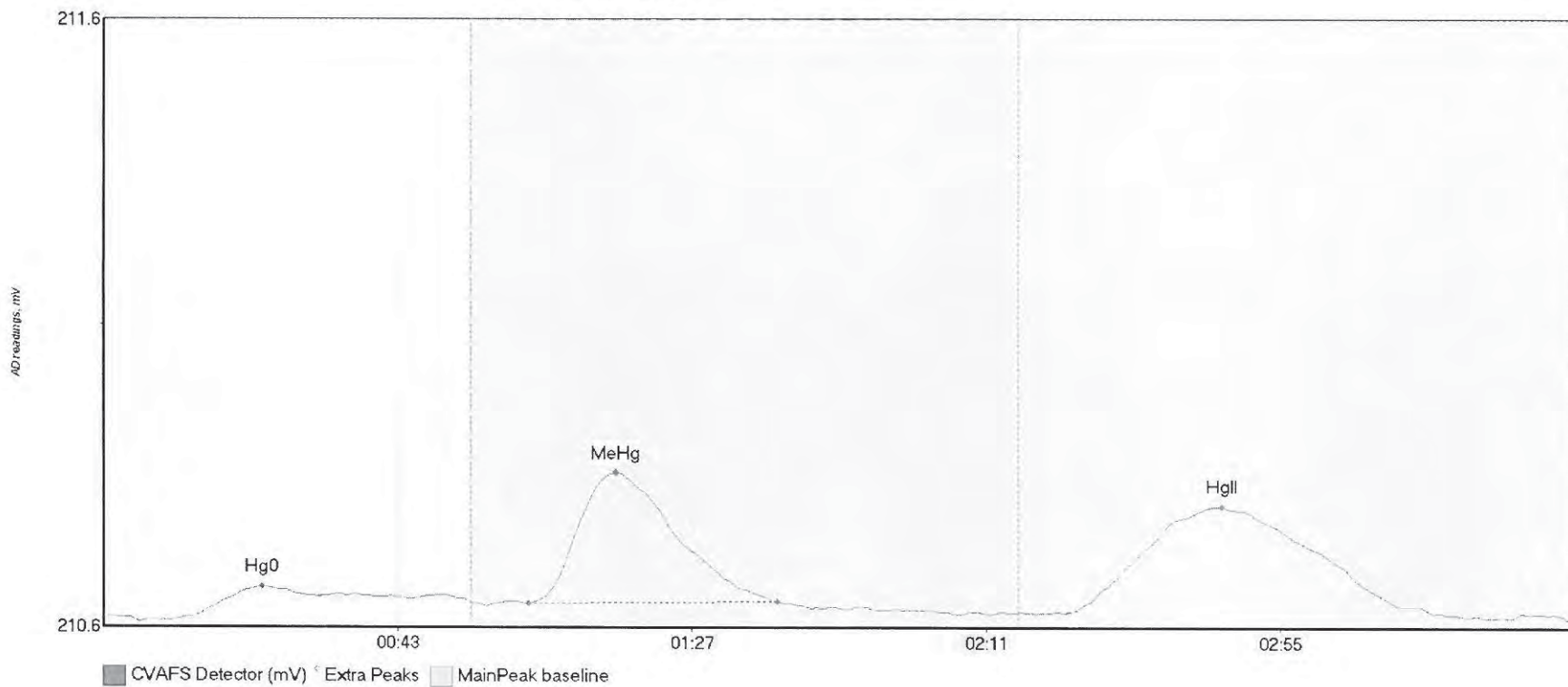
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-05 Hg0	21.088	11.5	53.7	210.58	210.62	21.9	0.157	OK	210.5833	0.00	0.06	
1709607-05 MeHg	1314.945	61.7	134.2	210.62	210.63	76.8	7.237	OK	210.5833	0.00	0.06	
1709607-05 HgII	1054.250	136.8	218.4	210.63	210.64	166.5	3.472	OK	210.5833	0.00	0.06	

#28: 1709607-06



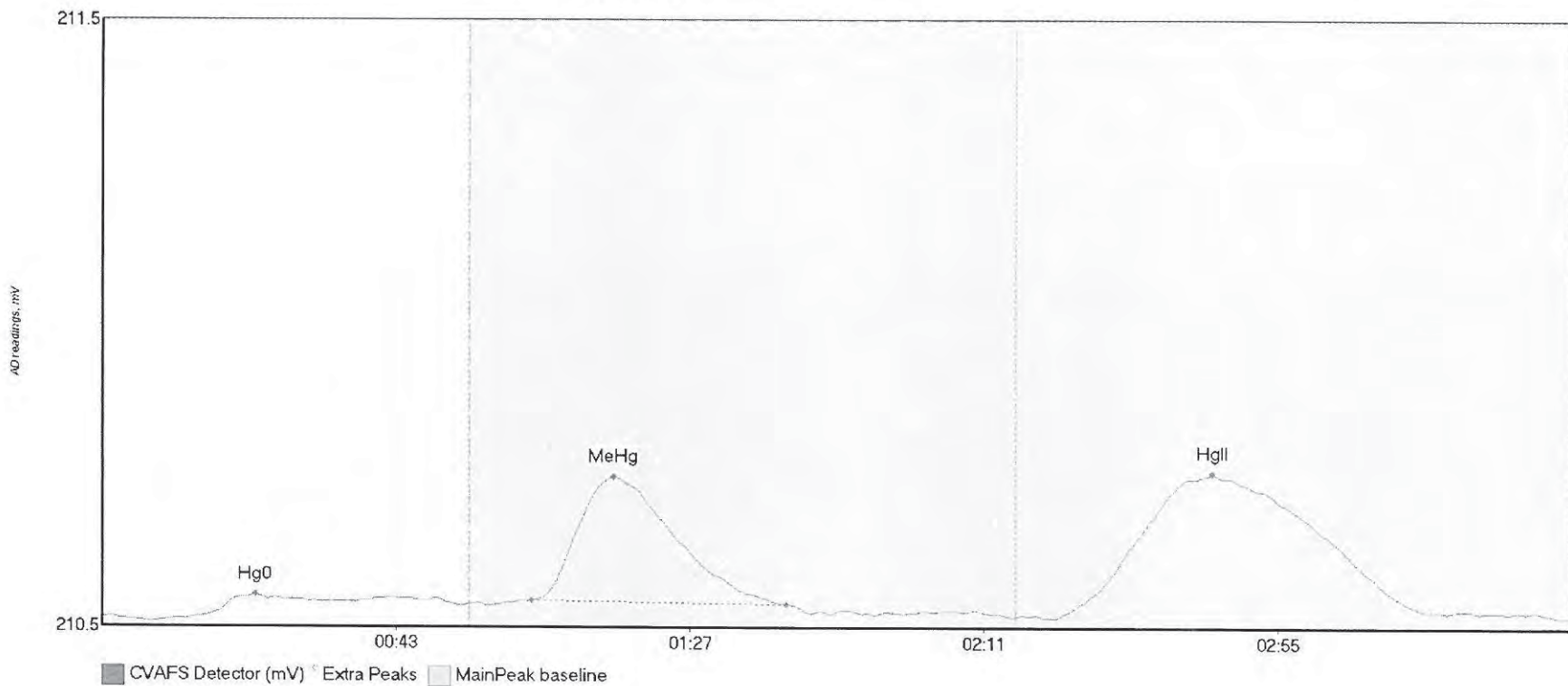
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-06 Hg0	20.375	12.9	52.7	210.58	210.61	22.9	0.134	OK	210.5769	0.00	0.01	
1709607-06 MeHg	680.405	61.2	126.0	210.61	210.61	76.7	3.789	OK	210.5769	0.00	0.01	
1709607-06 HgII	381.913	139.8	215.1	210.60	210.60	166.2	1.258	OK	210.5769	0.00	0.01	

#29: 1709607-07



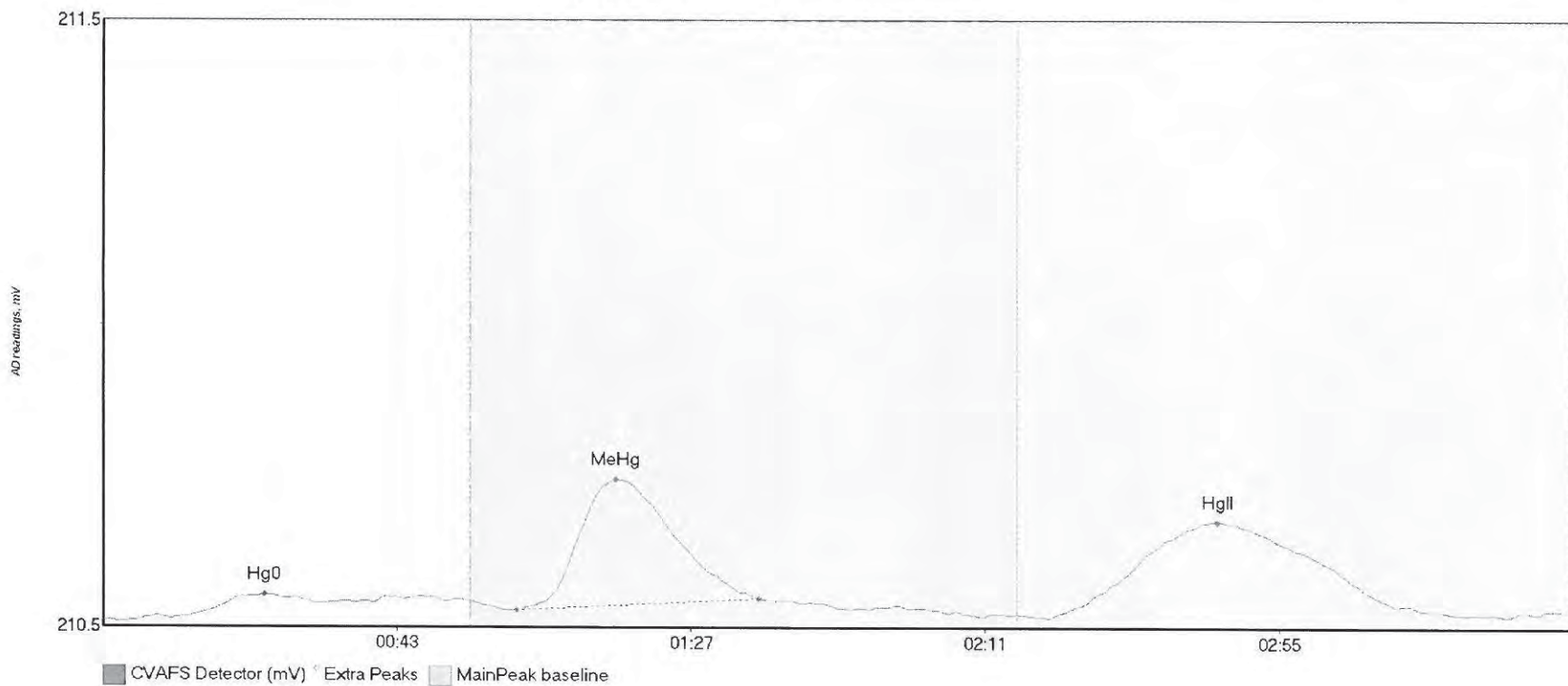
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-07 Hg0	9.153	13.1	55.0	210.57	210.59	23.7	0.050	CT	210.5703	0.00	0.00	
1709607-07 MeHg	35.575	63.6	100.8	210.59	210.59	76.8	0.215	OK	210.5703	0.00	0.00	
1709607-07 HgII	50.083	144.1	198.9	210.58	210.58	167.3	0.174	OK	210.5703	0.00	0.00	

#30: 1709607-08



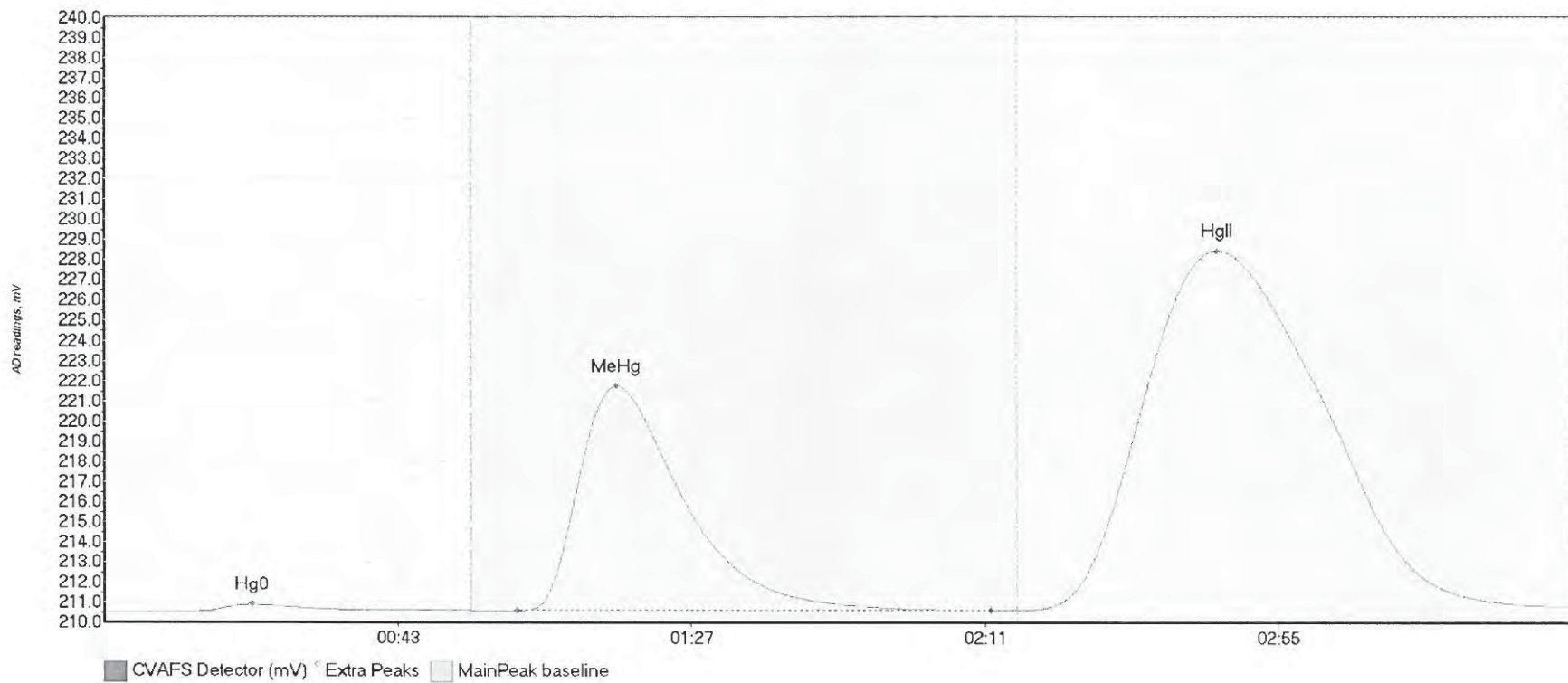
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-08 Hg0	6.404	14.5	53.6	210.55	210.57	23.0	0.036	OK	210.5529	0.00	0.00	
1709607-08 MeHg	33.866	64.3	102.5	210.58	210.58	76.6	0.203	OK	210.5529	0.00	0.00	
1709607-08 HgII	70.198	142.7	210.6	210.55	210.56	166.2	0.237	OK	210.5529	0.00	0.00	

#31: 1709607-09



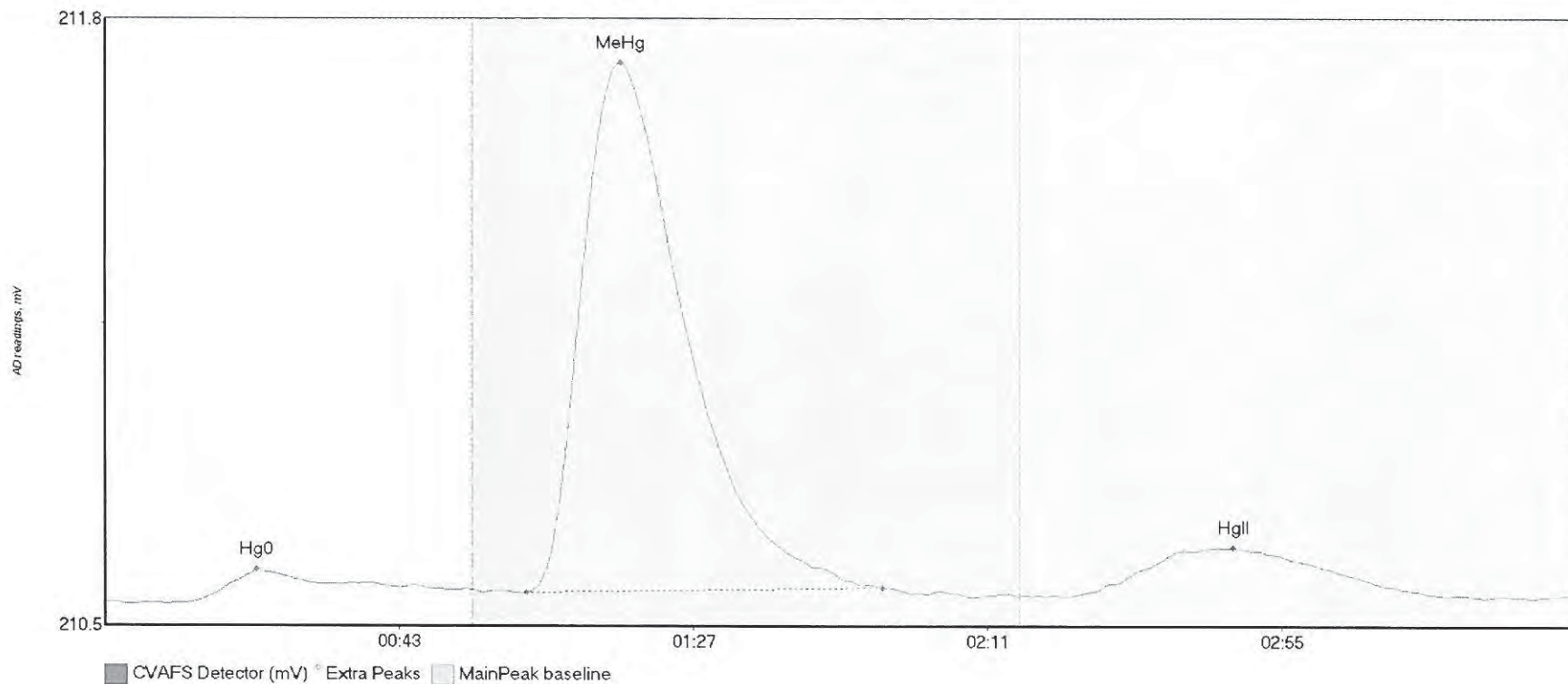
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-09 Hg0	2.701	10.4	32.7	210.55	210.57	24.2	0.037	OK	210.5428	0.00	0.01	
1709607-09 MeHg	33.502	61.8	98.2	210.56	210.58	76.8	0.216	OK	210.5428	0.00	0.01	
1709607-09 HgII	46.446	141.6	203.0	210.55	210.55	166.7	0.159	OK	210.5428	0.00	0.01	

#32: 1709607-10



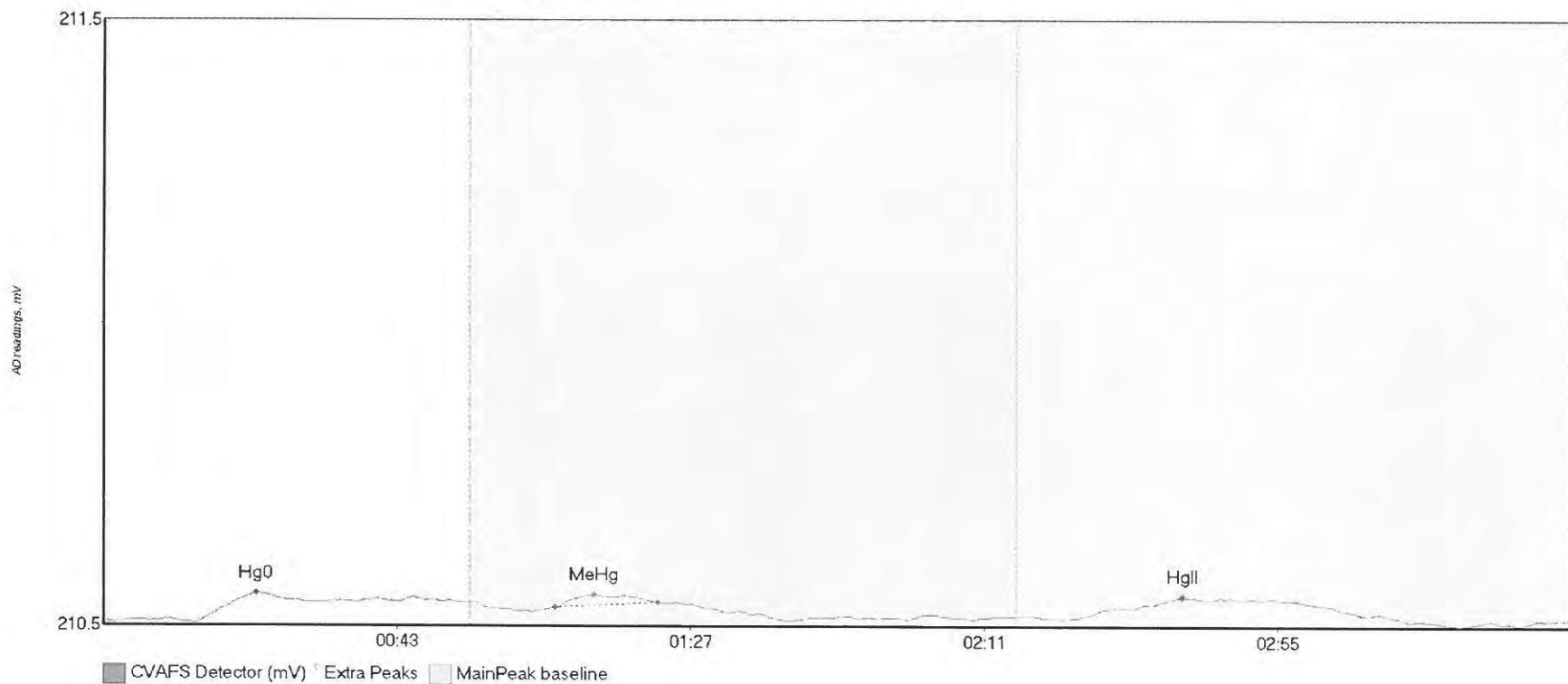
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-10 Hg0	44.932	12.8	55.0	210.54	210.59	22.1	0.345	CT	210.5441	0.00	0.25	
1709607-10 MeHg	2020.667	61.9	132.9	210.58	210.60	76.9	11.138	OK	210.5441	0.00	0.25	
1709607-10 HgII	5416.869	136.8	219.8	210.61	210.79	166.9	17.810	CT	210.5441	0.00	0.25	

#33: SEQ-CCV2



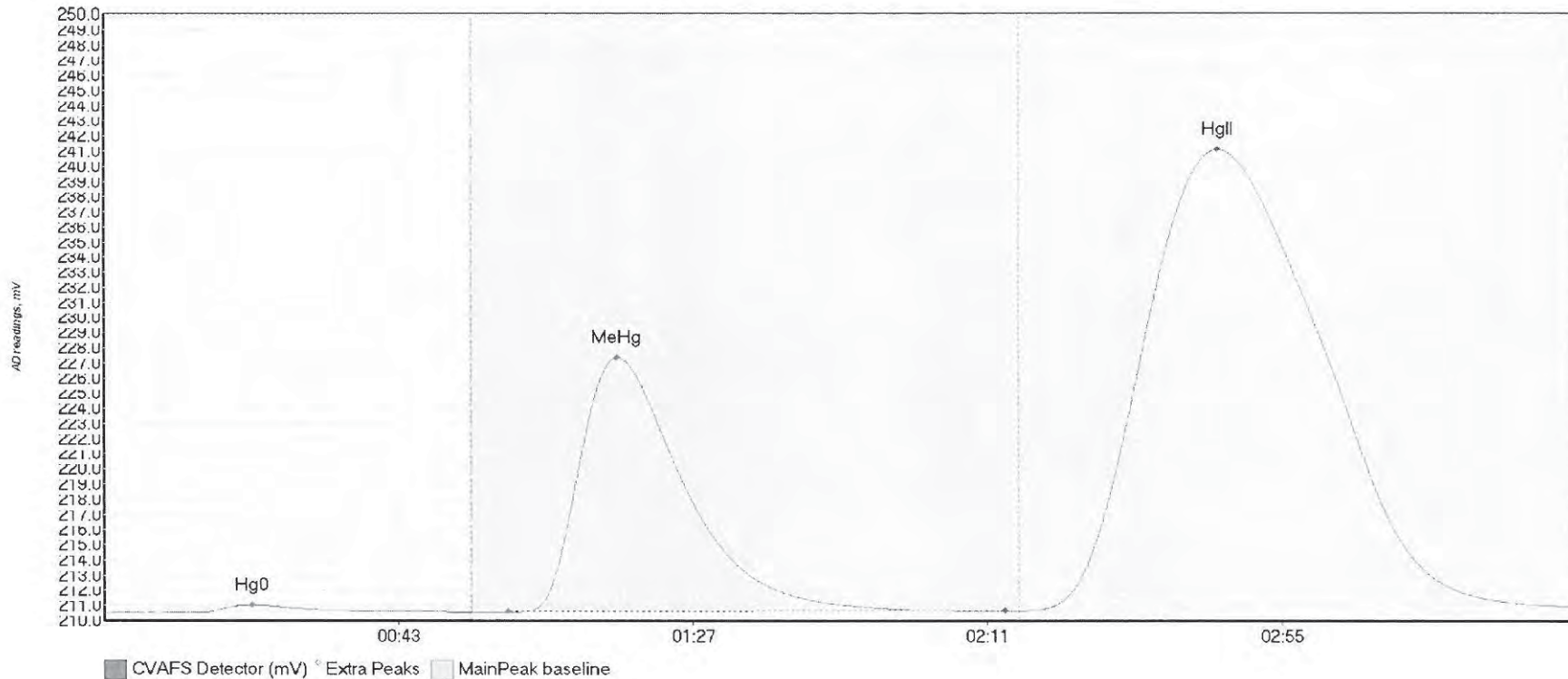
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCV2 Hg0	10.404	11.9	51.7	210.54	210.57	22.7	0.070	OK	210.5474	0.00	0.01	
SEQ-CCV2 MeHg	203.959	63.0	116.3	210.57	210.58	77.2	1.141	OK	210.5474	0.00	0.01	
SEQ-CCV2 HgII	28.305	146.5	198.4	210.57	210.56	168.7	0.098	OK	210.5474	0.00	0.01	

#34: SEQ-CCB2



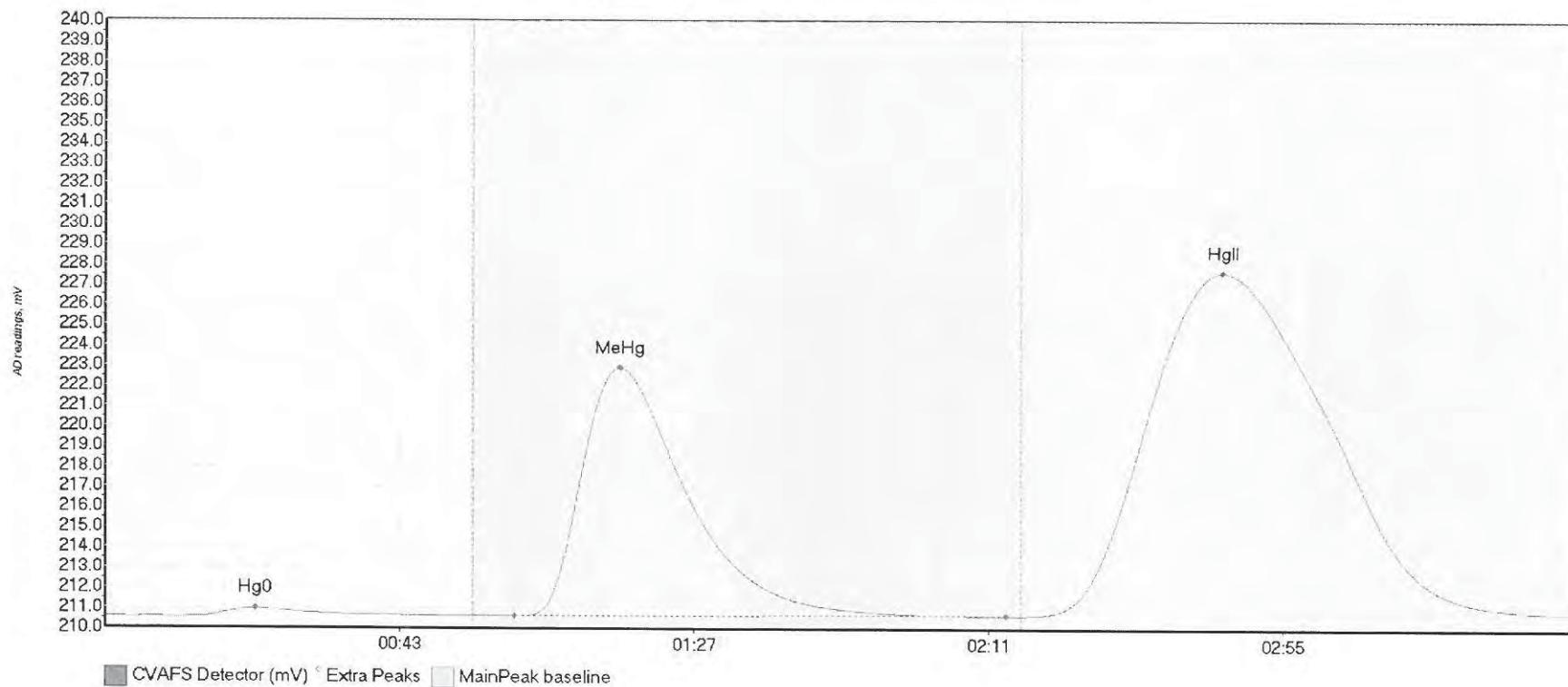
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCB2 Hg0	7.598	13.7	54.9	210.54	210.57	22.8	0.049	OK	210.5383	0.00	0.00	
SEQ-CCB2 MeHg	1.640	67.7	83.1	210.56	210.57	73.6	0.020	OK	210.5383	0.00	0.00	
SEQ-CCB2 HgII	7.993	147.5	188.7	210.55	210.55	161.7	0.031	OK	210.5383	0.00	0.00	

#35: 1709607-11



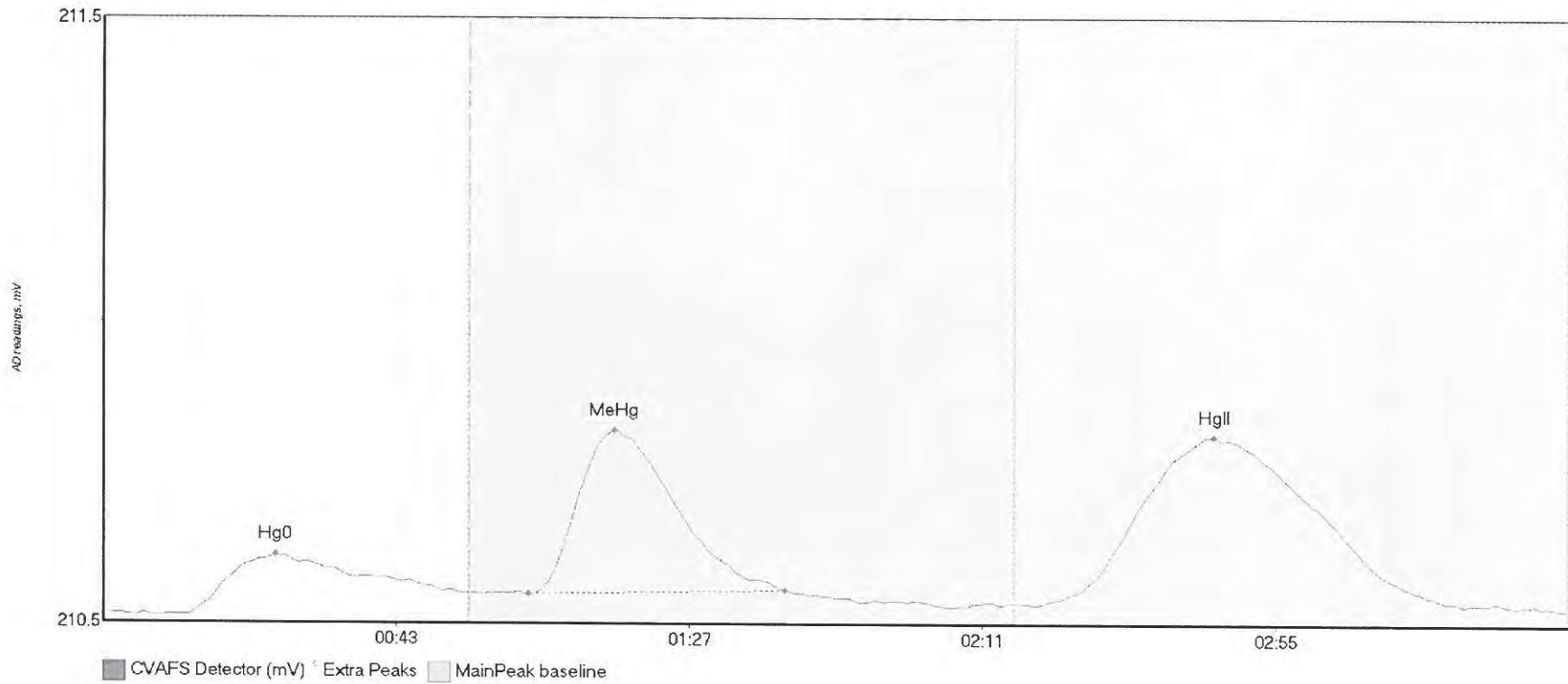
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-11 Hg0	66.033	13.0	53.9	210.54	210.60	22.1	0.502	OK	210.5384	0.00	0.40	
1709607-11 MeHg	3021.394	60.5	134.7	210.59	210.64	76.8	16.735	OK	210.5384	0.00	0.40	
1709607-11 HgII	9150.256	136.8	219.8	210.65	210.94	166.5	30.425	CT	210.5384	0.00	0.40	

#36: 1709607-12



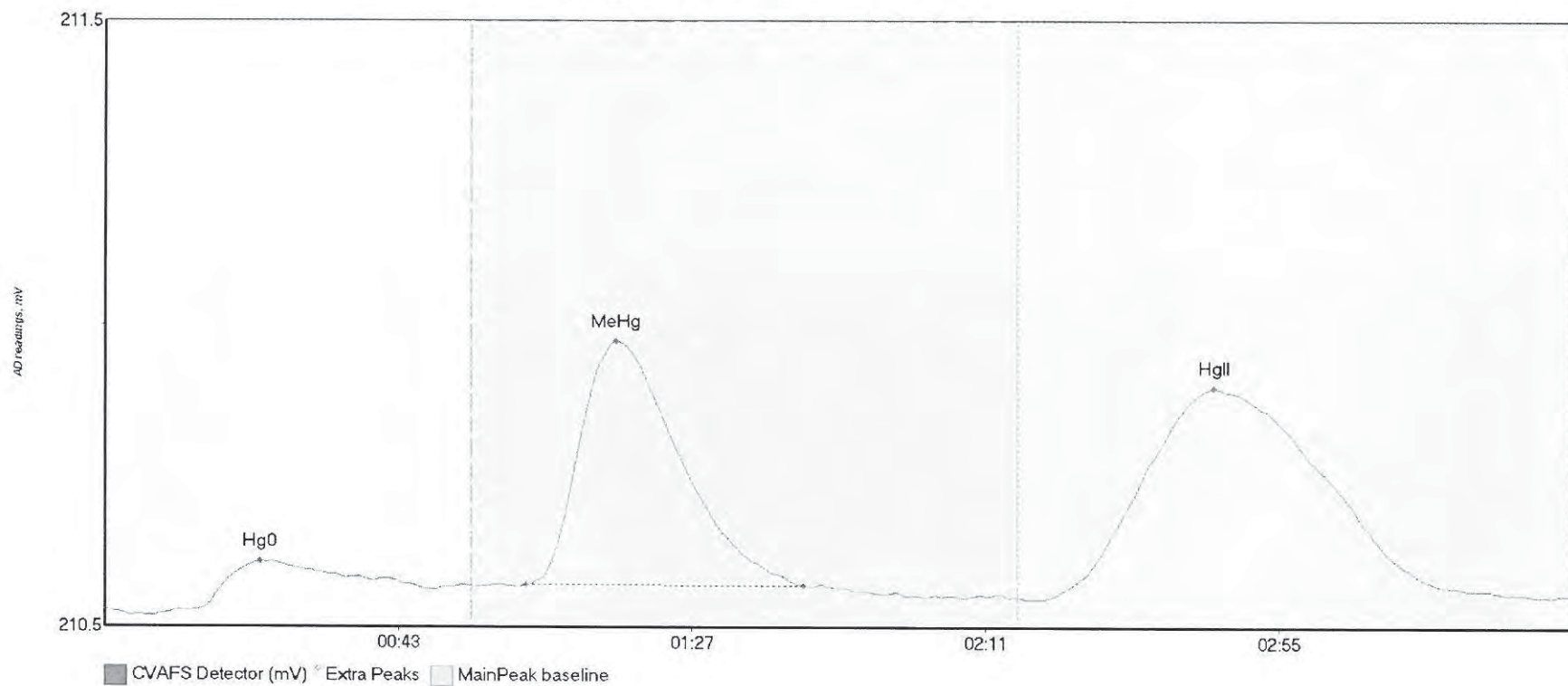
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-12 Hg0	58.729	11.3	55.0	210.54	210.61	22.4	0.415	CT	210.5532	0.00	0.24	
1709607-12 MeHg	2219.831	61.1	134.6	210.61	210.62	77.0	12.255	OK	210.5532	0.00	0.24	
1709607-12 HgII	5120.635	136.8	219.8	210.63	210.79	167.1	16.962	CT	210.5532	0.00	0.24	

#37: 1709608-01



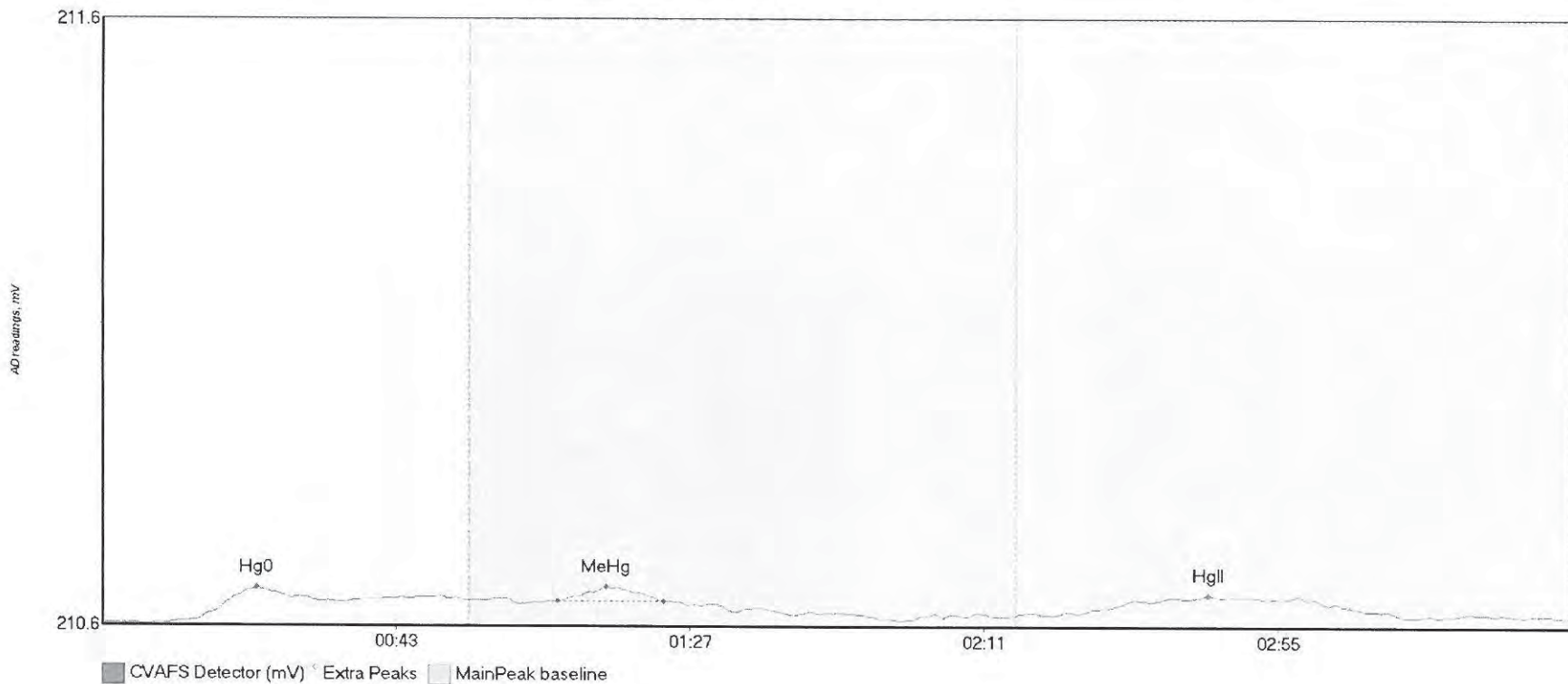
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709608-01 Hg0	18.549	12.6	54.7	210.55	210.59	25.8	0.098	OK	210.5573	0.00	0.01	
1709608-01 MeHg	44.680	63.9	102.3	210.59	210.60	76.8	0.271	OK	210.5573	0.00	0.01	
1709608-01 HgII	80.246	140.4	201.7	210.57	210.58	166.8	0.278	OK	210.5573	0.00	0.01	

#38: 1709608-03



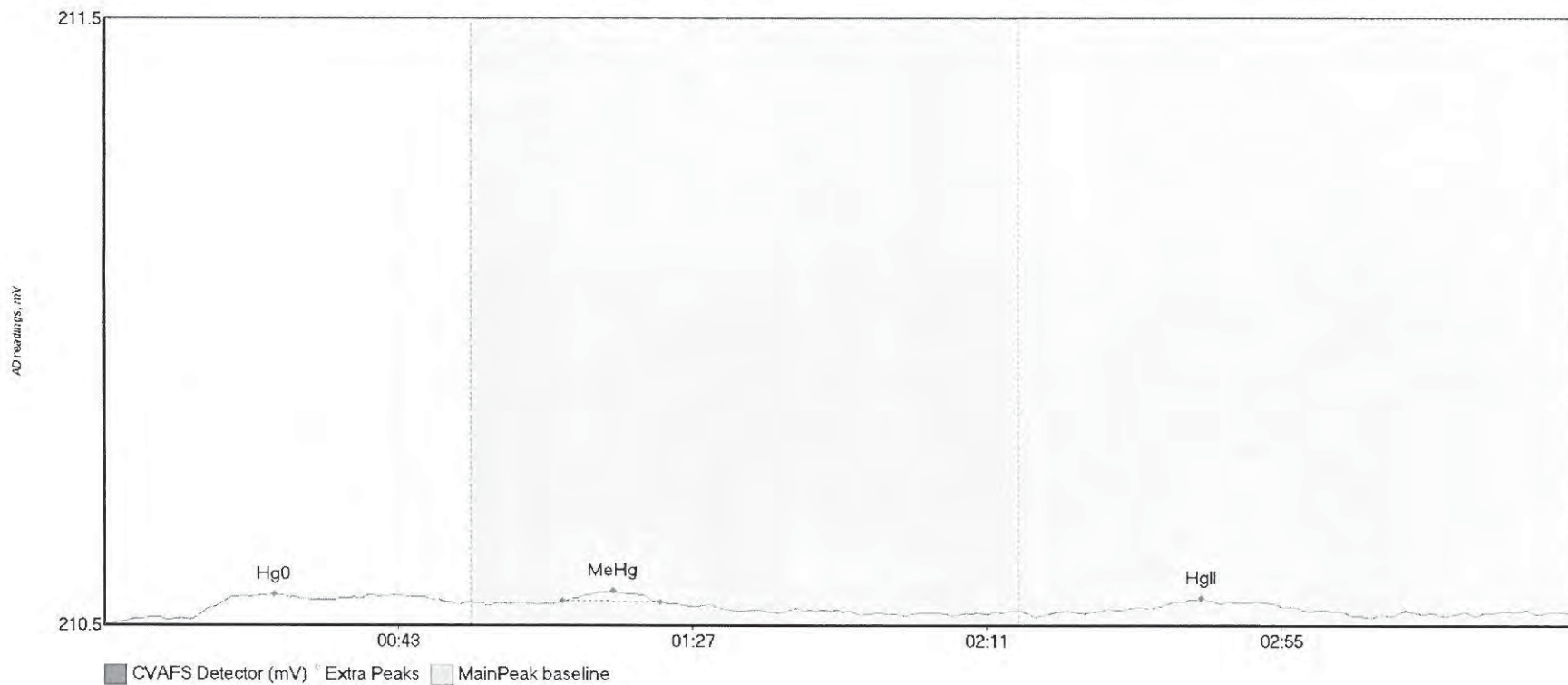
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709608-03 Hg0	12.926	14.4	49.2	210.55	210.59	23.3	0.079	OK	210.5518	0.00	0.02	
1709608-03 MeHg	69.490	63.2	104.8	210.59	210.59	76.7	0.403	OK	210.5518	0.00	0.02	
1709608-03 HgII	105.692	142.0	213.9	210.57	210.58	166.3	0.345	OK	210.5518	0.00	0.02	

#39: 1709609-02



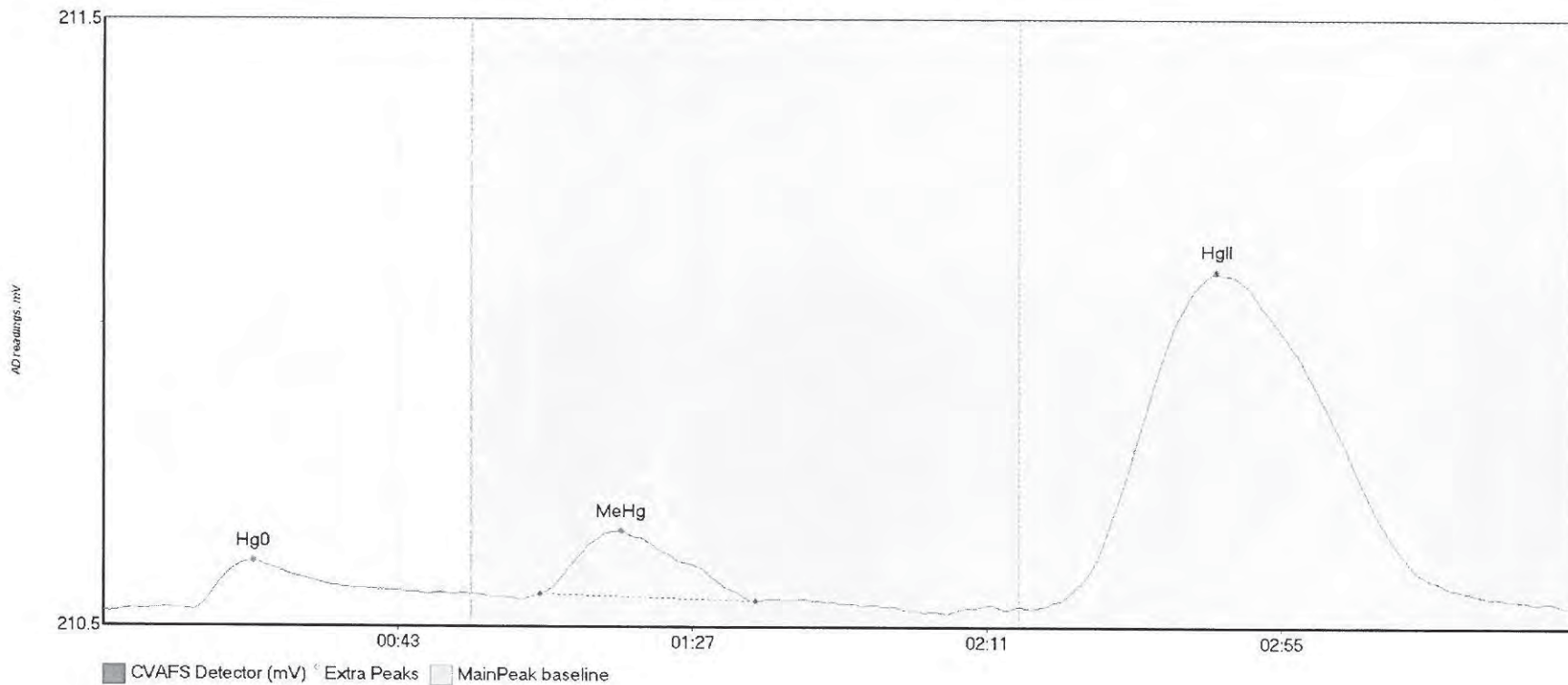
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709609-02 Hg0	4.147	12.5	35.9	210.56	210.59	23.1	0.054	OK	210.5591	0.00	0.01	
1709609-02 MeHg	2.110	68.1	84.0	210.59	210.60	75.5	0.024	OK	210.5591	0.00	0.01	
1709609-02 HgII	7.643	147.1	189.9	210.58	210.58	165.6	0.028	OK	210.5591	0.00	0.01	

#40: 1709609-03



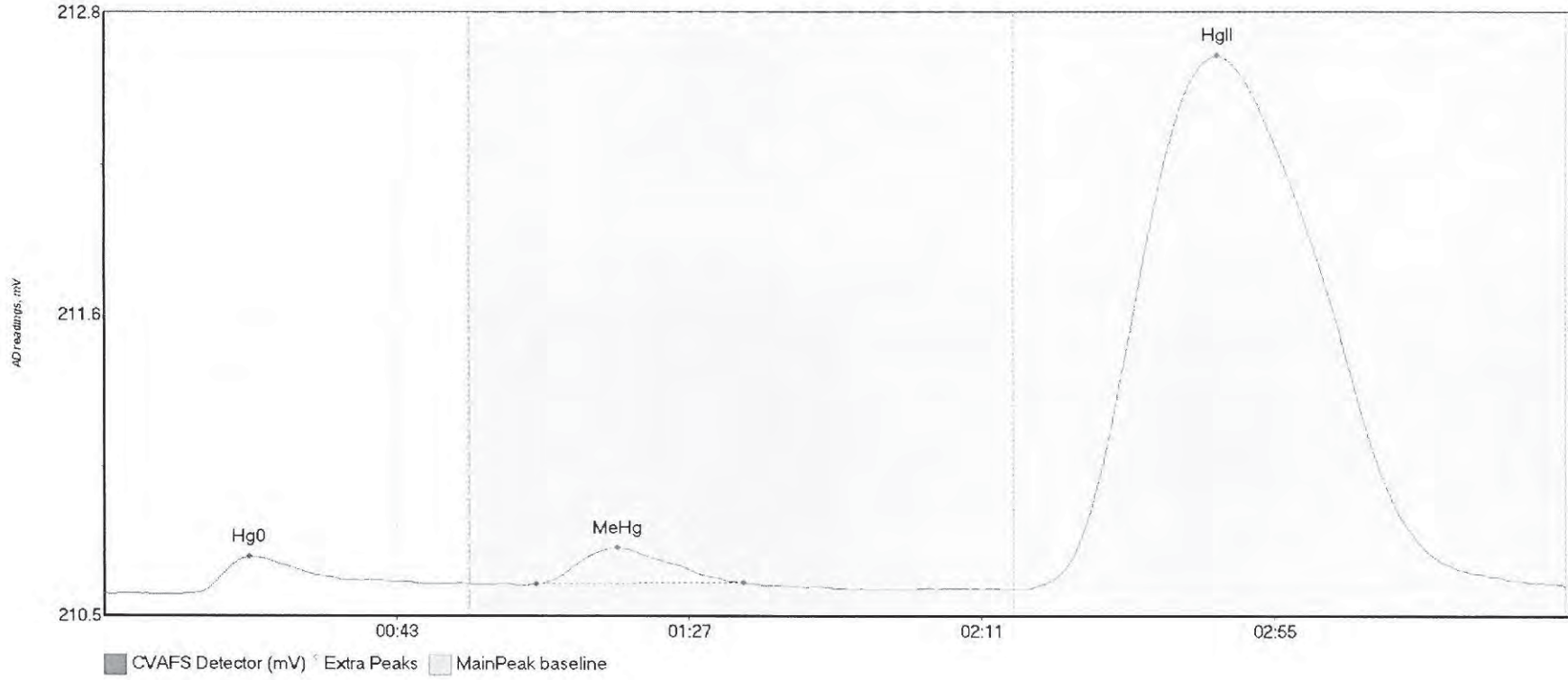
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709609-03 Hg0	8.531	2.5	52.8	210.55	210.58	25.5	0.046	OK	210.5488	0.00	0.02	
1709609-03 MeHg	1.472	68.6	83.1	210.59	210.59	76.2	0.017	OK	210.5488	0.00	0.02	
1709609-03 HgII	2.607	156.5	180.2	210.57	210.57	164.1	0.017	OK	210.5488	0.00	0.02	

#41: 1709609-04



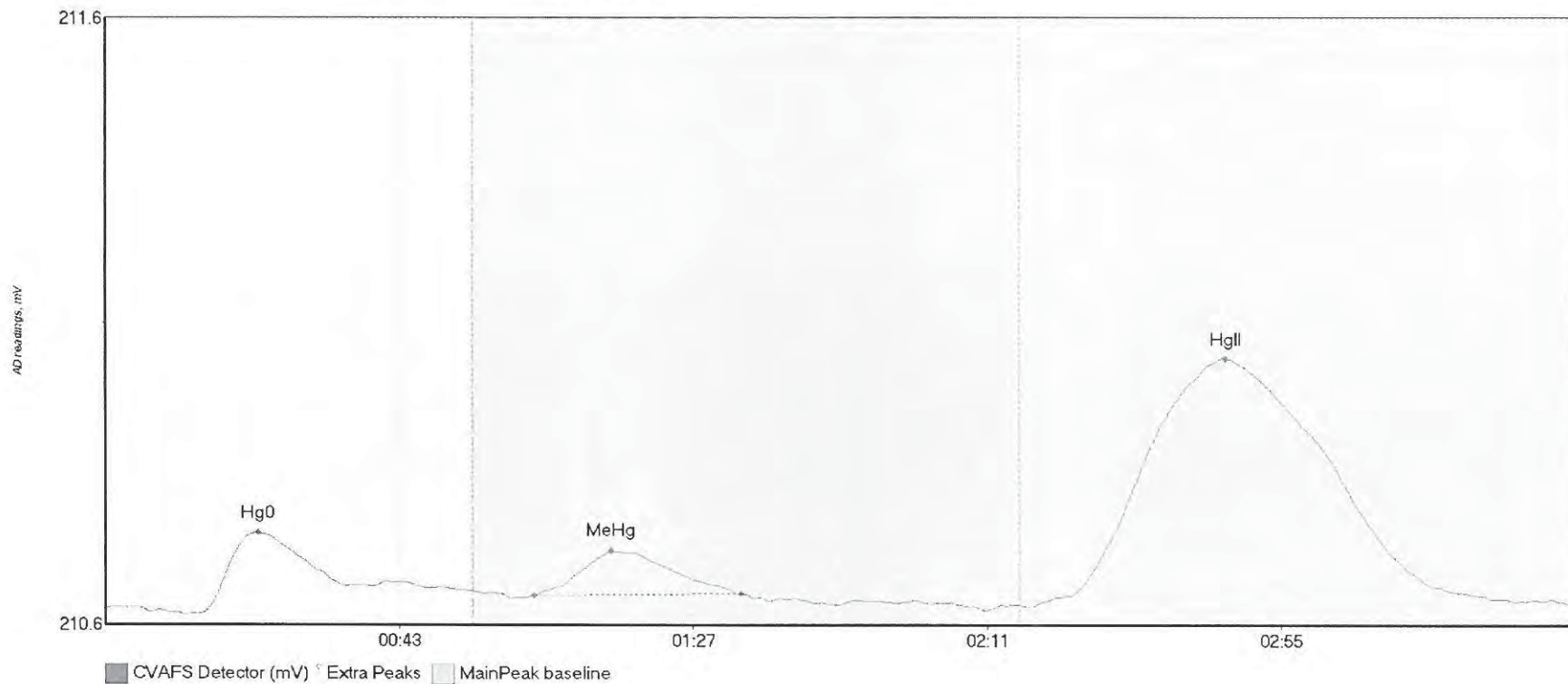
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709609-04 Hg0	11.600	13.3	48.8	210.57	210.60	22.4	0.082	OK	210.5690	0.00	0.01	
1709609-04 MeHg	18.905	65.3	97.4	210.60	210.59	77.4	0.105	OK	210.5690	0.00	0.01	
1709609-04 HgII	169.662	140.3	218.1	210.58	210.58	166.3	0.549	OK	210.5690	0.00	0.01	

#42: 1709609-05



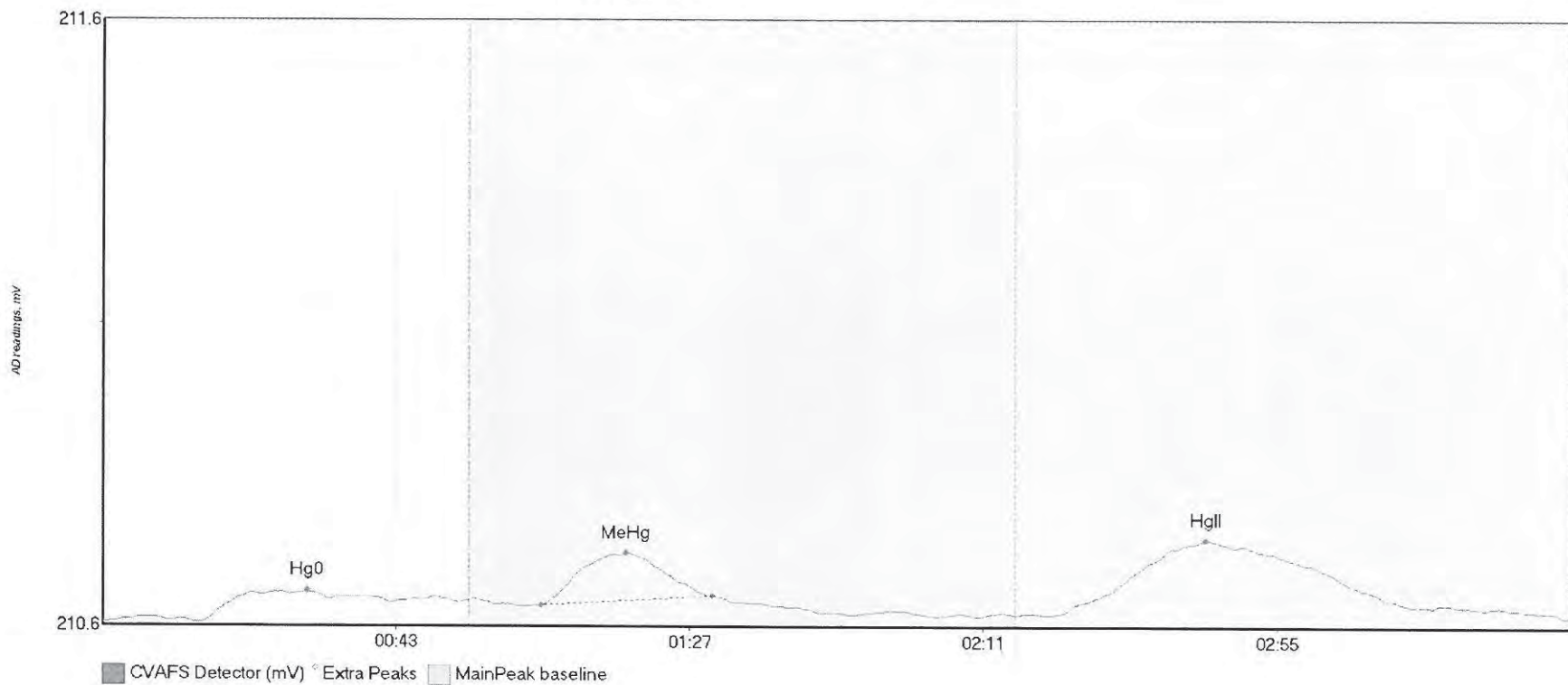
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709609-05 Hg0	18.625	12.6	49.1	210.58	210.61	21.9	0.138	OK	210.5758	0.00	0.03	
1709609-05 MeHg	21.231	65.0	96.2	210.61	210.61	77.3	0.139	OK	210.5758	0.00	0.03	
1709609-05 HgII	620.172	138.1	219.8	210.59	210.61	167.4	2.011	CT	210.5758	0.00	0.03	

#43: 1709609-06



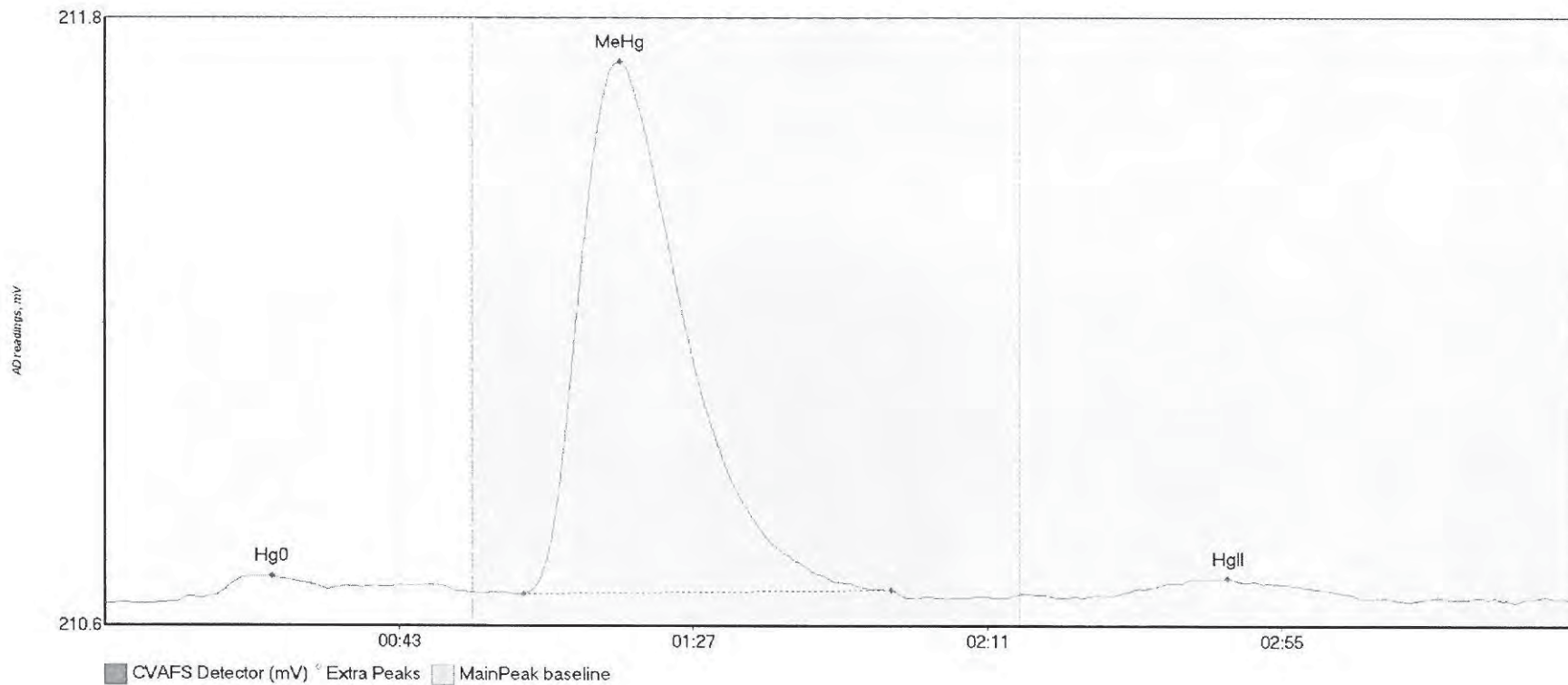
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709609-06 Hg0	19.342	14.0	54.5	210.59	210.62	22.8	0.133	OK	210.5964	0.00	0.01	
1709609-06 MeHg	11.381	64.2	95.1	210.62	210.62	75.7	0.074	OK	210.5964	0.00	0.01	
1709609-06 HgII	127.238	138.3	219.4	210.60	210.60	167.7	0.409	OK	210.5964	0.00	0.01	

#44: 1709609-08



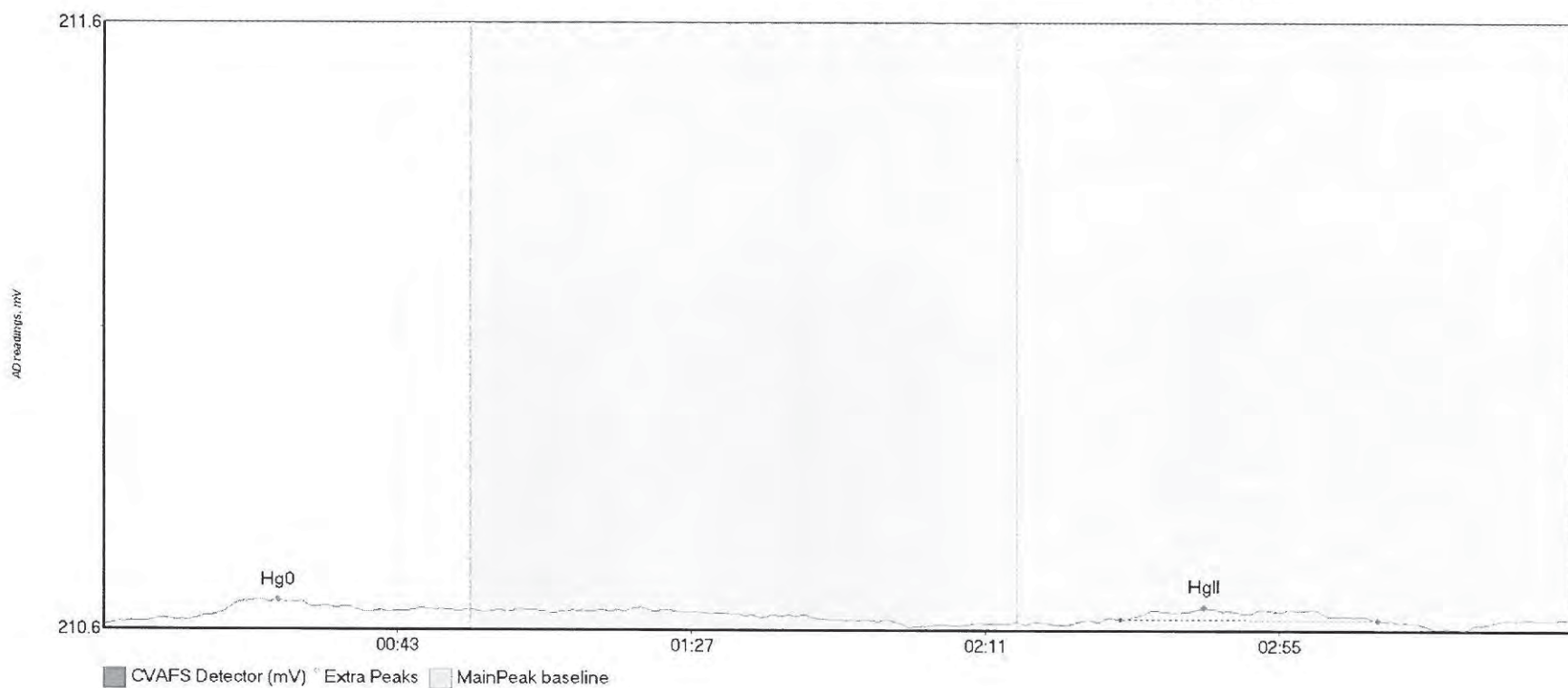
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709609-08 Hg0	6.598	14.6	43.4	210.60	210.63	30.7	0.051	OK	210.5992	0.00	0.01	
1709609-08 MeHg	11.475	65.7	91.4	210.63	210.64	78.5	0.087	OK	210.5992	0.00	0.01	
1709609-08 HgII	37.694	143.2	215.2	210.61	210.62	165.3	0.123	OK	210.5992	0.00	0.01	

#45: SEQ-CCV3



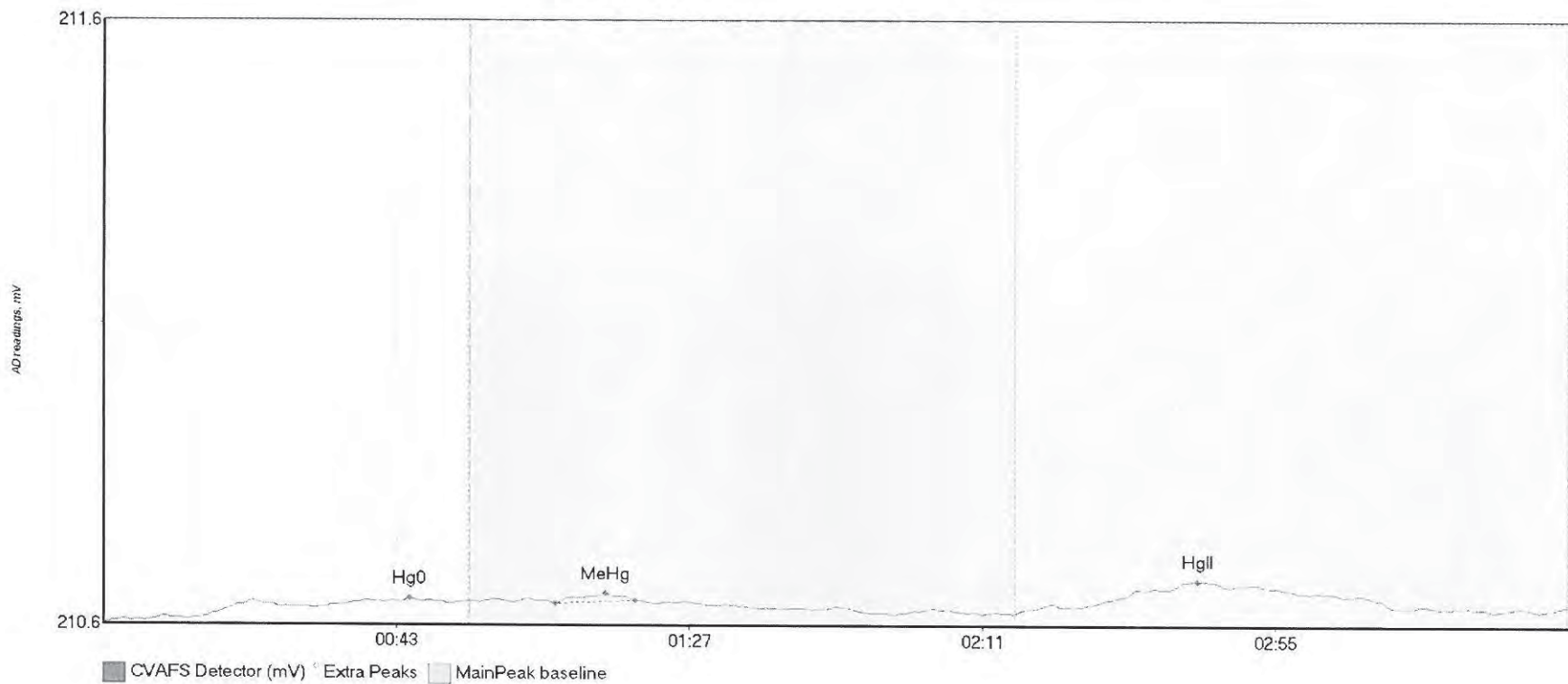
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCV3 Hg0	9.635	10.4	55.0	210.61	210.63	25.0	0.052	CT	210.6037	0.00	0.01	
SEQ-CCV3 MeHg	195.852	62.6	117.6	210.62	210.63	77.1	1.078	OK	210.6037	0.00	0.01	
SEQ-CCV3 HgII	6.913	150.6	185.9	210.62	210.62	168.0	0.035	OK	210.6037	0.00	0.01	

#46: SEQ-CCB3



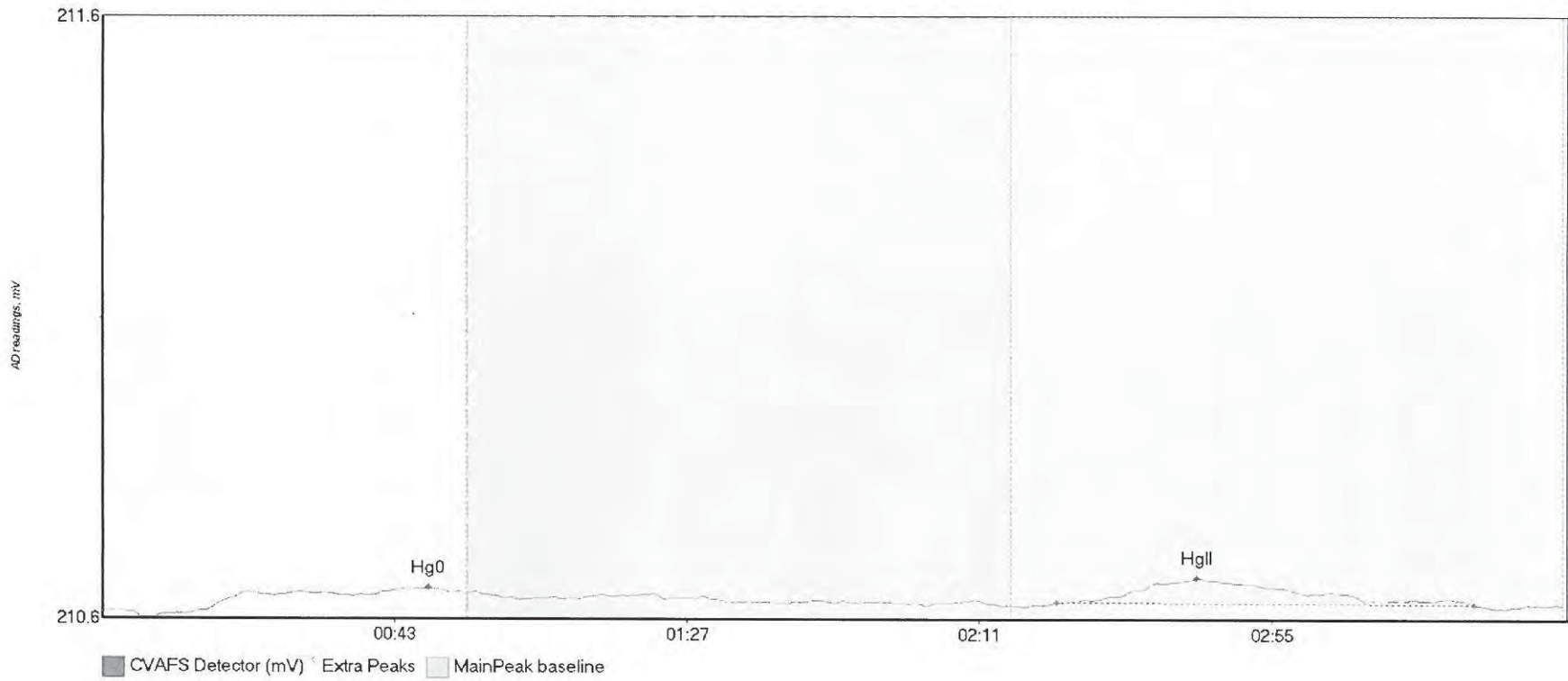
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCB3 Hg0	4.418	5.9	42.6	210.61	210.63	26.1	0.036	OK	210.6103	0.00	0.01	
SEQ-CCB3 HgII	5.006	152.3	190.7	210.62	210.62	164.8	0.020	OK	210.6103	0.00	0.01	017

#47: F709436-BLK1



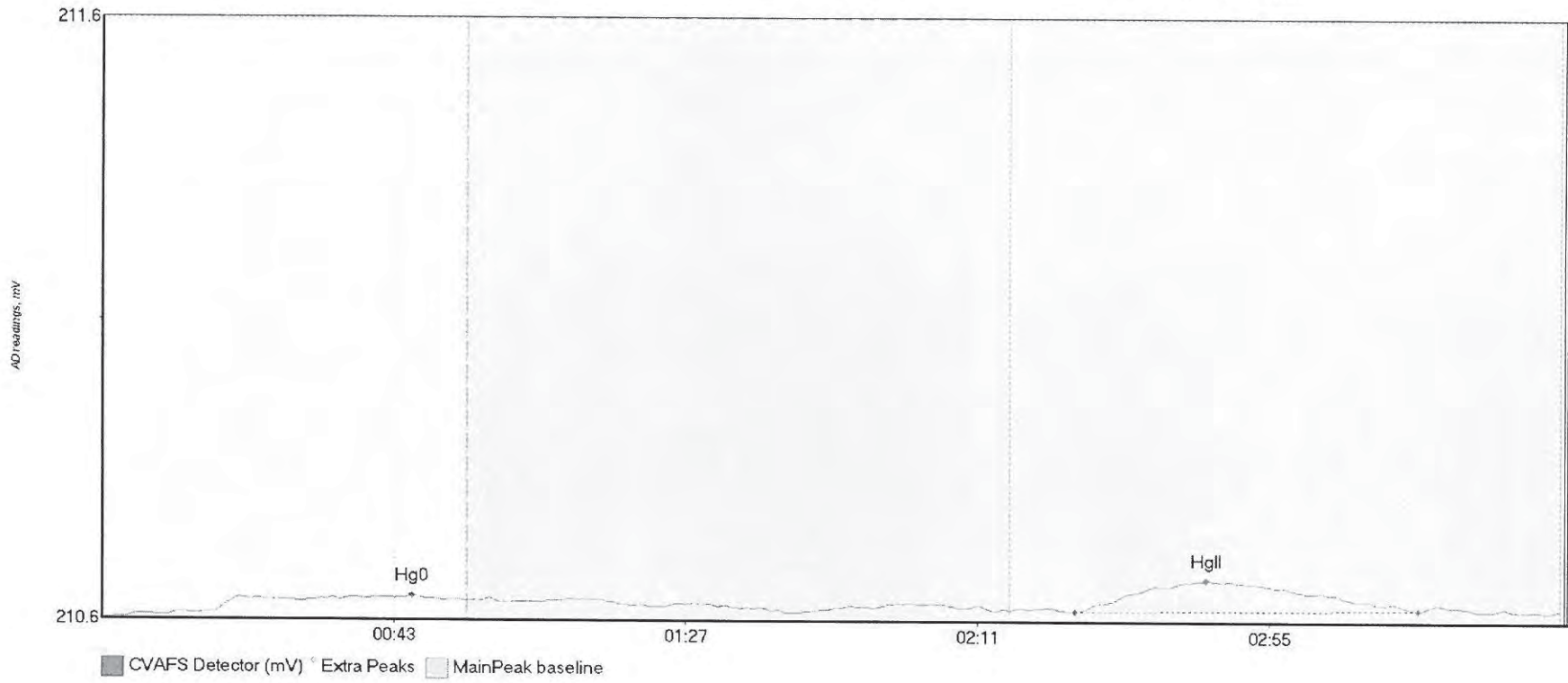
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709436-BLK1 Hg	3.940	6.4	52.3	210.62	210.65	46.0	0.037	OK	210.6160	0.00	0.03	
F709436-BLK1 Me	0.956	67.9	79.9	210.65	210.65	75.5	0.015	OK	210.6160	0.00	0.03	
F709436-BLK1 Hg	18.175	136.9	208.7	210.63	210.64	164.3	0.055	OK	210.6160	0.00	0.03	

#48: F709436-BLK2



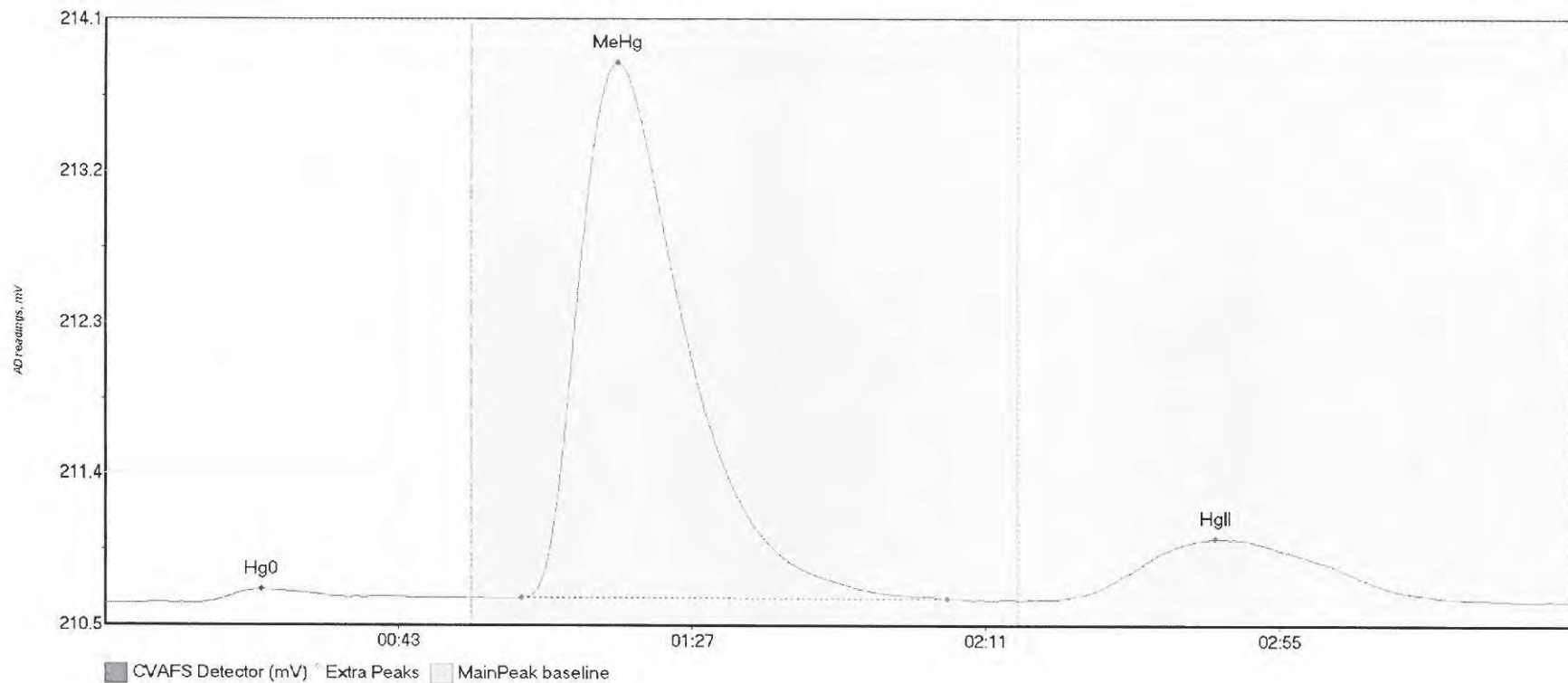
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709436-BLK2 Hg	5.238	15.5	55.0	210.64	210.67	49.2	0.038	CT	210.6378	0.00	0.01	
F709436-BLK2 Hg	11.911	143.7	206.5	210.65	210.65	164.7	0.041	OK	210.6378	0.00	0.01	017

#49: F709436-BLK3



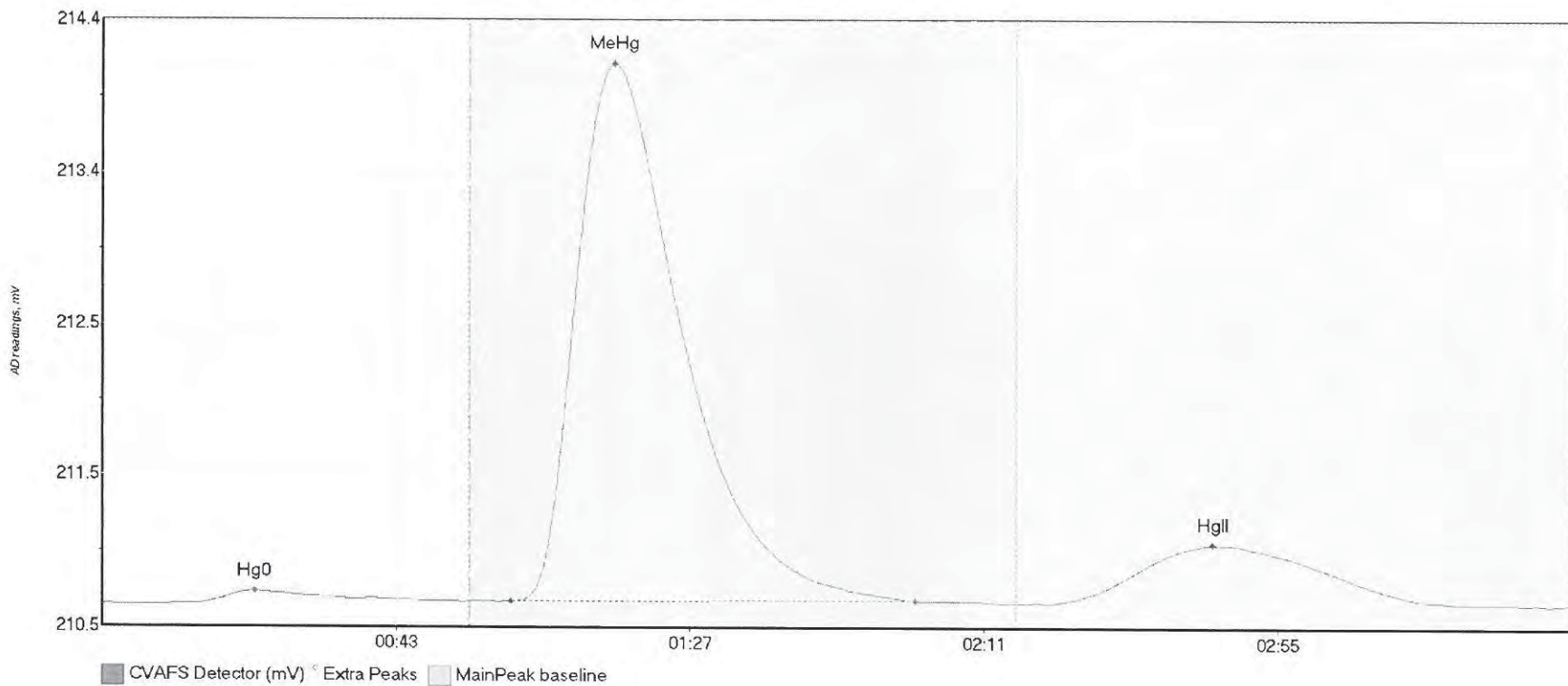
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709436-BLK3 Hg	4.972	9.4	55.0	210.65	210.68	46.7	0.034	CT	210.6490	0.00	0.02	
F709436-BLK3 Hg	15.112	146.7	198.4	210.66	210.67	166.5	0.053	OK	210.6490	0.00	0.02	017

#50: F709436-BS1



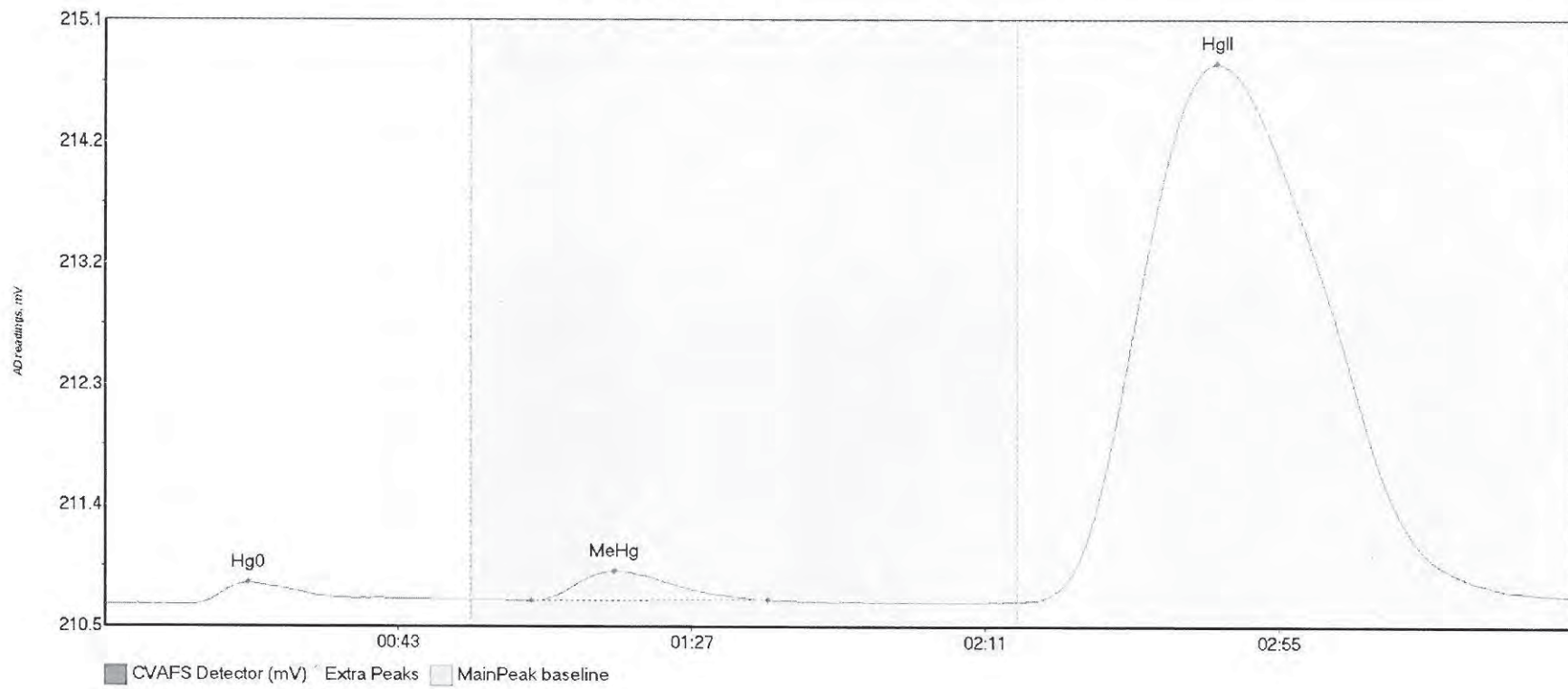
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709436-BS1 Hg0	11.490	13.5	51.3	210.66	210.69	23.5	0.084	OK	210.6628	0.00	0.01	
F709436-BS1 MeH	580.559	62.5	126.3	210.69	210.69	76.9	3.149	OK	210.6628	0.00	0.01	
F709436-BS1 HgI	108.351	142.1	205.3	210.68	210.68	166.4	0.358	OK	210.6628	0.00	0.01	

#51: F709436-BSD1



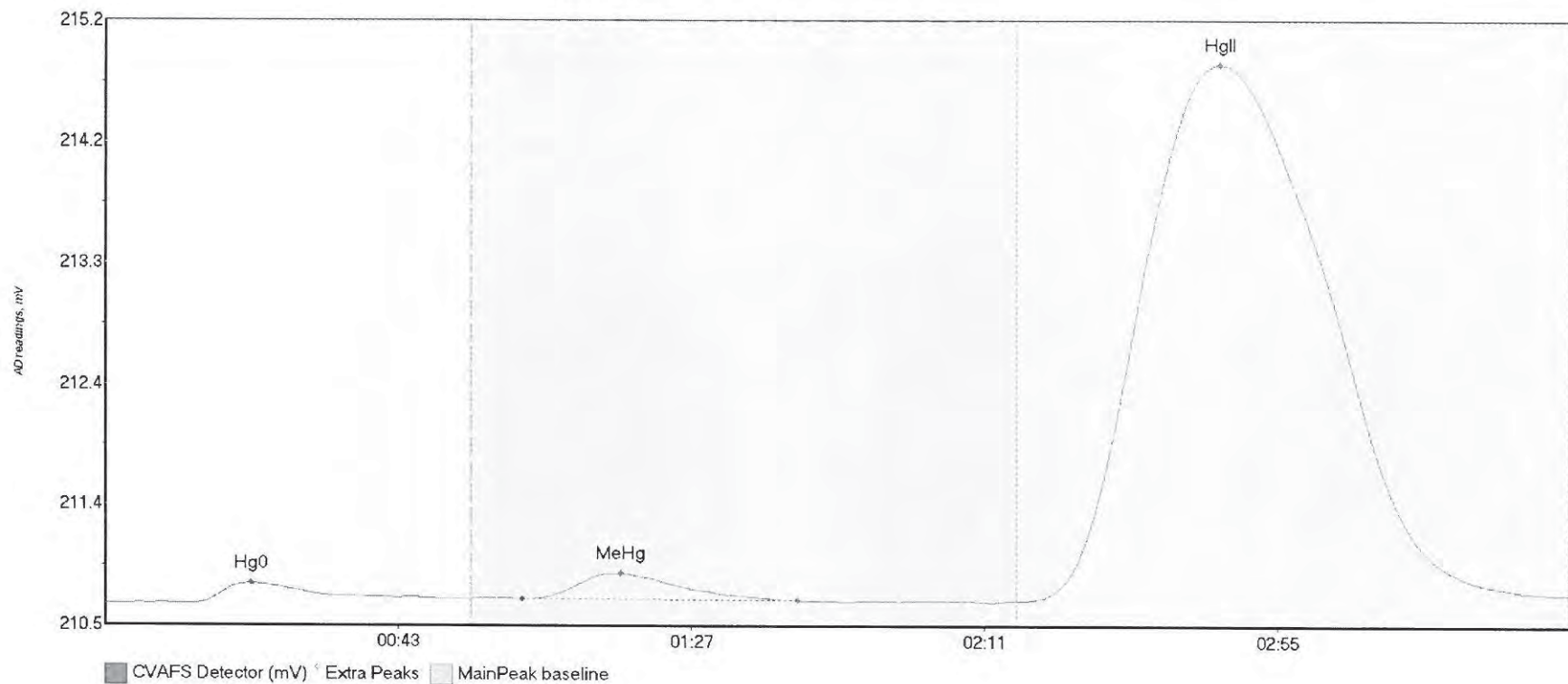
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709436-BSD1 Hg	13.316	13.5	53.8	210.67	210.69	22.8	0.082	OK	210.6695	0.00	0.01	
F709436-BSD1 Me	633.787	61.2	121.8	210.69	210.69	76.8	3.456	OK	210.6695	0.00	0.01	
F709436-BSD1 Hg	113.222	141.9	202.7	210.68	210.68	166.3	0.380	OK	210.6695	0.00	0.01	

#52: 1709529-01



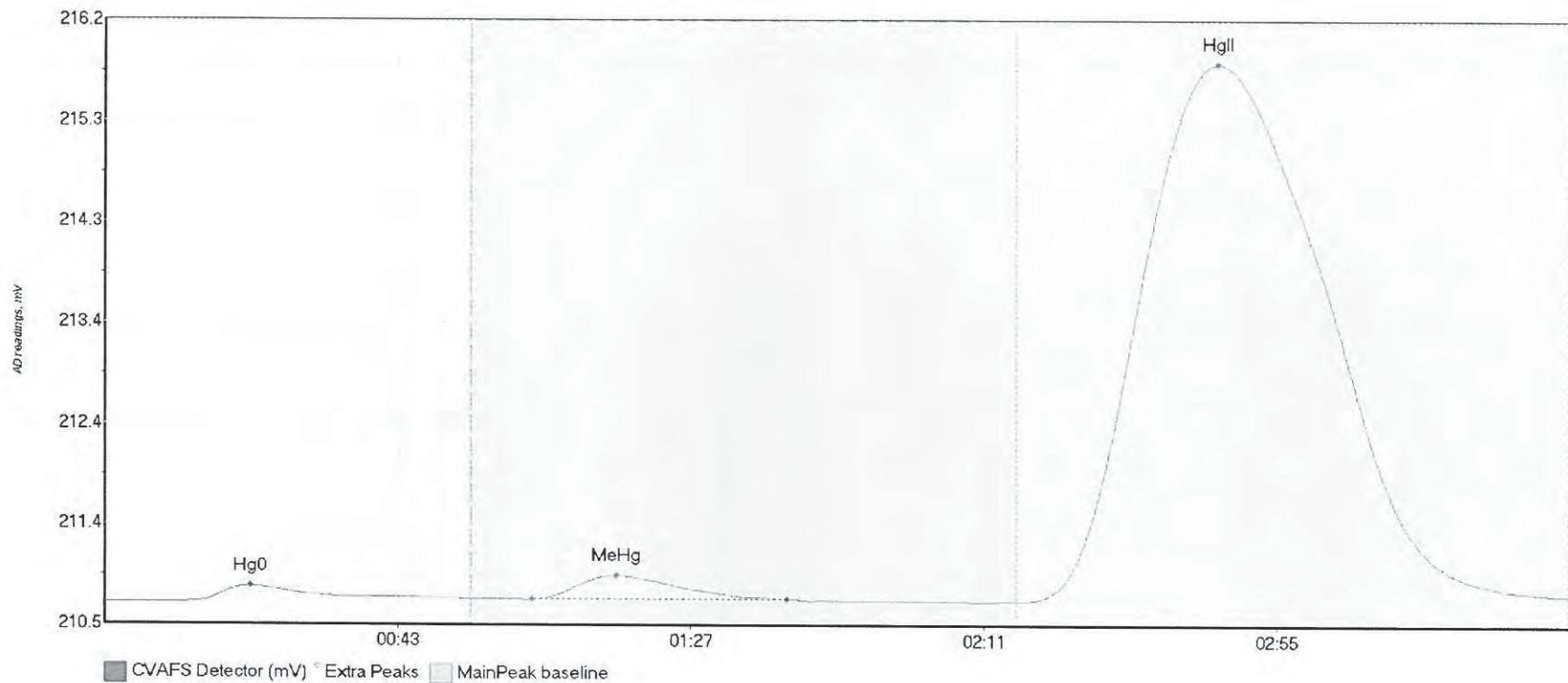
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709529-01 Hg0	22.561	12.1	54.2	210.66	210.70	21.6	0.164	OK	210.6657	0.00	0.06	
1709529-01 MeHg	36.236	64.0	99.4	210.69	210.70	76.5	0.224	OK	210.6657	0.00	0.06	
1709529-01 HgII	1246.572	136.8	219.8	210.69	210.73	166.8	4.054	CT	210.6657	0.00	0.06	

#53: 1709529-02



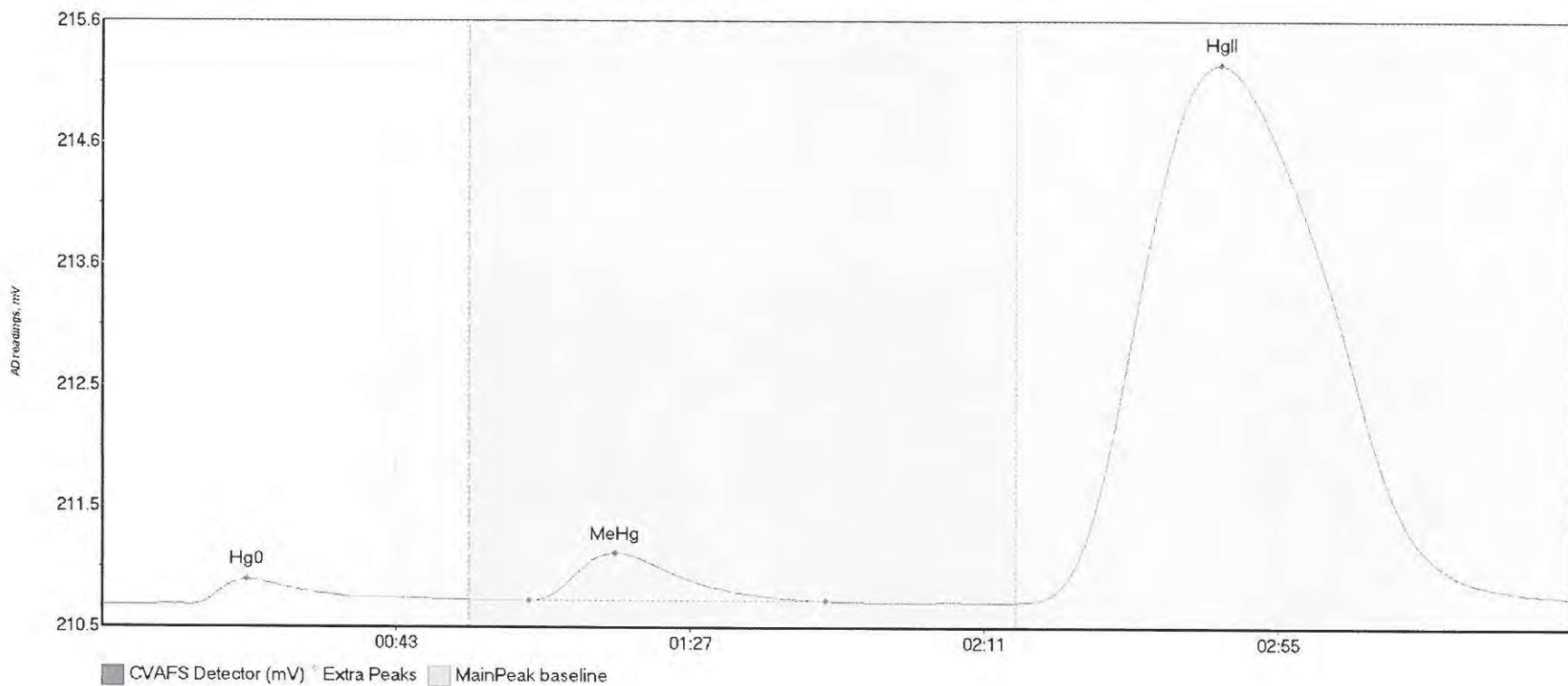
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709529-02 Hg0	22.660	12.9	51.1	210.68	210.72	22.0	0.157	OK	210.6868	0.00	0.07	
1709529-02 MeHg	35.002	62.6	104.0	210.72	210.71	77.4	0.197	OK	210.6868	0.00	0.07	
1709529-02 HgII	1292.412	137.6	219.8	210.71	210.76	167.3	4.135	CT	210.6868	0.00	0.07	

#54: 1709529-03



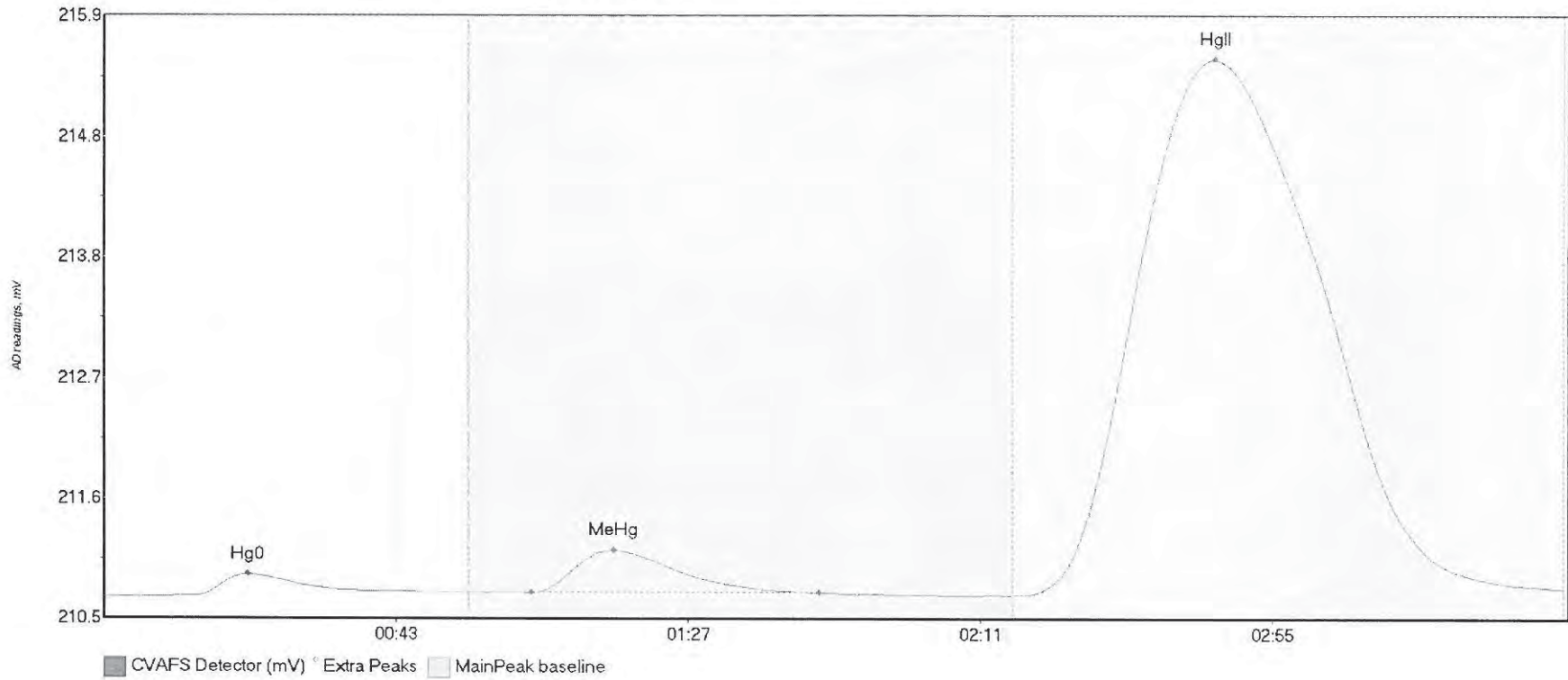
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709529-03 Hg0	20.973	11.2	54.8	210.71	210.74	21.8	0.147	OK	210.7004	0.00	0.08	
1709529-03 MeHg	37.863	64.2	102.5	210.73	210.74	76.9	0.223	OK	210.7004	0.00	0.08	
1709529-03 HgII	1581.104	138.0	219.7	210.72	210.78	167.0	5.100	OK	210.7004	0.00	0.08	

#55: 1709529-04



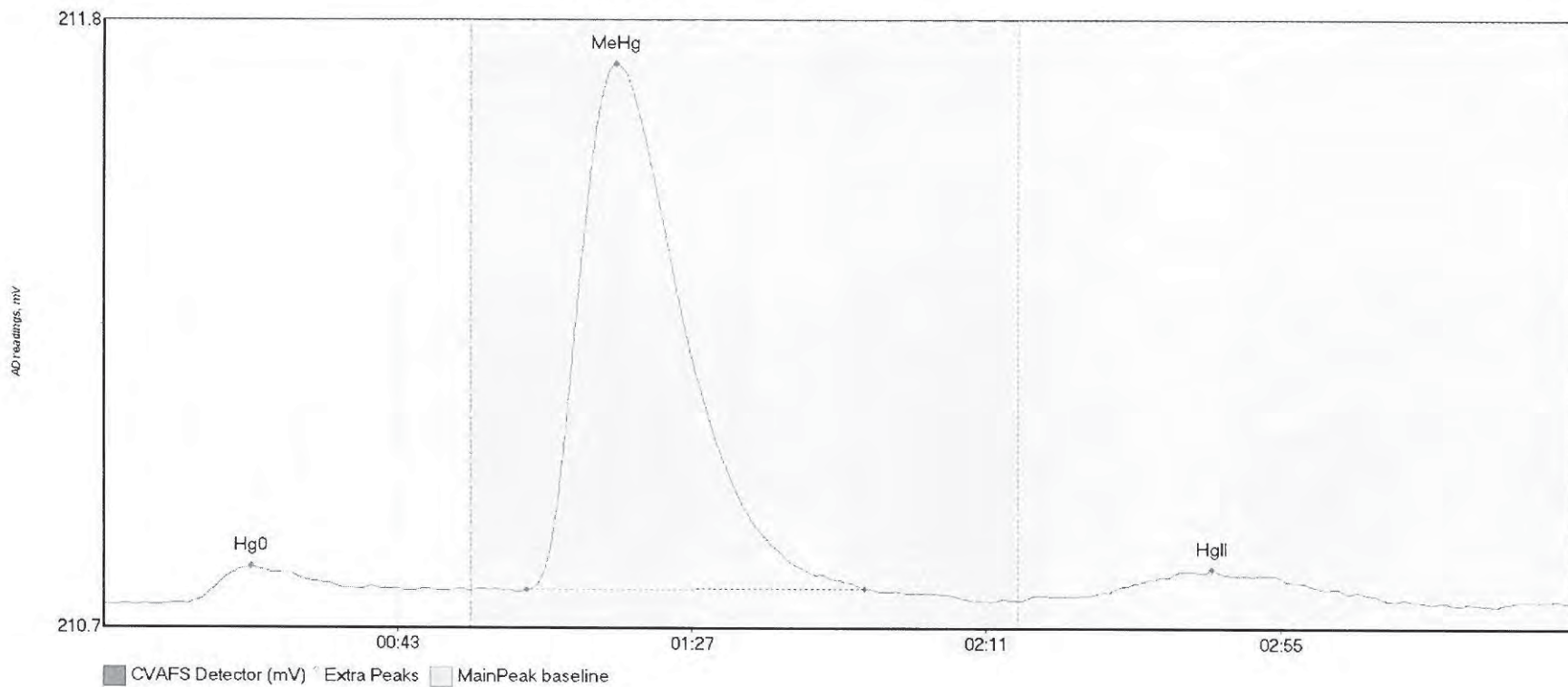
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709529-04 Hg0	30.147	13.2	55.0	210.71	210.75	21.7	0.207	CT	210.7046	0.00	0.08	
1709529-04 MeHg	69.671	63.8	108.3	210.74	210.74	76.8	0.395	OK	210.7046	0.00	0.08	
1709529-04 HgII	1399.541	136.8	219.8	210.73	210.78	167.4	4.476	CT	210.7046	0.00	0.08	

#56: 1709529-05



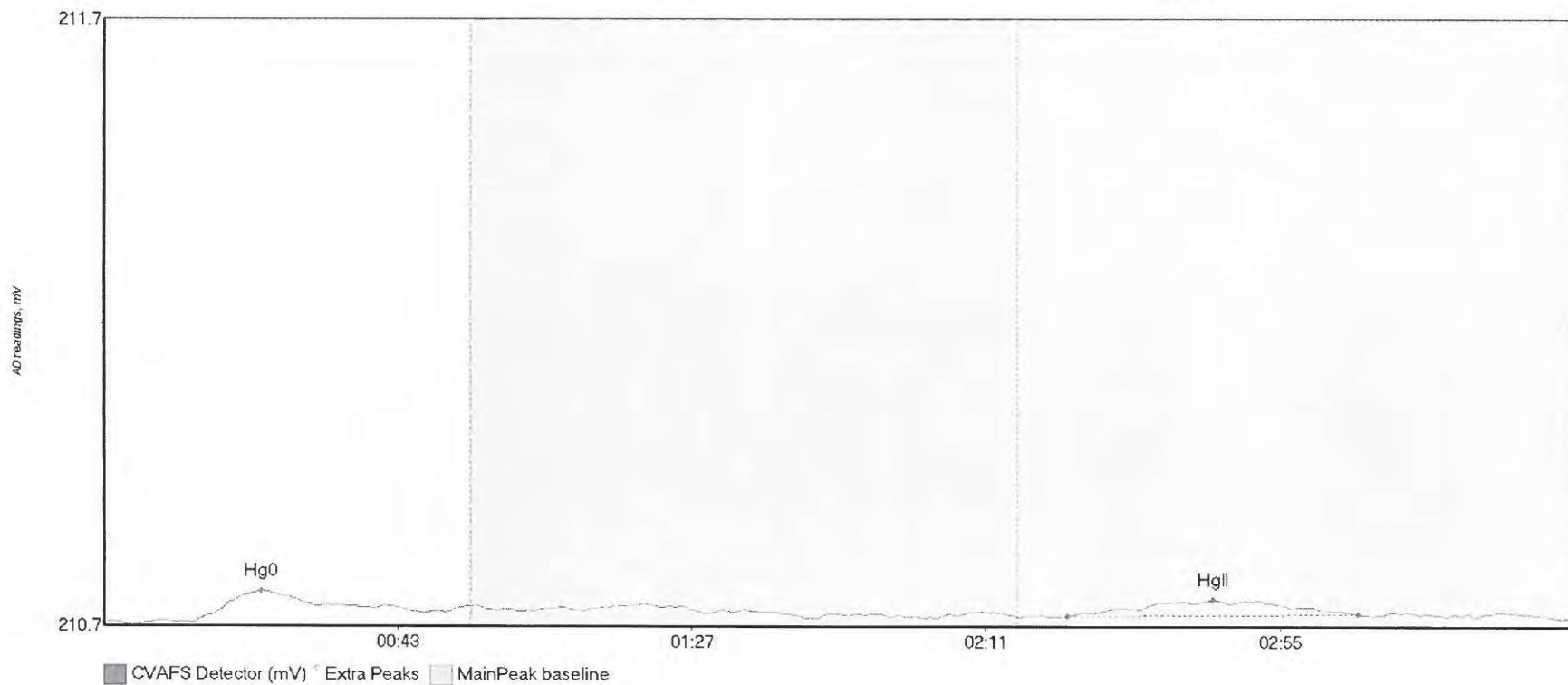
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709529-05 Hg0	26.226	9.4	52.9	210.72	210.76	21.7	0.202	OK	210.7180	0.00	0.08	
1709529-05 MeHg	66.583	64.4	107.7	210.76	210.75	76.9	0.378	OK	210.7180	0.00	0.08	
1709529-05 HgII	1484.855	138.3	219.8	210.73	210.79	167.4	4.786	CT	210.7180	0.00	0.08	

#57: SEQ-CCV4



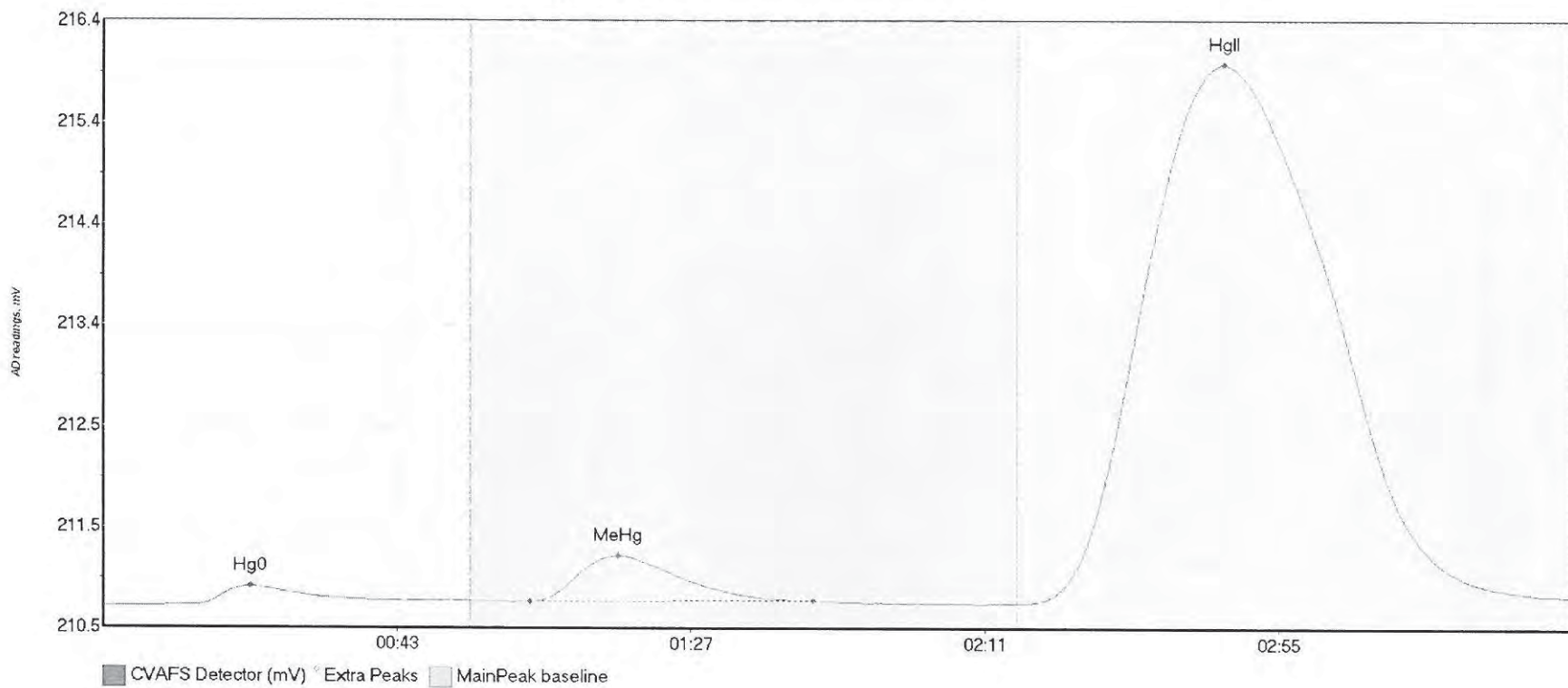
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCV4 Hg0	10.283	12.6	51.1	210.72	210.75	22.2	0.070	OK	210.7200	0.00	0.01	
SEQ-CCV4 MeHg	180.468	63.3	113.9	210.75	210.75	76.7	1.007	OK	210.7200	0.00	0.01	
SEQ-CCV4 HgII	16.457	137.1	192.8	210.73	210.73	165.8	0.058	OK	210.7200	0.00	0.01	

#58: SEQ-CCB4



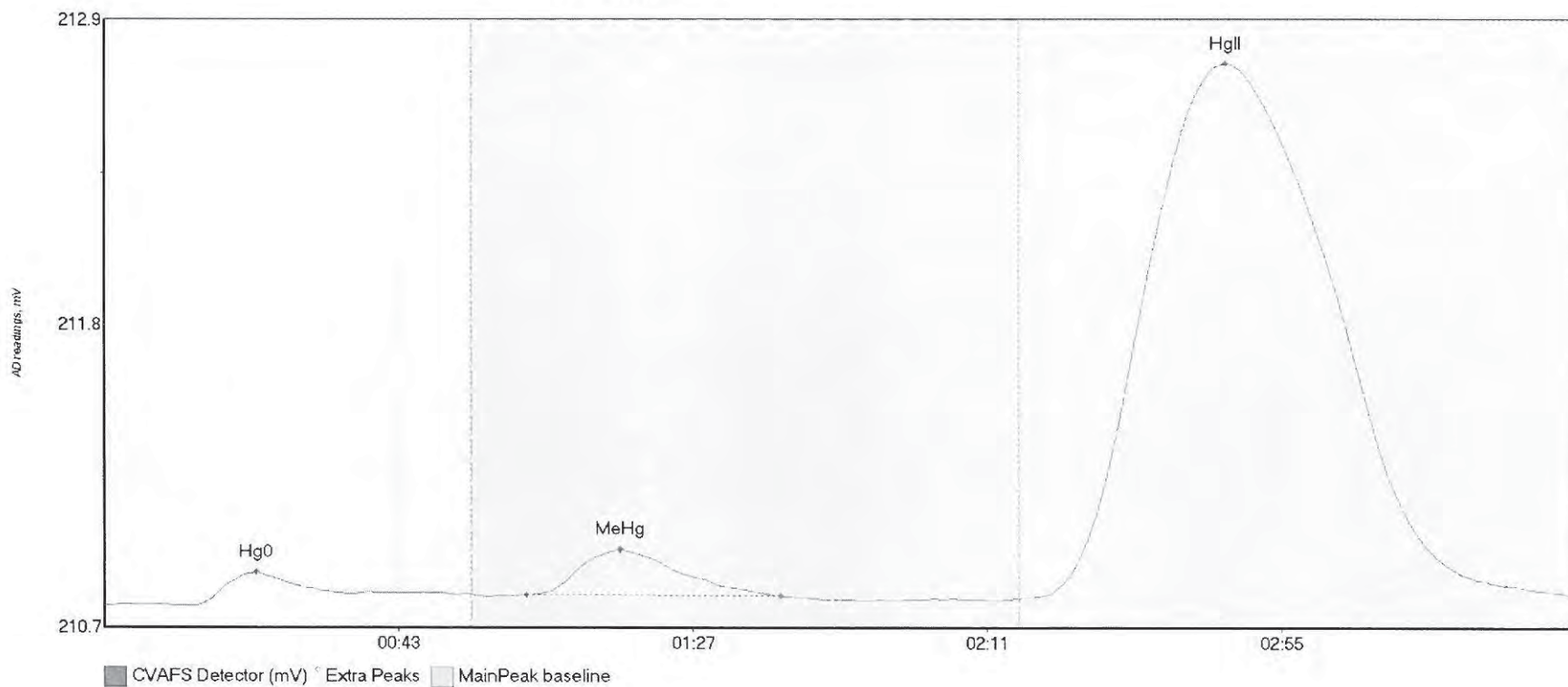
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCB4 Hg0	7.495	13.0	48.1	210.72	210.74	23.6	0.051	OK	210.7202	0.00	0.01	
SEQ-CCB4 HgII	6.180	144.3	187.8	210.73	210.73	166.1	0.026	OK	210.7202	0.00	0.01	017

#59: 1709529-06



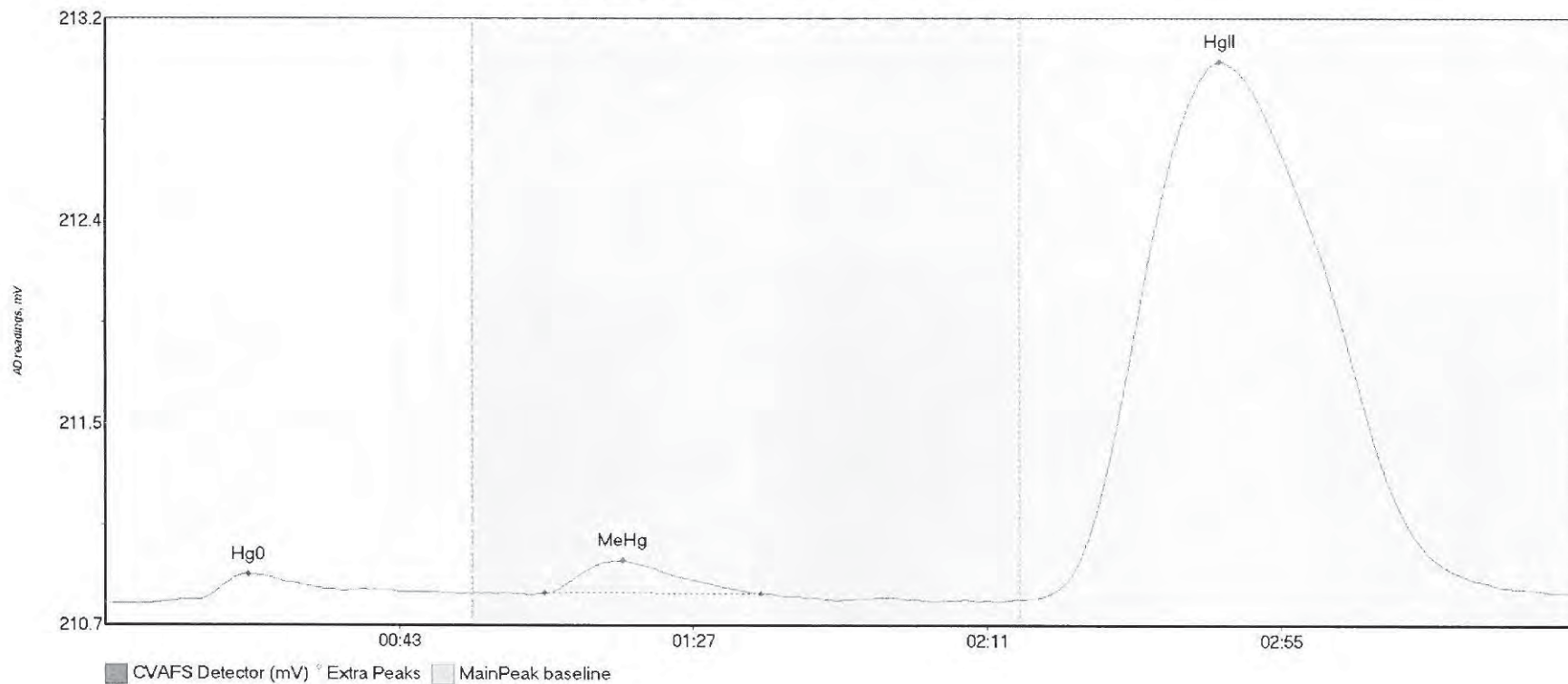
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709529-06 Hg0	21.966	11.3	45.2	210.73	210.77	22.0	0.183	OK	210.7226	0.00	0.09	
1709529-06 MeHg	75.884	63.8	106.3	210.77	210.77	77.2	0.440	OK	210.7226	0.00	0.09	
1709529-06 HgII	1623.132	137.3	219.2	210.75	210.81	167.7	5.209	OK	210.7226	0.00	0.09	

#60: 1709583-01



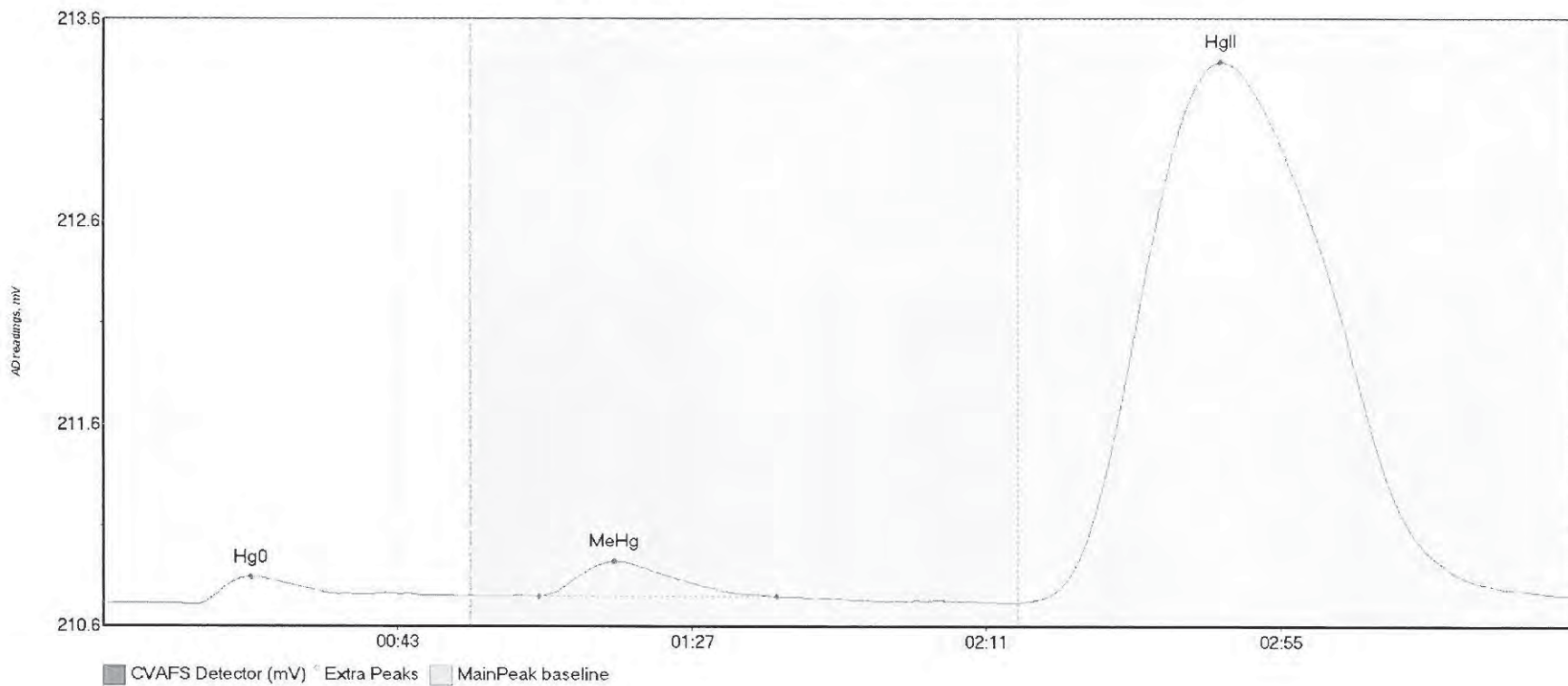
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709583-01 Hg0	16.236	13.6	53.0	210.73	210.77	22.7	0.121	OK	210.7342	0.00	0.04	
1709583-01 MeHg	28.614	63.2	101.1	210.77	210.77	77.1	0.164	OK	210.7342	0.00	0.04	
1709583-01 HgII	612.978	138.5	219.5	210.76	210.77	167.6	1.949	OK	210.7342	0.00	0.04	

#61: 1709583-02



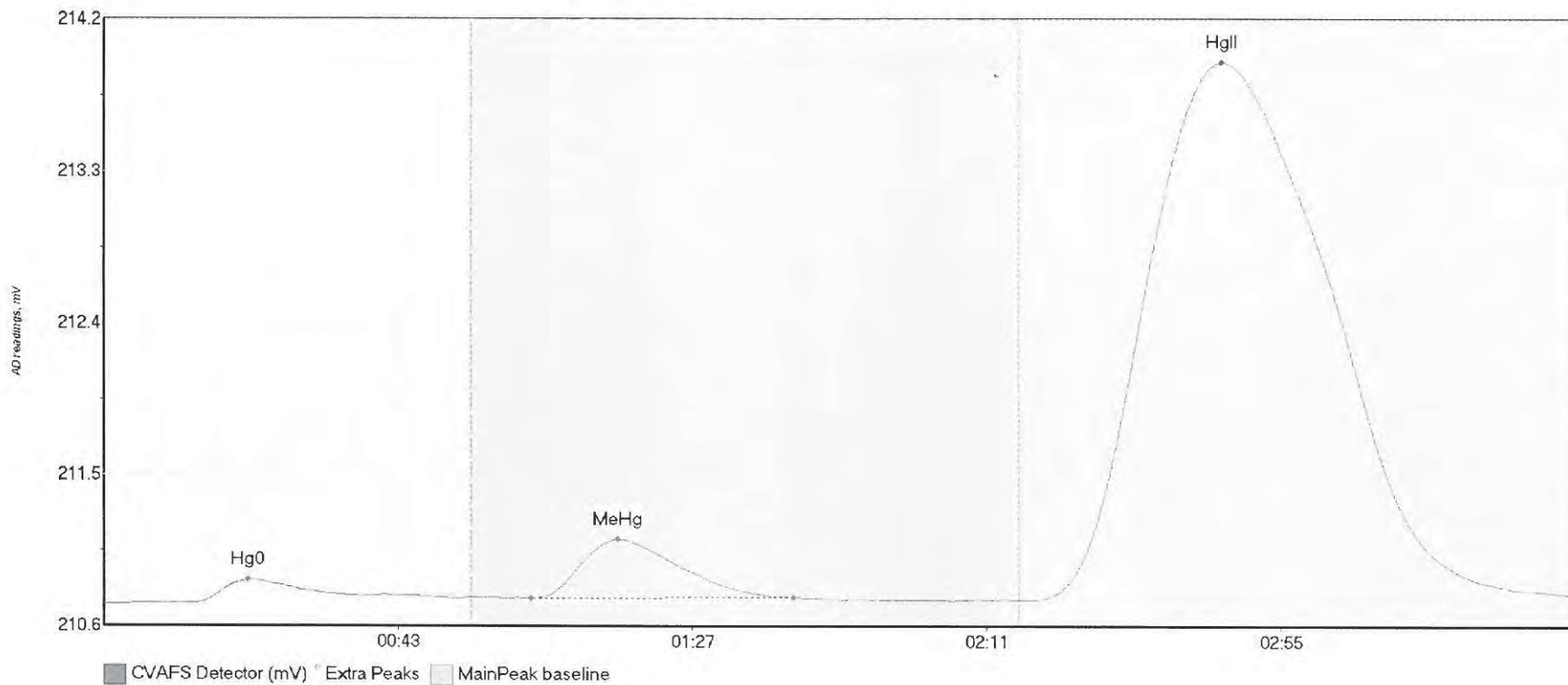
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709583-02 Hg0	17.860	7.0	53.1	210.75	210.79	21.5	0.121	OK	210.7471	0.00	0.04	
1709583-02 MeHg	22.701	65.7	98.1	210.79	210.79	77.4	0.139	OK	210.7471	0.00	0.04	
1709583-02 HgII	706.632	136.9	219.6	210.76	210.79	166.8	2.280	OK	210.7471	0.00	0.04	

#62: 1709583-03



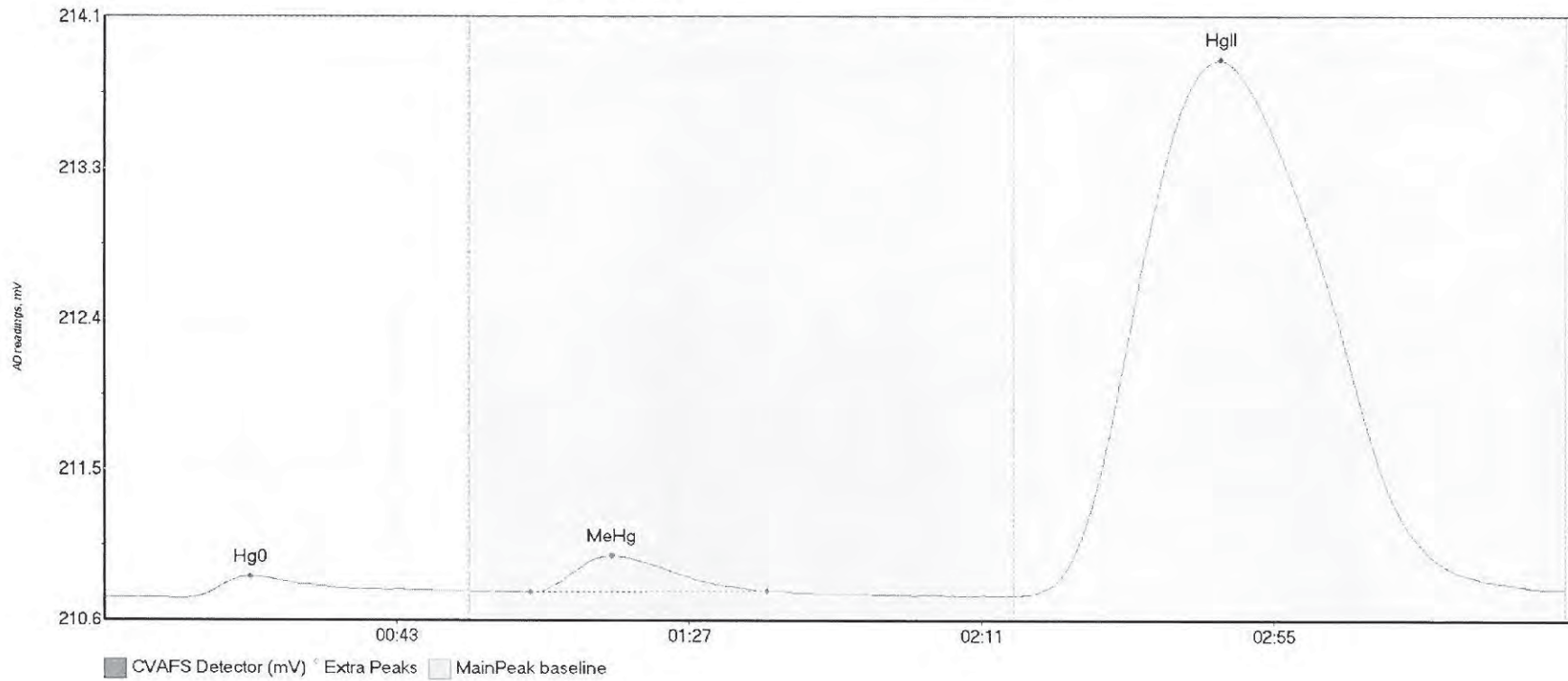
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709583-03 Hg0	18.936	14.0	52.8	210.75	210.79	22.1	0.133	OK	210.7575	0.00	0.04	
1709583-03 MeHg	27.546	65.1	100.8	210.79	210.78	76.4	0.167	OK	210.7575	0.00	0.04	
1709583-03 HgII	815.927	136.8	218.6	210.76	210.79	167.1	2.607	OK	210.7575	0.00	0.04	

#63: 1709607-13



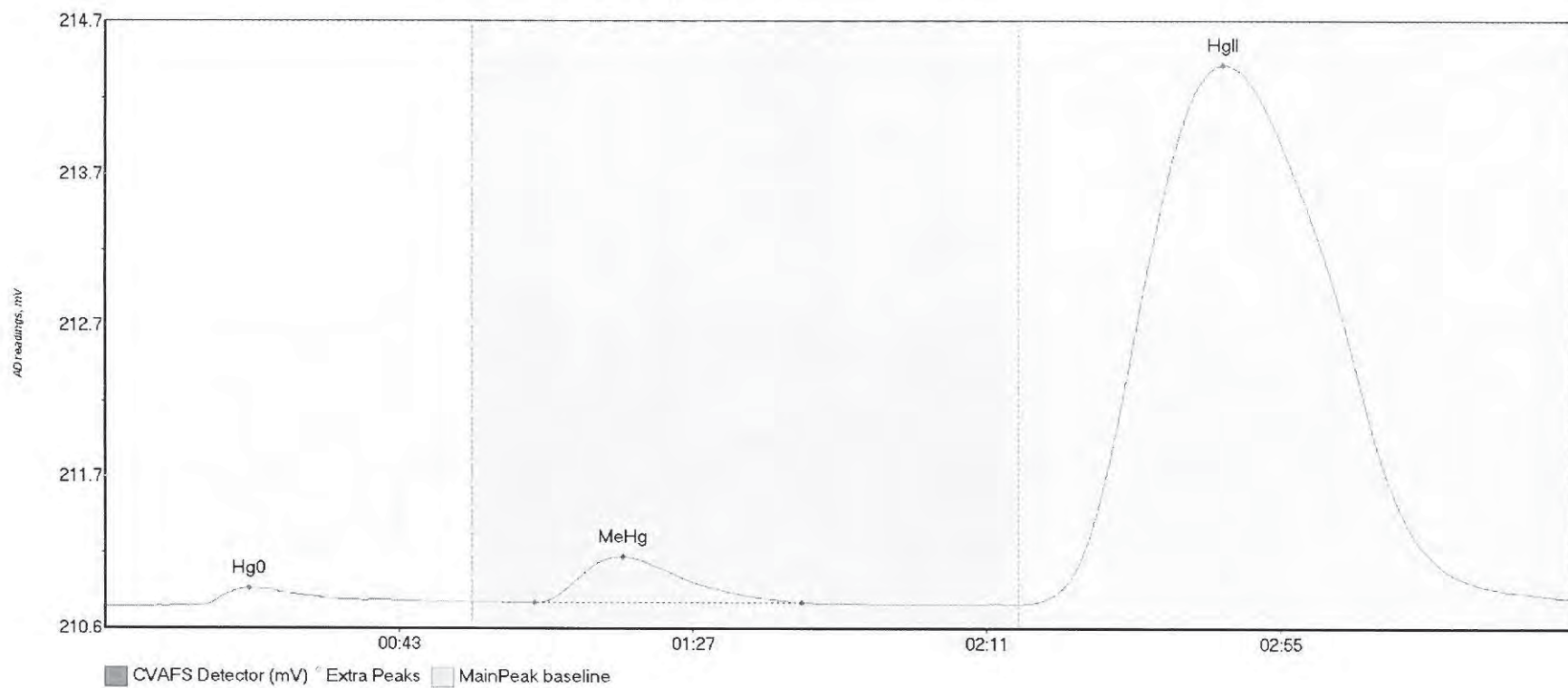
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-13 Hg0	20.065	3.1	53.0	210.76	210.79	21.6	0.140	OK	210.7580	0.00	0.06	
1709607-13 MeHg	57.281	63.9	103.1	210.79	210.80	76.9	0.346	OK	210.7580	0.00	0.06	
1709607-13 HgII	962.866	138.7	219.8	210.78	210.81	167.0	3.120	CT	210.7580	0.00	0.06	

#64: 1709607-14



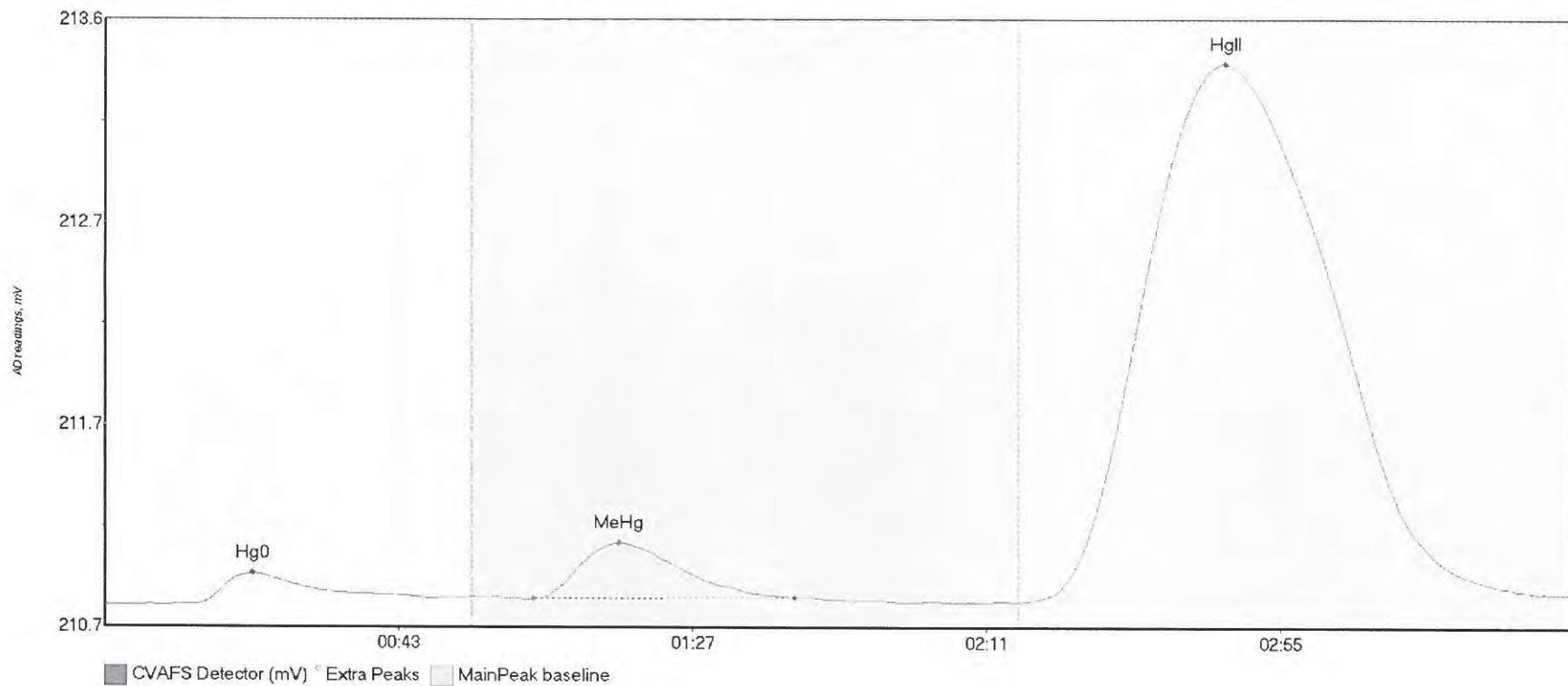
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-14 Hg0	20.053	10.8	55.0	210.77	210.82	22.0	0.131	CT	210.7790	0.00	0.05	
1709607-14 MeHg	35.447	64.1	99.7	210.81	210.81	76.4	0.213	OK	210.7790	0.00	0.05	
1709607-14 HgII	972.980	138.4	219.8	210.79	210.83	168.0	3.106	CT	210.7790	0.00	0.05	

#65: 1709607-15



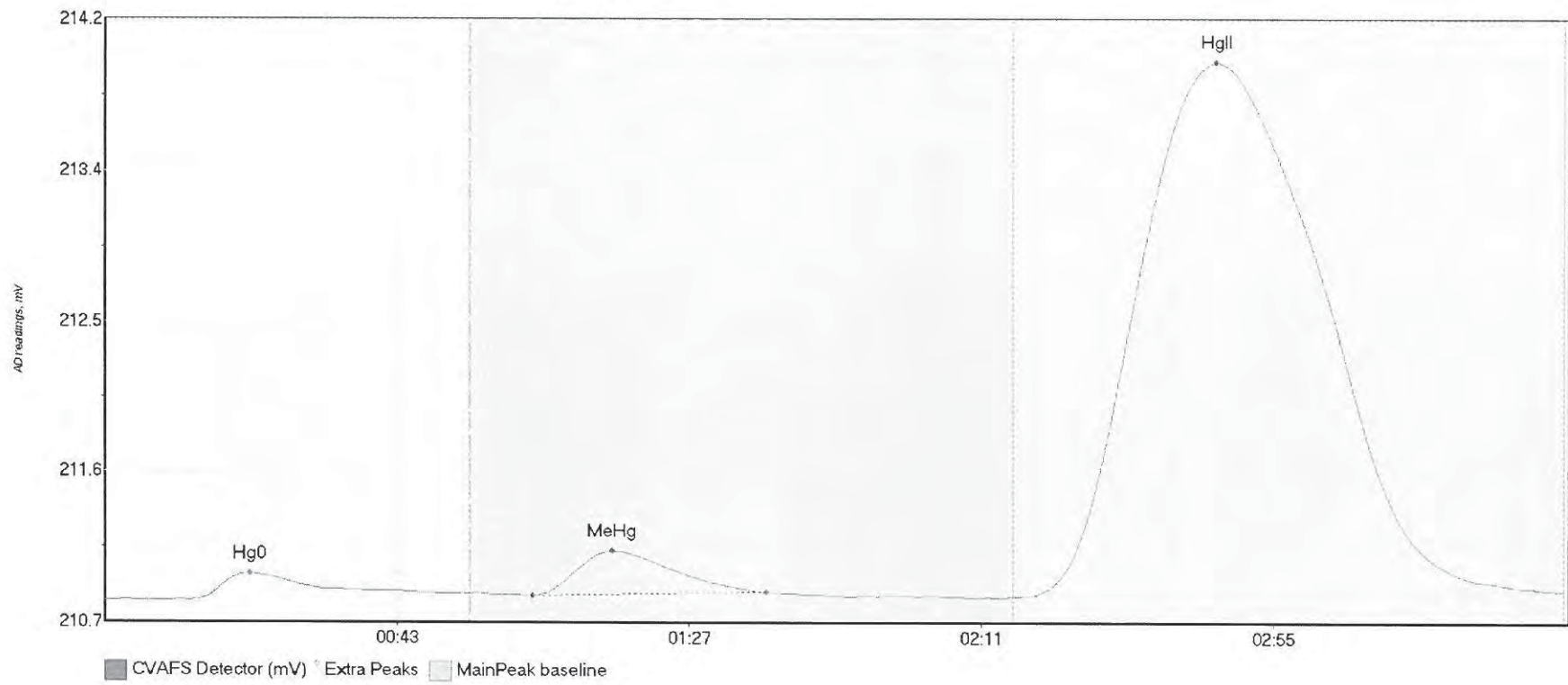
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-15 Hg0	16.837	9.1	52.4	210.79	210.82	21.6	0.120	OK	210.7882	0.00	0.06	
1709607-15 MeHg	55.042	64.3	104.3	210.81	210.82	77.6	0.309	OK	210.7882	0.00	0.06	
1709607-15 HgII	1147.683	136.8	218.3	210.80	210.85	167.3	3.632	OK	210.7882	0.00	0.06	

#66: 1709607-16



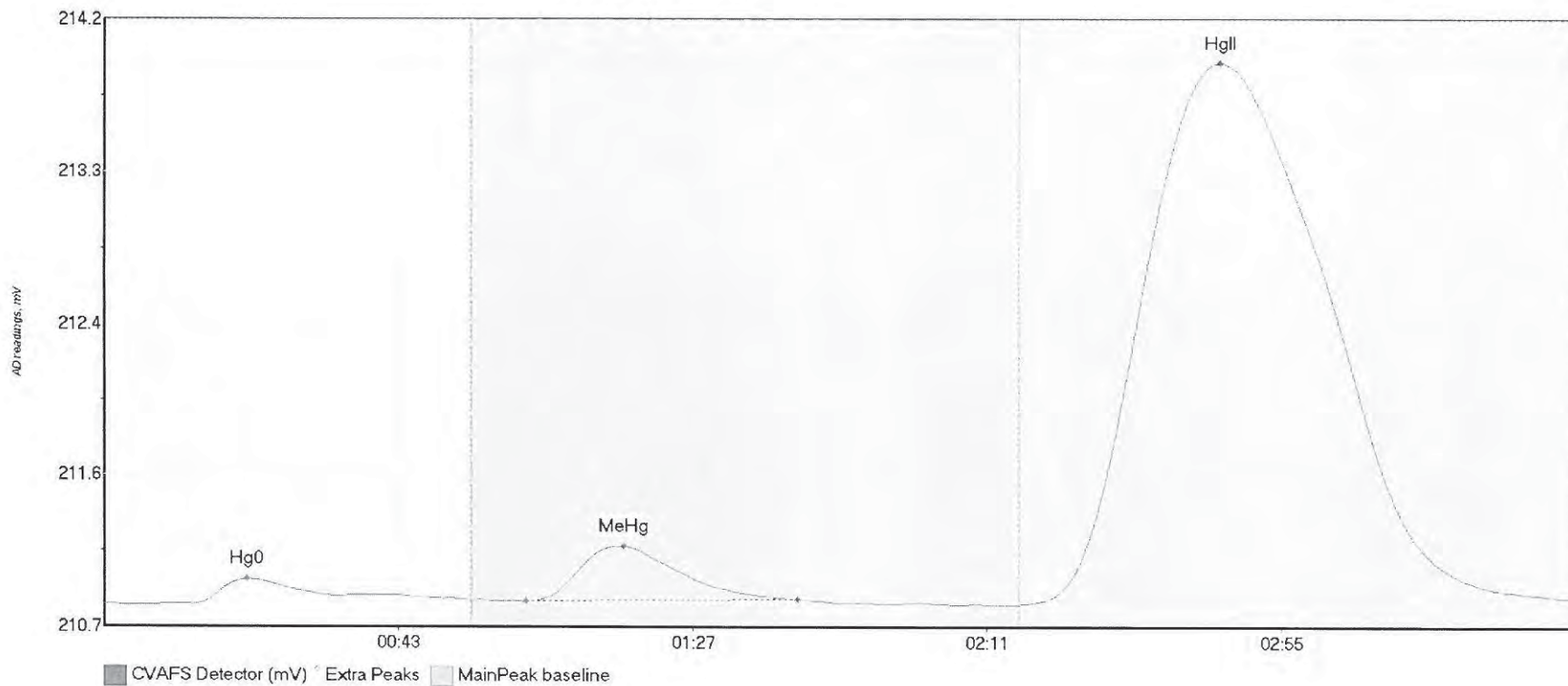
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-16 Hg0	20.930	12.6	48.8	210.80	210.83	22.1	0.150	OK	210.7936	0.00	0.06	
1709607-16 MeHg	46.346	64.1	103.3	210.83	210.83	77.0	0.270	OK	210.7936	0.00	0.06	
1709607-16 HgII	818.133	136.8	219.8	210.81	210.85	167.7	2.627	CT	210.7936	0.00	0.06	

#67: 1709607-17



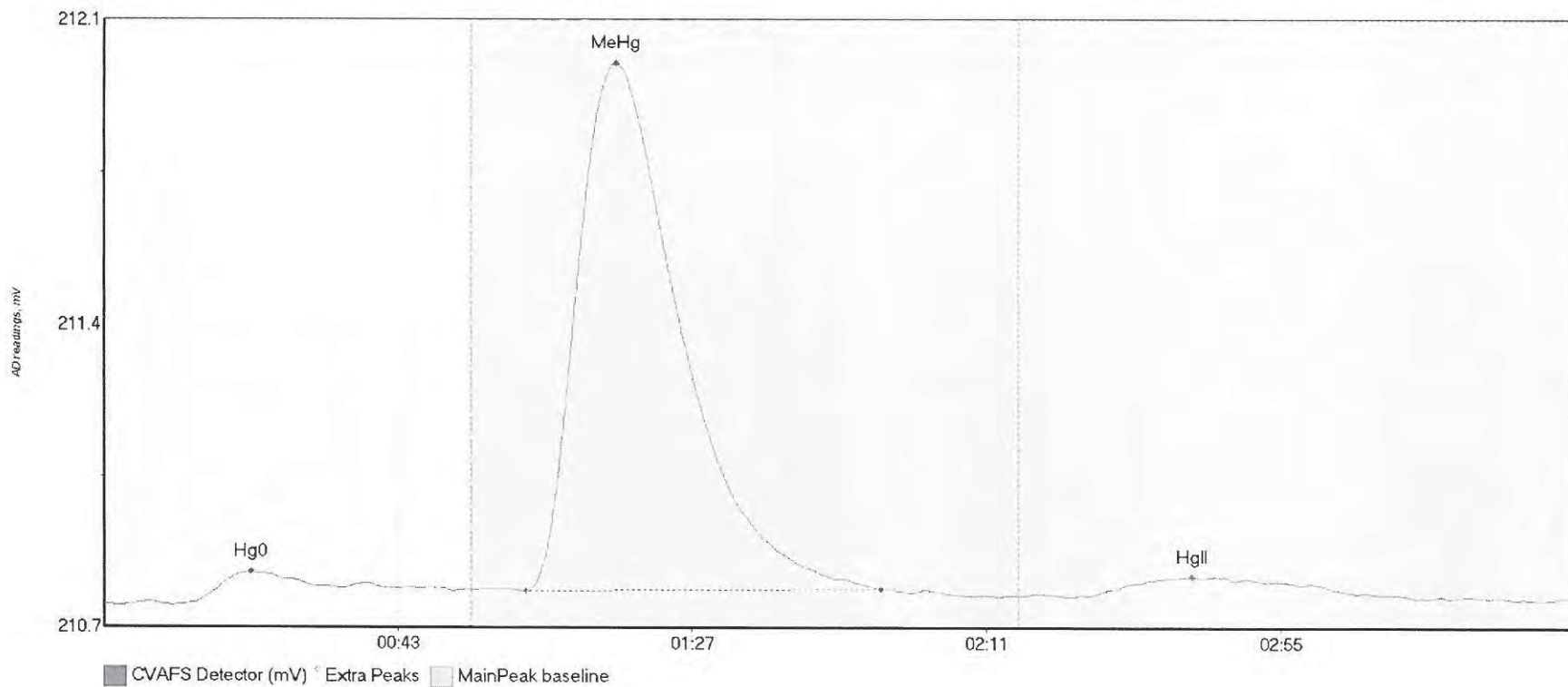
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-17 Hg0	22.164	12.7	50.6	210.80	210.84	21.9	0.156	OK	210.7955	0.00	0.06	
1709607-17 MeHg	42.746	64.5	99.8	210.82	210.84	76.4	0.266	OK	210.7955	0.00	0.06	
1709607-17 HgII	989.157	138.0	219.8	210.82	210.85	167.4	3.167	CT	210.7955	0.00	0.06	

#68: 1709607-18



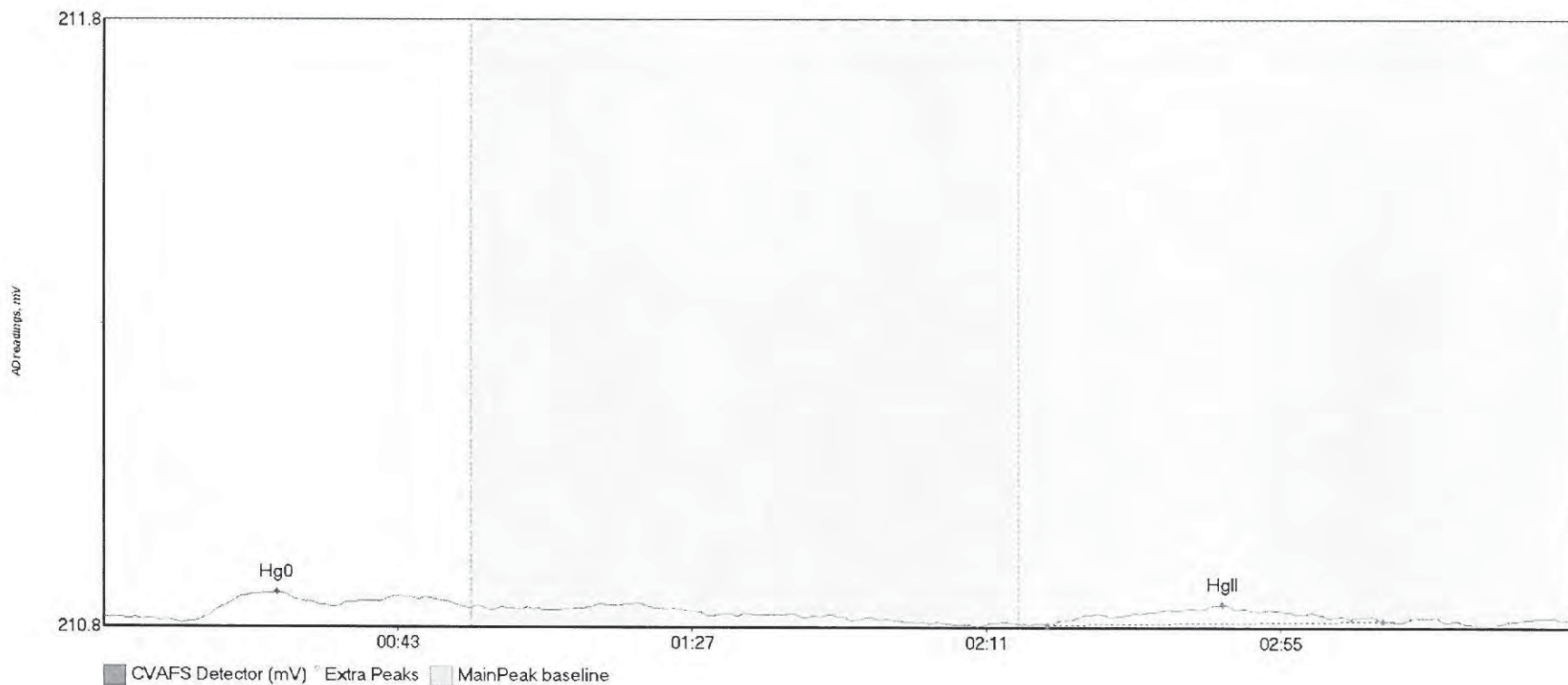
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709607-18 Hg0	21.938	13.1	54.9	210.81	210.84	21.4	0.146	OK	210.8118	0.00	0.04	
1709607-18 MeHg	53.558	63.2	103.8	210.83	210.84	77.8	0.318	OK	210.8118	0.00	0.04	
1709607-18 HgII	970.997	136.8	219.8	210.81	210.85	166.9	3.147	CT	210.8118	0.00	0.04	

#69: SEQ-CCV5



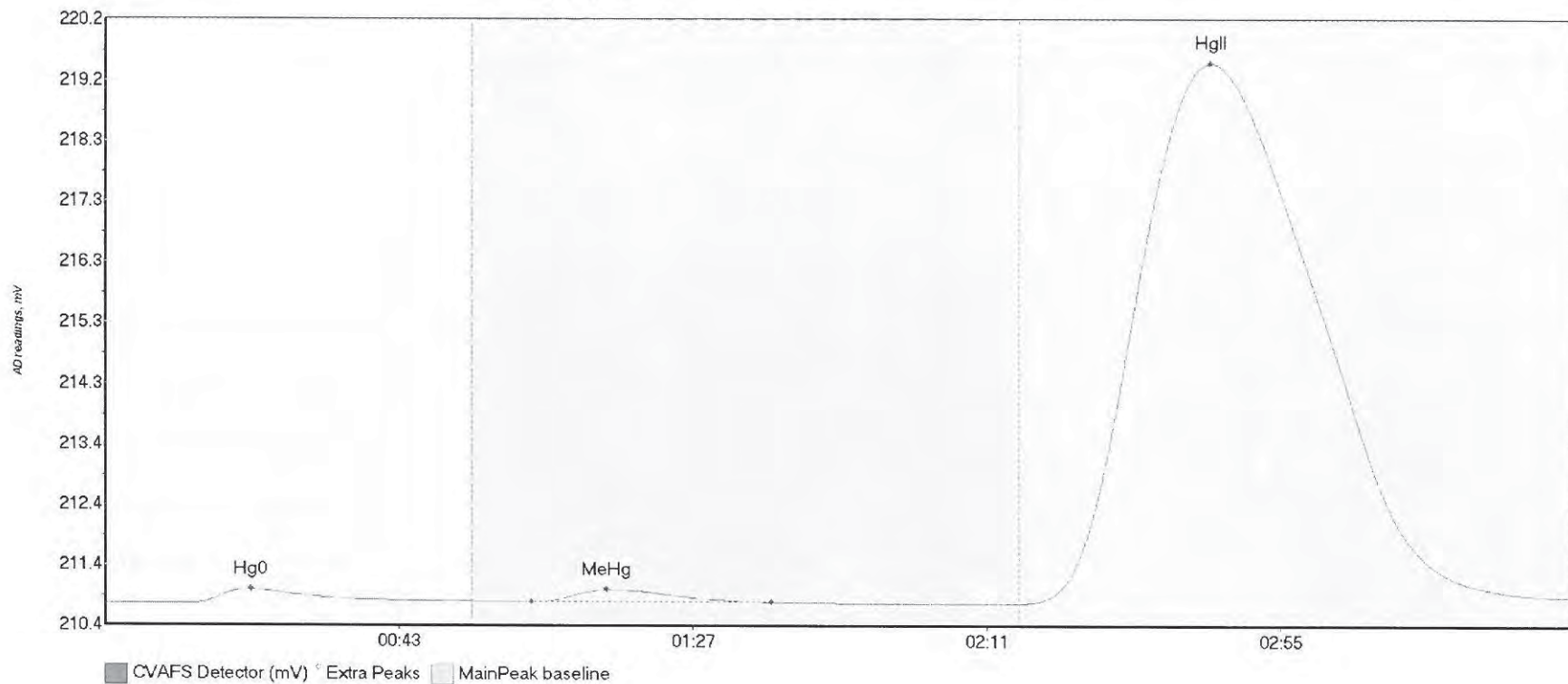
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCV5 Hg0	10.157	13.4	52.3	210.80	210.82	22.0	0.064	OK	210.7948	0.00	0.01	
SEQ-CCV5 MeHg	203.557	63.1	116.3	210.82	210.83	76.7	1.142	OK	210.7948	0.00	0.01	
SEQ-CCV5 HgII	9.952	147.2	187.4	210.81	210.82	162.8	0.042	OK	210.7948	0.00	0.01	

#70: SEQ-CCB5



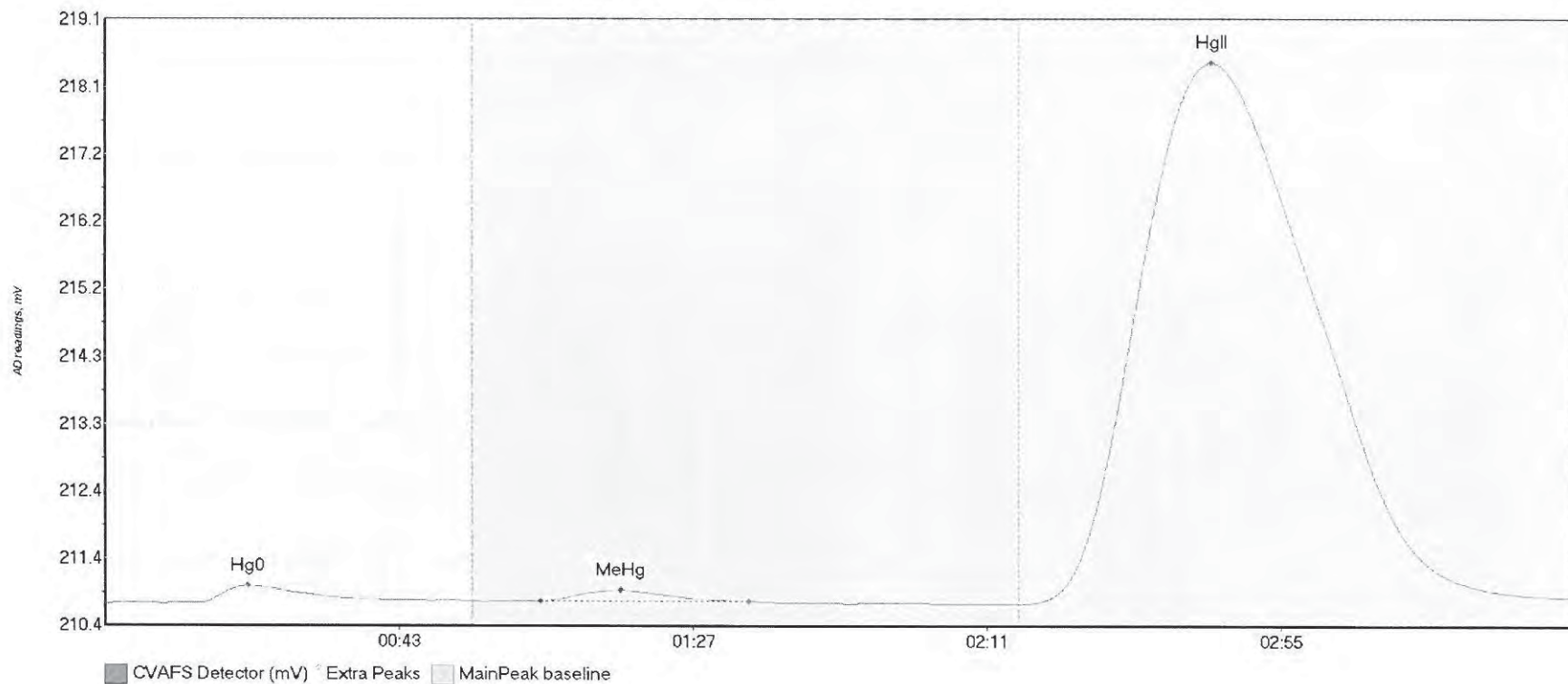
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCB5 Hg0	8.815	13.5	54.7	210.78	210.80	25.9	0.046	OK	210.7859	0.00	0.00	
SEQ-CCB5 HgII	8.026	141.2	191.3	210.77	210.78	167.3	0.034	OK	210.7859	0.00	0.00	017

#71: 1709609-13



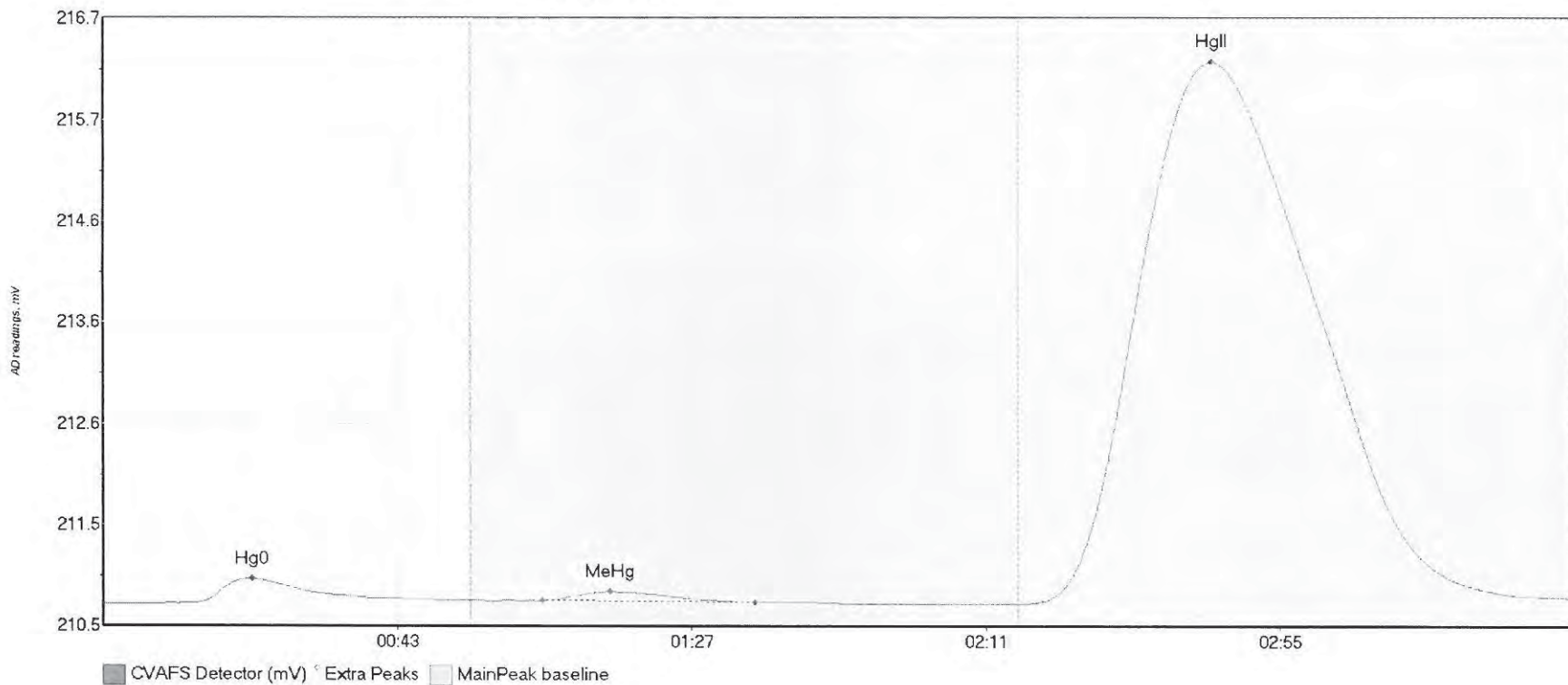
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709609-13 Hg0	33.140	12.8	55.0	210.76	210.81	21.9	0.229	CT	210.7688	0.00	0.10	
1709609-13 MeHg	33.199	63.9	99.8	210.79	210.78	75.2	0.200	OK	210.7688	0.00	0.10	
1709609-13 HgII	2620.689	137.6	219.8	210.77	210.87	165.5	8.745	CT	210.7688	0.00	0.10	

#72: 1709609-14



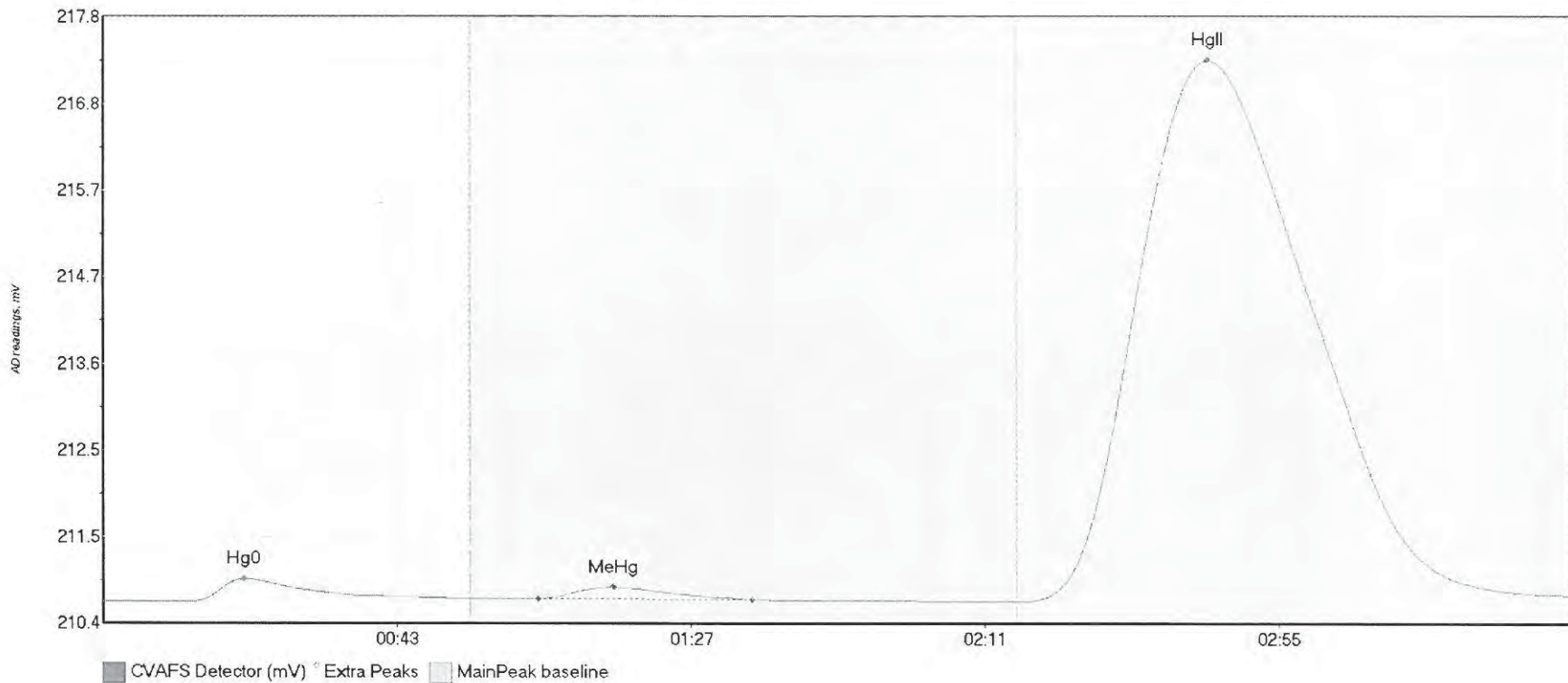
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709609-14 Hg0	35.639	13.7	55.0	210.76	210.79	21.5	0.247	CT	210.7537	0.00	0.08	
1709609-14 MeHg	22.991	65.1	96.3	210.78	210.79	77.1	0.158	OK	210.7537	0.00	0.08	
1709609-14 HgII	2281.293	136.8	219.8	210.74	210.84	165.6	7.721	CT	210.7537	0.00	0.08	

#73: 1709609-15



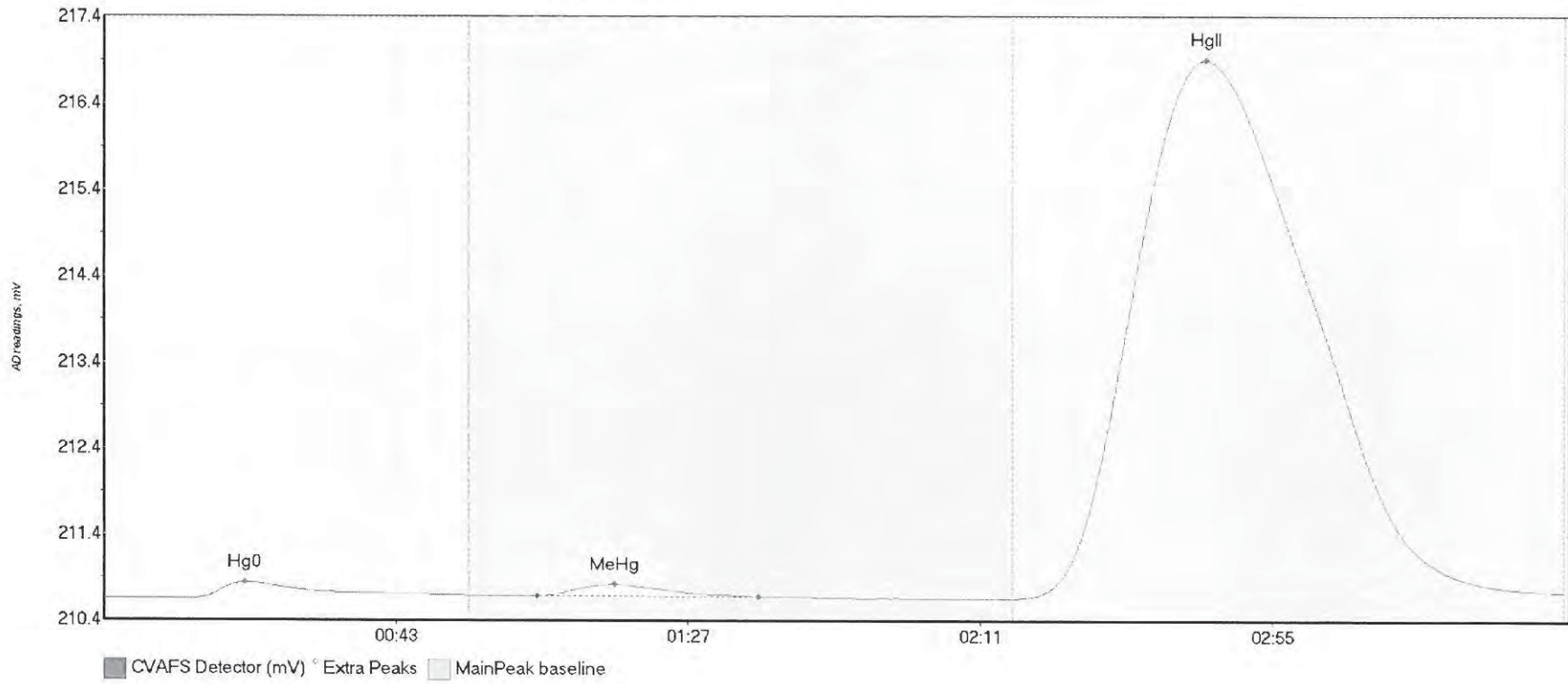
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709609-15 Hg0	35.175	7.5	54.4	210.72	210.75	22.3	0.251	OK	210.7123	0.00	0.06	
1709609-15 MeHg	15.007	65.7	97.4	210.75	210.73	75.9	0.092	OK	210.7123	0.00	0.06	
1709609-15 HgII	1633.100	136.8	219.8	210.71	210.77	165.8	5.530	CT	210.7123	0.00	0.06	

#74: 1709609-16



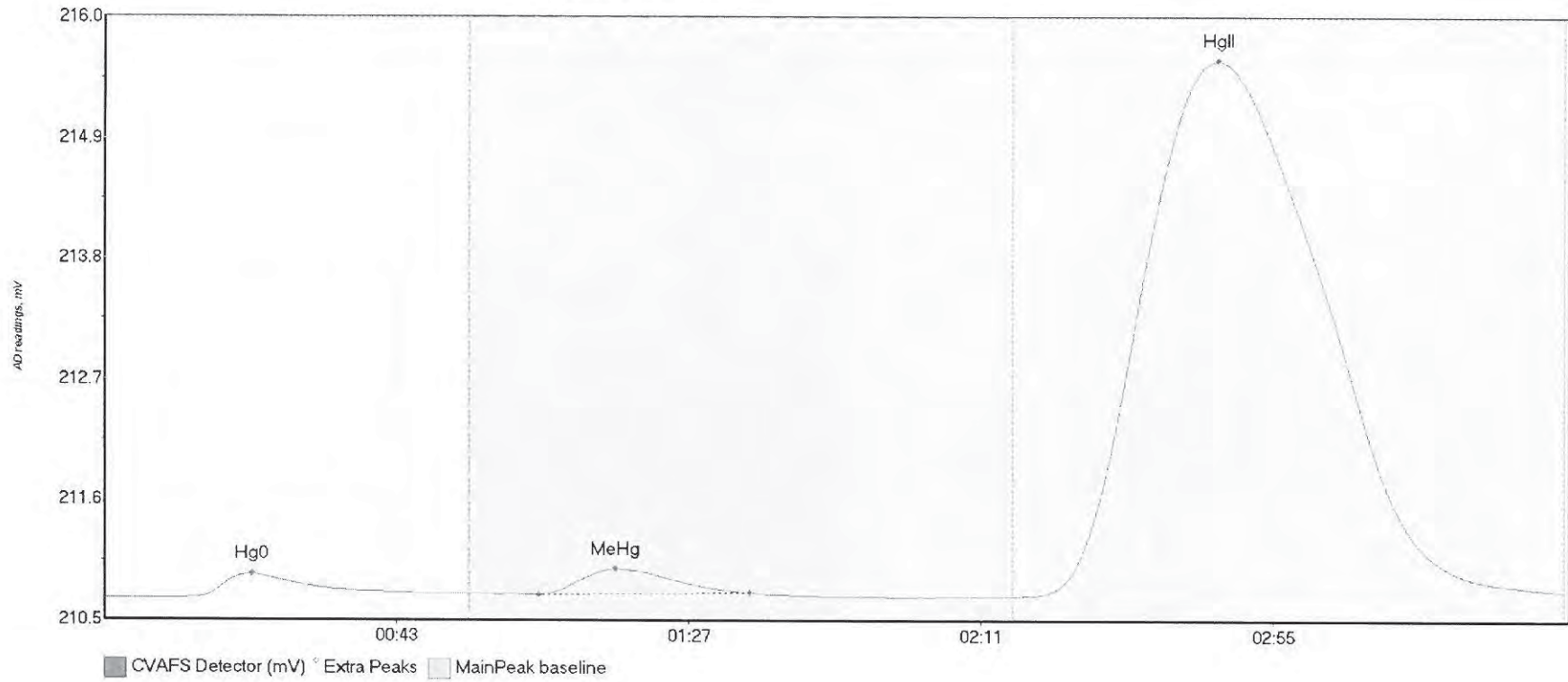
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709609-16 Hg0	38.135	13.1	53.1	210.69	210.73	21.2	0.273	OK	210.6891	0.00	0.07	
1709609-16 MeHg	22.354	65.1	97.2	210.72	210.71	76.4	0.137	OK	210.6891	0.00	0.07	
1709609-16 HgII	1919.944	137.5	219.8	210.69	210.76	165.3	6.625	CT	210.6891	0.00	0.07	

#75: 1709609-17



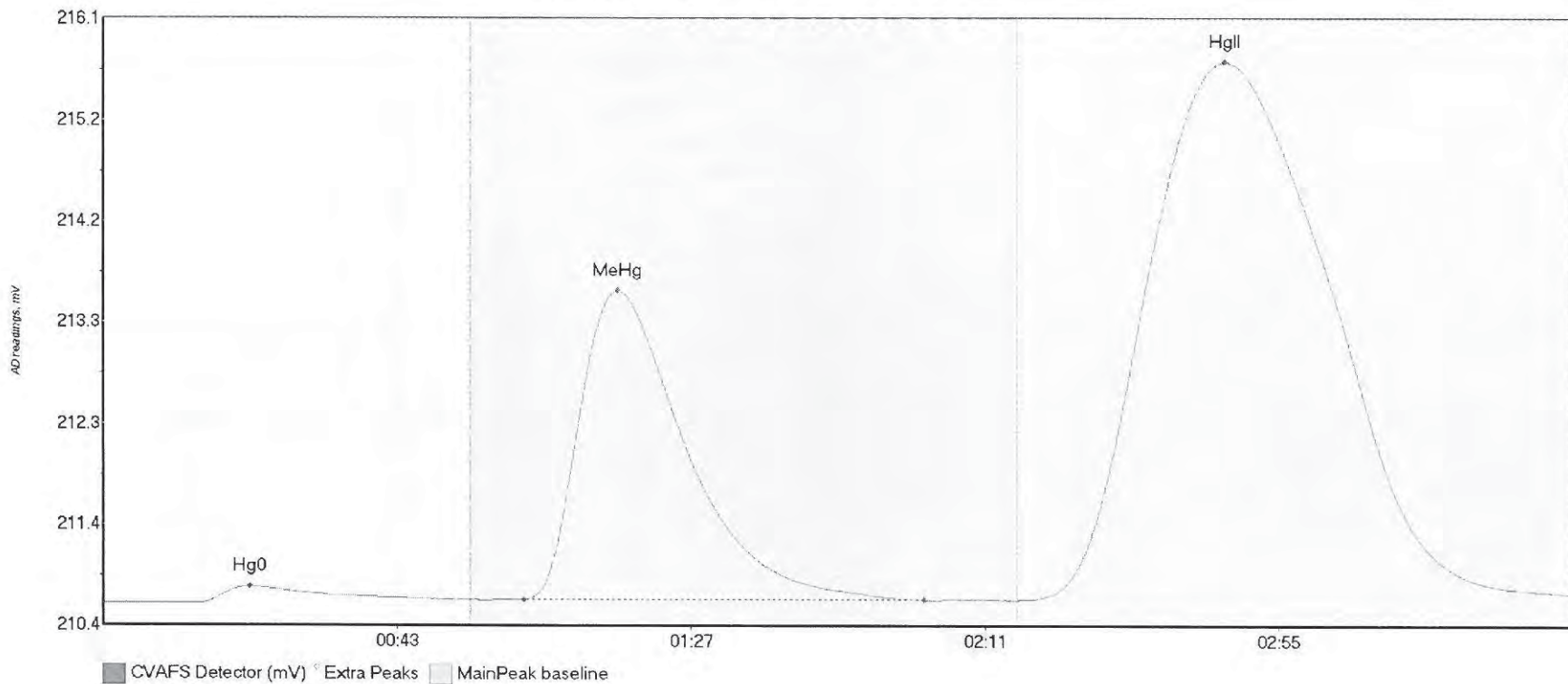
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
1709609-17 Hg0	26.364	13.6	55.0	210.67	210.71	21.3	0.178	CT	210.6693	0.00	0.08	
1709609-17 MeHg	20.420	65.3	98.6	210.70	210.69	77.0	0.130	OK	210.6693	0.00	0.08	
1709609-17 HgII	1845.256	136.8	219.7	210.68	210.75	166.0	6.185	OK	210.6693	0.00	0.08	

#76: F709436-DUP1



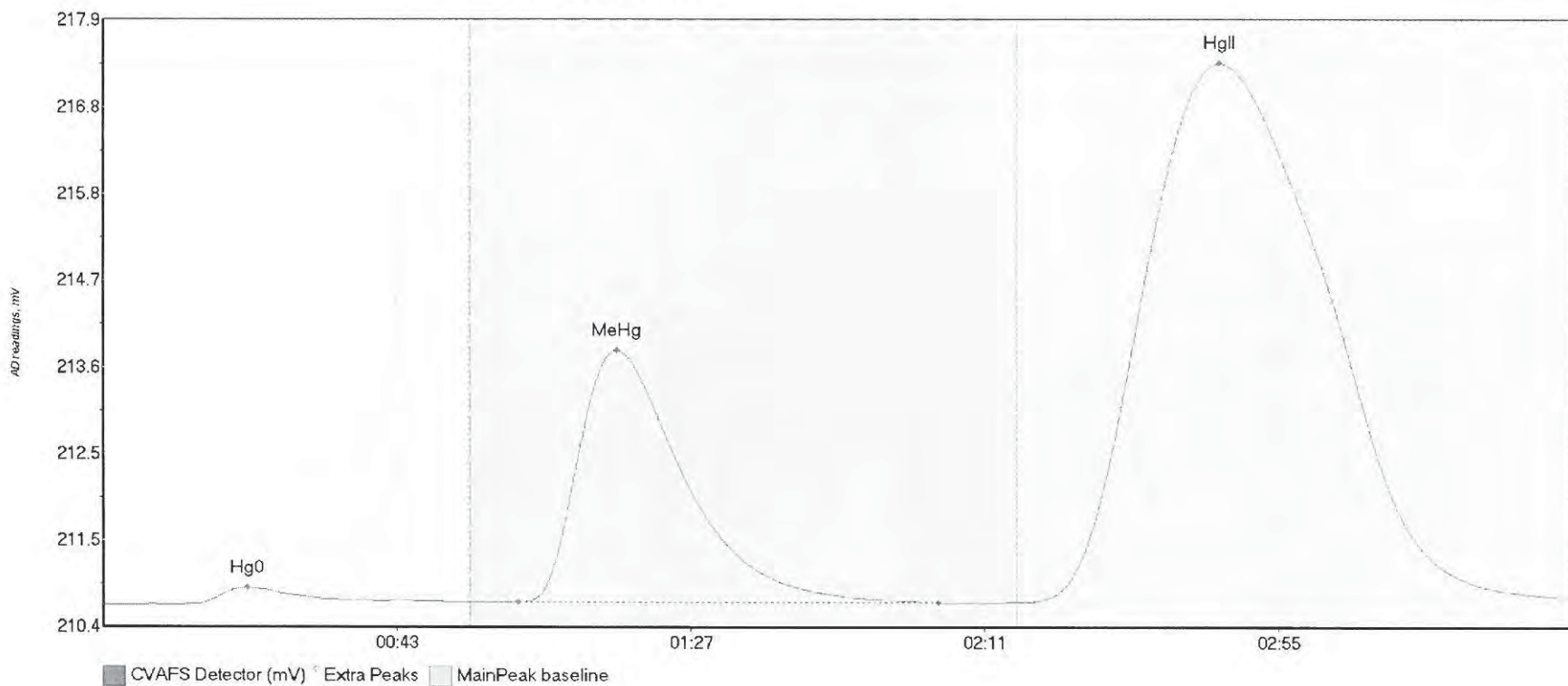
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709436-DUP1 Hg	28.188	12.1	48.6	210.66	210.70	22.3	0.217	OK	210.6562	0.00	0.07	
F709436-DUP1 Me	35.187	65.5	97.2	210.69	210.71	77.0	0.235	OK	210.6562	0.00	0.07	
F709436-DUP1 Hg	1486.499	139.2	219.8	210.68	210.73	167.8	4.904	CT	210.6562	0.00	0.07	

#77: F709436-MS1



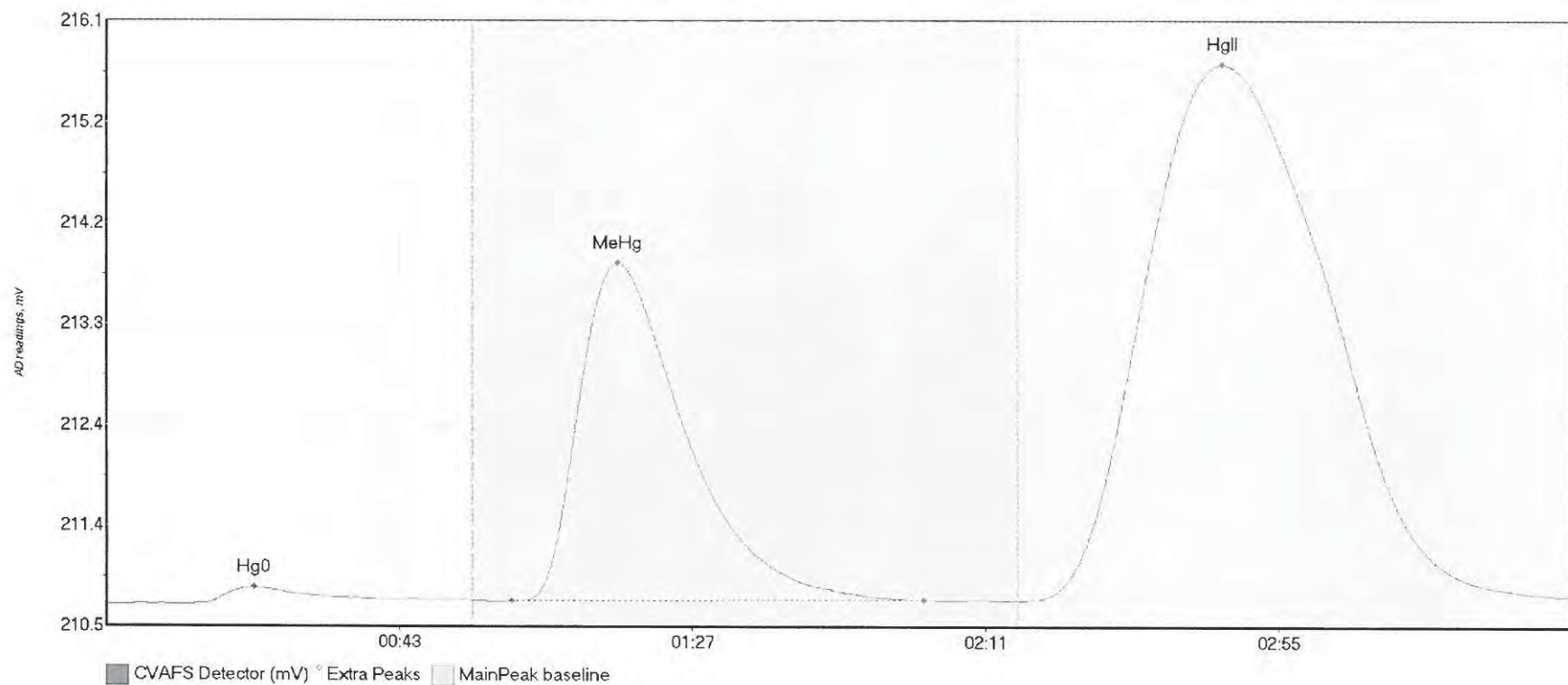
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment	
F709436-MS1	Hg0	24.398	14.5	55.0	210.65	210.68	22.0	0.157	CT	210.6498	0.00	0.09	
F709436-MS1	MeH	529.407	63.0	122.9	210.68	210.68	77.1	2.879	OK	210.6498	0.00	0.09	
F709436-MS1	HgI	1547.429	138.9	219.8	210.68	210.74	167.9	5.007	CT	210.6498	0.00	0.09	

#78: F709436-MSD1



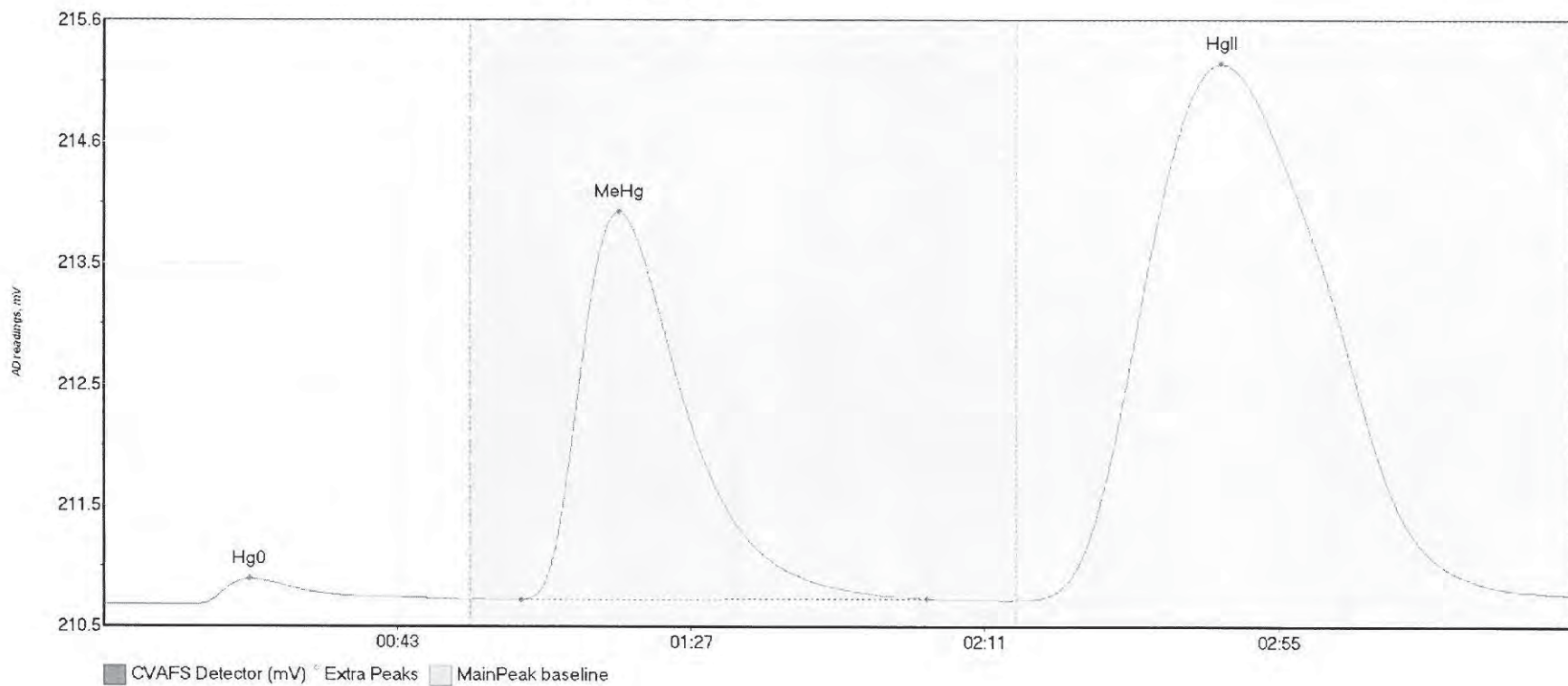
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709436-MSD1 Hg	28.492	5.0	55.0	210.65	210.69	21.7	0.212	CT	210.6478	0.00	0.10	
F709436-MSD1 Me	571.088	62.2	125.2	210.69	210.68	77.0	3.113	OK	210.6478	0.00	0.10	
F709436-MSD1 Hg	2061.064	137.4	219.8	210.68	210.75	167.2	6.679	CT	210.6478	0.00	0.10	

#79: F709436-MS2



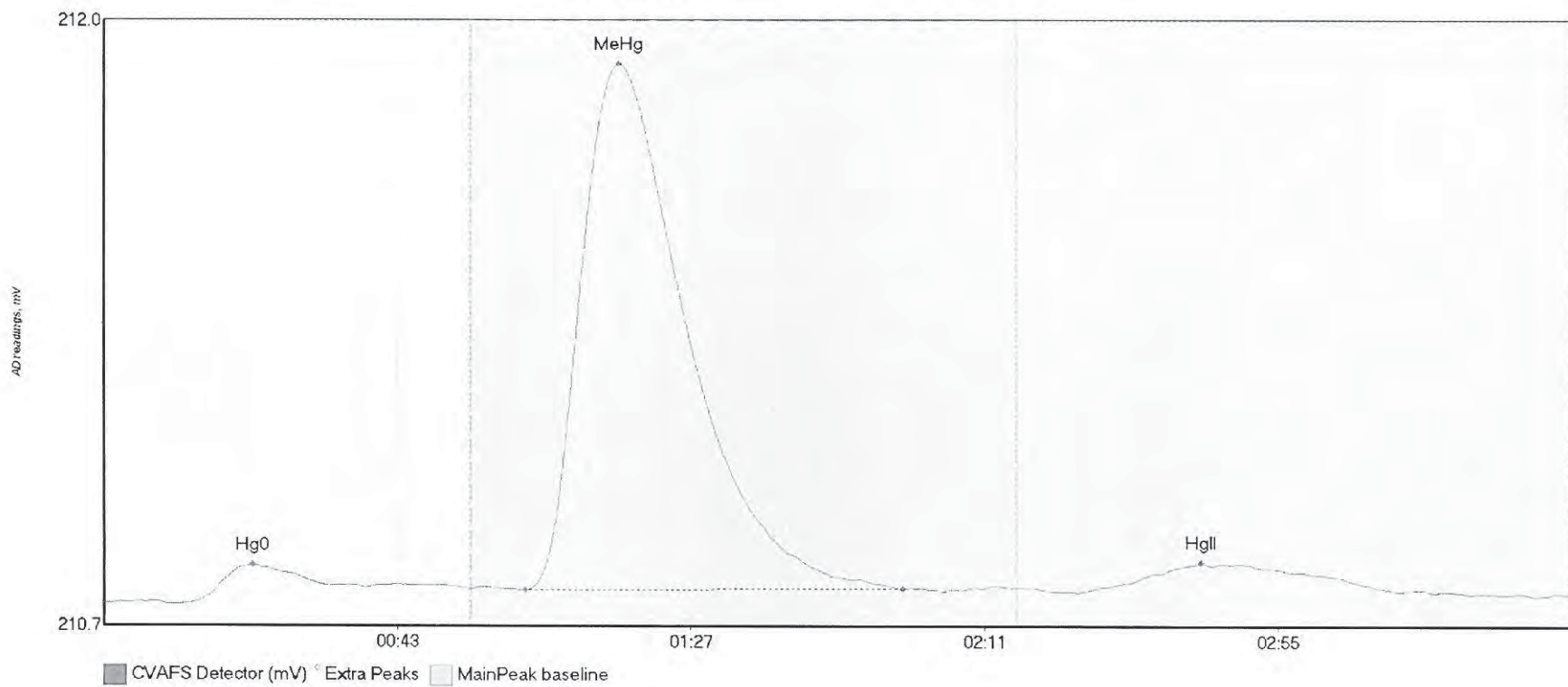
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment	
F709436-MS2	Hg0	21.387	12.1	55.0	210.67	210.70	22.1	0.156	CT	210.6620	0.00	0.09	
F709436-MS2	MeH	585.752	60.9	122.7	210.70	210.71	76.9	3.172	OK	210.6620	0.00	0.09	
F709436-MS2	HgI	1558.416	138.8	219.8	210.71	210.75	167.4	5.026	CT	210.6620	0.00	0.09	

#80: F709436-MSD2



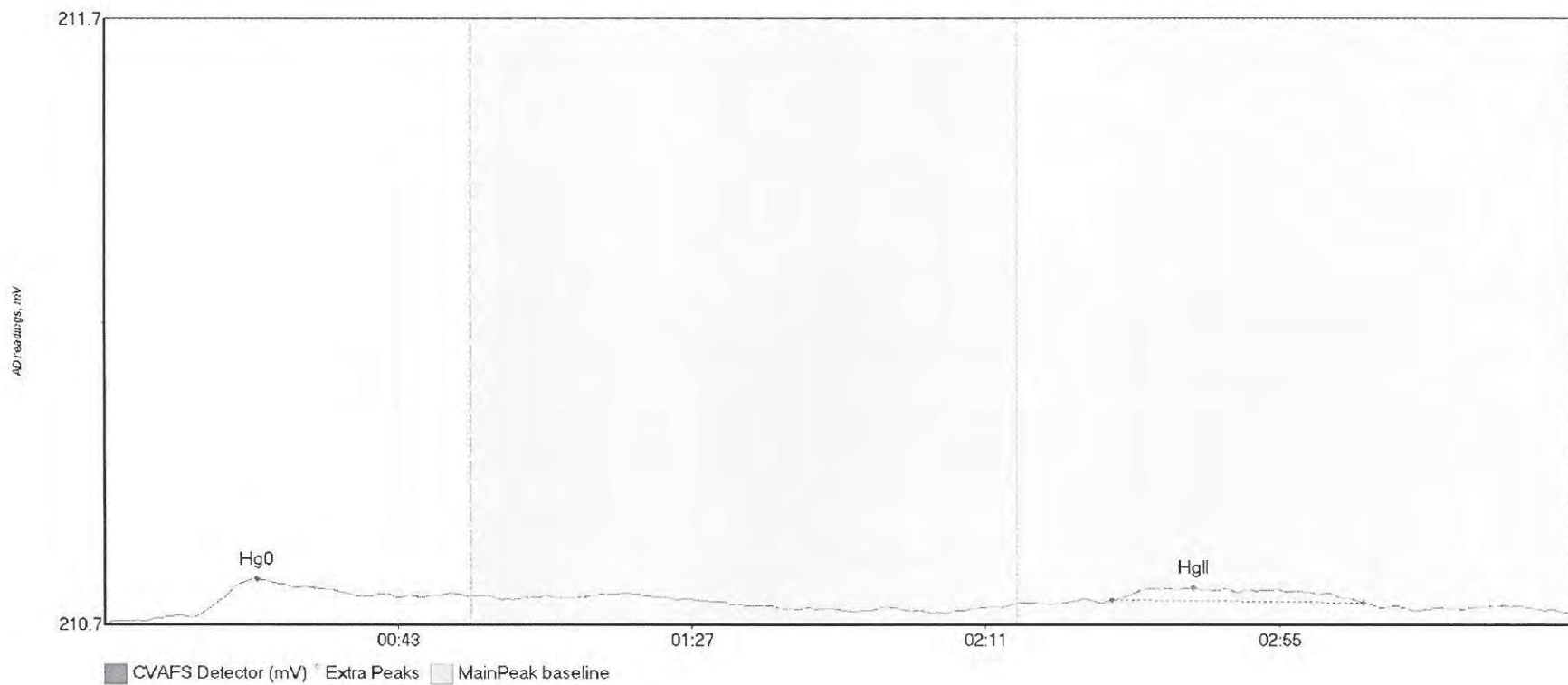
Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
F709436-MSD2 Hg	29.958	13.6	54.2	210.68	210.72	21.8	0.209	OK	210.6812	0.00	0.08	
F709436-MSD2 Me	591.275	62.6	123.5	210.72	210.73	77.3	3.247	OK	210.6812	0.00	0.08	
F709436-MSD2 Hg	1377.390	138.2	219.7	210.72	210.76	167.4	4.481	OK	210.6812	0.00	0.08	

#81: SEQ-CCV6



Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCV6 Hg0	12.878	13.0	55.0	210.71	210.74	22.3	0.084	CT	210.7080	0.00	0.02	
SEQ-CCV6 MeHg	213.871	63.2	119.8	210.74	210.74	77.3	1.167	OK	210.7080	0.00	0.02	
SEQ-CCV6 HgII	12.850	150.3	190.9	210.74	210.74	164.4	0.053	OK	210.7080	0.00	0.02	

#82: SEQ-CCB6



Name	Area	Start Time	EndTime	StartValue	EndValue	Peak Max	PeakHeight	Flags	Baseline	BlDev	BlShift	Comment
SEQ-CCB6 Hg0	8.156	6.0	44.0	210.72	210.76	22.8	0.071	OK	210.7225	0.00	0.02	
SEQ-CCB6 HgII	6.049	151.1	188.6	210.76	210.76	163.2	0.021	OK	210.7225	0.00	0.02	017



Frontier Global Sciences

THg26002-170928-1

Analysis Datasheet for Total Mercury

Date of Analysis: September 28, 2017

Instrument #: Hg2600-2

LIMS Sequence #: 7129007, 7128008, 7129009

Analyst: BC

Units ng/L

Calibration Statistics:

LabNumber	n	True Val	Area	Uncorrected Response Factor	Corrected Peak Height	Corrected Response Factor	% Recovery
SEQ-CAL1	1	0.50 ng/L	77.42 units	154.84	67.21 units	134.42	98.3 %Rec
SEQ-CAL2	1	1.00 ng/L	149.35 units	149.35	139.14 units	139.14	101.8 %Rec
SEQ-CAL3	1	5.00 ng/L	703.14 units	140.63	692.93 units	138.59	101.4 %Rec
SEQ-CAL4	1	20.00 ng/L	2692.48 units	134.62	2682.27 units	134.11	98.1 %Rec
SEQ-CAL5	1	40.00 ng/L	5505.39 units	137.63	5495.18 units	137.38	100.5 %Rec
SEQ-CAL6	0						
SEQ-CAL7	0						
SEQ-CAL8	0						
SEQ-CAL9	0						

Corr. Mean RF **Corr. St Dev RF** **Corr. RSD CF** **Uncorr. Mean RF**
 136.73 +/- 2.34 1.7% RSD 143.42

Blanks:

LabNumber	n	Mean	Std Dev	Mean (ng/L)	Std Dev (ng/L)
SEQ-IBL	3	10.21 units	±1.70	0.07 ng/L	±0.01

Preparation Blanks

Sample Type	Batch ID	n	Mean	Std Dev
BLK	1	2	0.490 ng/L	±0.547
BLK	2	3	16.663 ng/L	±5.022
BLK	3	3	0.148 ng/L	±0.052
BLK	4	1	0.077 ng/L	
BLK	5	0	0.000 ng/L	
BLK	6	0	0.000 ng/L	

QUALITY ASSURANCE
PEER-REVIEWED

INITIALS: DM 9/29/17

TotalMercury EPA1631
 Operat BC
 BlankSi 10.209
 Calib Eqn: Conc = (Area-10.20
 Run Date: 9/28/2017
 Blank SD: 1.70013201
 Worksh THg260 CalibFa 136.73
 Status: QC Warnings:10/QC
 Run Time: 11:59:30
 Blank RSD%: 16.65342833
 Method ##### R: 0.9999
 R²: 0.9999
 CF SD: 2.33855786
 CF RSD%: 1.710353235
 Descrip THg26002-170928-1

Sample/ID	Location	Rinse	Dilute	Blank	Conc (ppt)	MB%	FinalConc	Rec%	QA	RawData	RunEnd	Peak (Raw)	Control (etf)	Flags	RunCount
Clean				0.00	6.56					86100-1.RAW	8:27:02	897.55	Clean	OK	1
clean				0.00	0.03					86101-1.RAW	8:29:53	4.18	Clean	OK	1
ws				10.21	0.00					86102-1.RAW	8:34:01	10.64	Sample	OK	1
ws				10.21	0.00					86103-1.RAW	8:38:10	10.40	Sample	OK	1
ws				10.21	0.00					86104-1.RAW	8:42:18	8.07	Sample	OK	1
SEQ-IBL1	A1		1	0.00	0.06					86105-1.RAW	8:46:27	8.27	Sample	OK	1
SEQ-IBL2	A2		1	0.00	0.08					86106-1.RAW	8:50:35	11.46	Sample	OK	1
SEQ-IBL3	A3		1	0.00	0.08					86107-1.RAW	8:54:43	10.90	Sample	OK	1
SEQ-CAL1	A4		1	10.21	0.49			98.31		86108-1.RAW	8:58:52	77.42	Sample	OK	1
SEQ-CAL2	A5		1	10.21	1.02			101.77		86109-1.RAW	9:03:00	149.35	Sample	OK	1
SEQ-CAL3	A6		1	10.21	5.07			101.36		86110-1.RAW	9:07:09	703.14	Sample	OK	1
SEQ-CAL4	A7		1	10.21	19.62			98.09		86111-1.RAW	9:11:17	2692.48	Sample	OK	1
SEQ-CAL5	A8		1	10.21	40.19			100.48		86112-1.RAW	9:15:26	5505.39	Sample	OK	1
SEQ-ICV1	A9		1	10.21	5.26			105.17		86113-1.RAW	9:19:34	729.23	Sample	OK	1
WS				10.21	0.21					86114-1.RAW	9:32:08	38.65	Sample	OK	1
F709449-BLK1	A10		10	10.21	0.10					86115-1.RAW	9:36:16	11.63	Sample	OK	1
F709449-BLK2	A11		10	10.21	0.88					86116-1.RAW	9:40:25	22.20	Sample	OK	1
F709449-BS1	A12		10	10.21	205.92					86117-1.RAW	9:44:33	2825.74	Sample	OK	1
F709449-BSD1	A13		10	10.21	201.46					86118-1.RAW	9:48:42	2764.70	Sample	OK	1
1709529-01	A14		50	10.21	644.55					86119-1.RAW	9:52:50	1772.78	Sample	OK	1
1709529-02	A15		50	10.21	641.61					86120-1.RAW	9:56:58	1764.75	Sample	OK	1
1709529-03	A16		50	10.21	624.15					86121-1.RAW	10:01:07	1716.99	Sample	OK	1
1709529-04	A17		50	10.21	697.69					86122-1.RAW	10:05:15	1918.10	Sample	OK	1
1709529-05	A18		50	10.21	647.84					86123-1.RAW	10:09:24	1781.78	Sample	OK	1
1709529-06	A19		50	10.21	665.56					86124-1.RAW	10:13:32	1830.23	Sample	OK	1
SEQ-CCV1	A20		1	10.21	4.97			99.33		86125-1.RAW	10:17:41	689.27	Sample	OK	1
SEQ-CCB1	A21		1	10.21	0.15			0.00		86126-1.RAW	10:21:49	30.81	Sample	OK	1
ws				10.21	0.34					86127-1.RAW	10:32:40	57.36	Sample	OK	1
1709607-13	B1		50	10.21	850.74					86128-1.RAW	10:36:48	2336.64	Sample	OK	1
1709607-14	B2		50	10.21	727.62					86129-1.RAW	10:40:56	1999.96	Sample	OK	1
1709607-15	B3		50	10.21	2738.89					86130-1.RAW	10:45:05	7499.94	Sample	FB	1
1709607-16	B4		50	10.21	619.95					86131-1.RAW	10:49:13	1705.51	Sample	OK	1
1709607-17	B5		50	10.21	669.29					86132-1.RAW	10:53:22	1840.45	Sample	OK	1
1709607-18	B6		50	10.21	738.46					86133-1.RAW	10:57:30	2029.59	Sample	OK	1
1709609-13	B7		50	10.21	1017.52					86134-1.RAW	11:01:39	2792.71	Sample	OK	1
1709609-14	B8		50	10.21	903.18					86135-1.RAW	11:05:47	2480.04	Sample	OK	1
1709609-15	B9		50	10.21	959.58					86136-1.RAW	11:09:55	2634.26	Sample	OK	1
1709609-16	B10		50	10.21	930.02					86137-1.RAW	11:14:04	2553.45	Sample	OK	1
SEQ-CCV2	B11		1	10.21	5.35			106.92		86138-1.RAW	11:18:12	741.14	Sample	OK	1
SEQ-CCB2	B12		1	10.21	0.30			0.00		86139-1.RAW	11:22:21	50.89	Sample	OK	1
1709609-17	B13		50	10.21	970.50					86140-1.RAW	11:26:29	2664.12	Sample	OK	1
1709609-18	B14		50	10.21	858.84					86141-1.RAW	11:30:37	2358.79	Sample	OK	1
1709610-13	B15		50	10.21	728.65					86142-1.RAW	11:34:46	2002.76	Sample	OK	1
1709610-14	B16		50	10.21	1095.53					86143-1.RAW	11:38:54	3006.03	Sample	OK	1

F709449-MS1	B17	400	10.21	2882.10	262.84	86144-1.RAW	11:43:03	995.38	Sample	OK	1
F709449-MSD1	B18	400	10.21	3264.34		86145-1.RAW	11:47:11	1126.04	Sample	OK	1
F709449-MS2	B19	400	10.21	3159.89	96.74	86146-1.RAW	11:51:20	1090.34	Sample	OK	1
F709449-MSD2	B20	400	10.21	2986.68		86147-1.RAW	11:55:28	1031.13	Sample	OK	1
WS			10.21	0.51		86148-1.RAW	12:03:39	79.34	Sample	OK	1
F709464-BLK1	B21	100	10.21	22.34		86149-1.RAW	12:07:48	40.76	Sample	OK	1
F709464-BLK2	C1	100	10.21	14.83		86150-1.RAW	12:11:56	30.49	Sample	OK	1
SEQ-CCV3	C2	1	10.21	5.08	101.63	86151-1.RAW	12:16:05	705.00	Sample	OK	1
SEQ-CCB3	C3	1	10.21	0.16	0.00	86152-1.RAW	12:20:13	32.12	Sample	OK	1
F709464-BLK3	C4	100	10.21	12.82		86153-1.RAW	12:24:22	27.73	Sample	OK	1
F709464-BS1	C5	400	10.21	1891.49		86154-1.RAW	12:28:30	656.77	Sample	OK	1
F709464-BSD1	C6	400	10.21	1857.47		86155-1.RAW	12:32:38	645.14	Sample	OK	1
1709703-01	C7	2500	10.21	38124.99		86156-1.RAW	12:36:47	2095.33	Sample	OK	1
1709703-02	C8	2500	10.21	46348.94		86157-1.RAW	12:40:55	2545.12	Sample	OK	1
1709745-01	C9	400	10.21	913.36		86158-1.RAW	12:45:04	322.42	Sample	OK	1
1709745-02	C10	400	10.21	769.74		86159-1.RAW	12:49:12	273.33	Sample	OK	1
1709746-01	C11	2500	10.21	5652.91		86160-1.RAW	12:53:20	319.38	Sample	OK	1
1709746-02	C12	2500	10.21	4794.35		86161-1.RAW	12:57:29	272.42	Sample	OK	1
1709746-03	C13	2500	10.21	20896.87		86162-1.RAW	13:01:37	1153.10	Sample	OK	1
SEQ-CCV4	C14	1	10.21	5.09	101.75	86163-1.RAW	13:05:46	705.84	Sample	OK	1
SEQ-CCB4	C15	1	10.21	0.19	0.00	86164-1.RAW	13:09:54	35.62	Sample	OK	1
1709746-04	C16	2500	10.21	25091.77		86165-1.RAW	13:14:03	1382.52	Sample	OK	1
1709748-01	C17	2500	10.21	2251.17		86166-1.RAW	13:18:11	133.33	Sample	OK	1
1709748-02	C18	2500	10.21	1898.38		86167-1.RAW	13:22:19	114.03	Sample	OK	1
1709703-01B	C19	100	10.21	62.34		86168-1.RAW	13:26:28	95.45	Sample	OK	1
1709703-02B	C20	100	10.21	94.68		86169-1.RAW	13:30:36	139.67	Sample	OK	1
1709745-01B	C21	100	10.21	16.06		86170-1.RAW	13:34:45	32.17	Sample	OK	1
1709745-02B	A1	100	10.21	21.18		86171-1.RAW	13:38:53	39.16	Sample	OK	1
1709746-01B	A2	100	10.21	174.87		86172-1.RAW	13:43:01	249.30	Sample	OK	1
1709746-02B	A3	100	10.21	14.70		86173-1.RAW	13:47:10	30.30	Sample	OK	1
1709746-03B	A4	100	10.21	15.30		86174-1.RAW	13:51:18	31.13	Sample	OK	1
SEQ-CCV5	A5	1	10.21	4.87	97.47	86175-1.RAW	13:55:27	676.53	Sample	OK	1
SEQ-CCB5	A6	1	10.21	0.14	0.00	86176-1.RAW	13:59:35	29.12	Sample	OK	1
1709746-04B	A7	100	10.21	24.87		86177-1.RAW	14:03:44	44.22	Sample	OK	1
1709748-01B	A8	100	10.21	57.26		86178-1.RAW	14:07:52	88.51	Sample	OK	1
1709748-02B	A9	100	10.21	41.80		86179-1.RAW	14:12:00	67.37	Sample	OK	1
1709703-01C	A10	5000	10.21	127422.76		86180-1.RAW	14:16:09	3494.70	Sample	OK	1
1709703-02C	A11	5000	10.21	106365.97		86181-1.RAW	14:20:17	2918.88	Sample	OK	1
1709745-01C	A12	2500	10.21	27043.26		86182-1.RAW	14:24:26	1489.25	Sample	OK	1
1709745-02C	A13	2500	10.21	25747.75		86183-1.RAW	14:28:34	1418.40	Sample	OK	1
1709746-01C	A14	2500	10.21	26328.66		86184-1.RAW	14:32:42	1450.17	Sample	OK	1
1709746-02C	A15	2500	10.21	27159.01		86185-1.RAW	14:36:51	1495.58	Sample	OK	1
1709746-03C	A16	2500	10.21	26680.54		86186-1.RAW	14:40:59	1469.42	Sample	OK	1
SEQ-CCV6	A17	1	10.21	5.03	100.63	86187-1.RAW	14:45:08	698.16	Sample	OK	1
SEQ-CCB6	A18	1	10.21	0.18	0.00	86188-1.RAW	14:49:16	34.47	Sample	OK	1
1709746-04C	A19	2500	10.21	27366.06		86189-1.RAW	14:53:24	1506.91	Sample	OK	1
1709748-01C	A20	400	10.21	8370.29		86190-1.RAW	14:57:33	2871.37	Sample	OK	1
1709748-02C	A21	400	10.21	8711.71		86191-1.RAW	15:01:41	2988.08	Sample	FB	1
1709703-01CRE	B1	5000	10.21	154080.86		86192-1.RAW	15:05:50	4223.69	Sample	OK	1

1709703-02CRE	B2	5000	10.21	163226.97		86193-1.RAW	15:09:58	4473.80	Sample	OK	1
F709464-DUP1	B3	400	10.21	1081.66		86194-1.RAW	15:14:07	379.95	Sample	OK	1
F709464-MS1	B4	400	10.21	2875.08	265.56	86195-1.RAW	15:18:15	992.98	Sample	OK	1
F709464-MSD1	B5	400	10.21	2941.15		86196-1.RAW	15:22:23	1015.56	Sample	OK	1
F709474-BLK1	B6	1	10.21	0.21		86197-1.RAW	15:26:32	38.64	Sample	OK	1
F709474-BLK2	B7	1	10.21	0.12		86198-1.RAW	15:30:40	26.18	Sample	OK	1
SEQ-CCV7	B8	1	10.21	5.16	103.16	86199-1.RAW	15:34:49	715.49	Sample	OK	1
SEQ-CCB7	B9	1	10.21	0.22	0.00	86200-1.RAW	15:38:57	39.78	Sample	OK	1
F709474-BLK3	B10	1	10.21	0.12		86201-1.RAW	15:43:06	26.32	Sample	OK	1
F709474-BLK4	B11	1	10.21	0.08		86202-1.RAW	15:47:14	20.71	Sample	OK	1
F709474-BS1	B12	1	10.21	15.31		86203-1.RAW	15:51:22	2103.75	Sample	OK	1
F709474-BSD1	B13	1	10.21	15.12		86204-1.RAW	15:55:31	2077.44	Sample	OK	1
1709609-09	B14	1	10.21	1.22		86205-1.RAW	15:59:39	177.22	Sample	OK	1
1709609-10	B15	1	10.21	37.70		86206-1.RAW	16:03:48	5164.76	Sample	OK	1
1709609-11	B16	1	10.21	38.77		86207-1.RAW	16:07:56	5311.29	Sample	OK	1
1709609-12	B17	1	10.21	44.04		86208-1.RAW	16:12:04	6032.17	Sample	OK	1
1709610-01	B18	1	10.21	2.19		86209-1.RAW	16:16:13	309.00	Sample	OK	1
1709610-02	B19	1	10.21	1.73		86210-1.RAW	16:20:21	246.11	Sample	OK	1
SEQ-CCV8	B20	1	10.21	5.42	108.50	86211-1.RAW	16:24:30	751.95	Sample	OK	1
SEQ-CCB8	B21	1	10.21	0.23	0.00	86212-1.RAW	16:28:38	42.27	Sample	OK	1
1709700-01	C1	1	10.21	16.12		86213-1.RAW	16:32:47	2214.72	Sample	OK	1
1709700-02	C2	1	10.21	16.82		86214-1.RAW	16:36:55	2309.45	Sample	OK	1
1709700-03	C3	1	10.21	0.28		86215-1.RAW	16:41:04	48.06	Sample	OK	1
1709700-04	C4	1	10.21	3.99		86216-1.RAW	16:45:13	555.22	Sample	OK	1
1709609-12RE1	C5	10	10.21	45.88		86217-1.RAW	16:49:21	637.53	Sample	OK	1
1709610-01RE1	C6	1	10.21	1.74		86218-1.RAW	16:53:30	247.80	Sample	OK	1
F709474-DUP1	C7	10	10.21	45.04		86219-1.RAW	16:57:38	626.00	Sample	OK	1
F709474-MS1	C8	10	10.21	147.93	321.33	86220-1.RAW	17:01:47	2032.87	Sample	OK	1
F709474-MSD1	C9	10	10.21	146.31		86221-1.RAW	17:05:55	2010.72	Sample	OK	1
SEQ-CCV9	C10	1	10.21	5.44	108.86	86222-1.RAW	17:10:04	754.40	Sample	OK	1
SEQ-CCB9	C11	1	10.21	0.22	0.00	86223-1.RAW	17:14:12	40.71	Sample	OK	1

Failing Data Report - 7129007

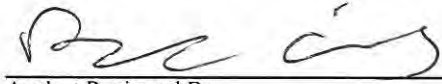
Sample ID	Analysis	Result	MRL	Dup Result	Source Result	True Value	Units	% Rec.	Rec. LCL	Rec. UCL	RPD	RPD Limit	Over Cal	Failure	Qualifier
1709607-15	Hg-CVAFS-S-7474	3700	67.5				ng/g						FAIL-OVER	PASS	E

Bea King 9/29/17
 Analyst Reviewed By Date

Don Matam 9/29/17
 Peer Reviewed By Date

Failing Data Report - 7I29008

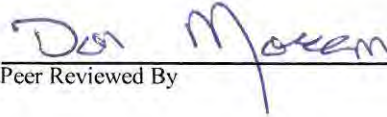
Sample ID	Analysis	Result	MRL	Dup Result	Source Result	True Value	Units	% Rec.	Rec. LCL	Rec. UCL	RPD	RPD Limit	Over Cal	Failure	Qualifier
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Analyst Reviewed By

9/29/17

Date



Peer Reviewed By

9/29/17

Date

Failing Data Report - 7129009

Sample ID	Analysis	Result	MRL	Dup Result	Source Result	True Value	Units	% Rec.	Rec. LCL	Rec. UCL	RPD	RPD Limit	Over Cal	Failure	Qualifier
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[Signature]

9/29/17

Analyst Reviewed By

Date

Don Maxem

9/29/17

Peer Reviewed By

Date

ANALYSIS SEQUENCE

7129008



Instrument: Hg2600-2

Calibration ID: UNASSIGNED

Analyzed: 9/28/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
7129008-IBL1	QC	1			
7129008-IBL2	QC	2			
7129008-IBL3	QC	3			
7129008-CAL1	QC	4	1704505		
7129008-CAL2	QC	5	1704506		
7129008-CAL3	QC	6	1704507		
7129008-CAL4	QC	7	1704508		
7129008-CAL5	QC	8	1704509		
7129008-ICV1	QC	9	1705628		
7129008-CCV1	QC	10	1705628		
7129008-CCB1	QC	11			
7129008-CCV2	QC	12	1705628		
7129008-CCB2	QC	13			
F709464-BLK1	QC	14			
F709464-BLK2	QC	15			
7129008-CCV3	QC	16	1705628		
7129008-CCB3	QC	17			
F709464-BLK3	QC	18			
F709464-BS1	QC	19			
F709464-BSD1	QC	20			
1709703-01	Hg_FSTM_TRAP_A	21			
1709703-02	Hg_FSTM_TRAP_A	22			
1709745-01	Hg_FSTM_TRAP_A	23			AFS - Take photos of trap if heavy particulate present and send to PM
1709745-02	Hg_FSTM_TRAP_A	24			AFS - Take photos of trap if heavy particulate present and send to PM
1709746-01	Hg_FSTM_TRAP_A	25			AFS - Take photos of trap if heavy particulate present and send to PM
1709746-02	Hg_FSTM_TRAP_A	26			AFS - Take photos of trap if heavy particulate present and send to PM
1709746-03	Hg_FSTM_TRAP_A	27			AFS - Take photos of trap if heavy particulate present and send to PM
7129008-CCV4	QC	28	1705628		
7129008-CCB4	QC	29			
1709746-04	Hg_FSTM_TRAP_A	30			AFS - Take photos of trap if heavy particulate present and send to PM
1709748-01	Hg_FSTM_TRAP_A	31			
1709748-02	Hg_FSTM_TRAP_A	32			
7129008-CCV5	QC	33	1705628		
7129008-CCB5	QC	34			
7129008-CCV6	QC	35	1705628		

Due Date: 9/29/2017

Instrument: Hg2600-2

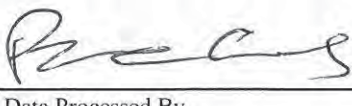
Calibration ID: UNASSIGNED

Analyzed: 9/28/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
7129008-CCB6	QC	36			
F709464-DUP1	QC	37			
F709464-MS1	QC	38			
F709464-MSD1	QC	39			
7129008-CCV7	QC	40	1705628		
7129008-CCB7	QC	41			

 9/29/17

Samples Loaded By Date

 9/29/17

Data Processed By Date

10rd
9/28/17

ANALYSIS SEQUENCE

7129007



Instrument: Hg2600-2

Calibration ID: UNASSIGNED

Analyzed: 9/28/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
7129007-IBL1	QC	1			
7129007-IBL2	QC	2			
7129007-IBL3	QC	3			
7129007-CAL1	QC	4	1704505		
7129007-CAL2	QC	5	1704506		
7129007-CAL3	QC	6	1704507		
7129007-CAL4	QC	7	1704508		
7129007-CAL5	QC	8	1704509		
7129007-ICV1	QC	9	1705628		
F709449-BLK1	QC	10			
F709449-BLK2	QC	11			
F709449-BS1	QC	12			
F709449-BSD1	QC	13			
1709529-01	Hg-CVAFS-S-7474	14			
1709529-02	Hg-CVAFS-S-7474	15			
1709529-03	Hg-CVAFS-S-7474	16			
1709529-04	Hg-CVAFS-S-7474	17			
1709529-05	Hg-CVAFS-S-7474	18			
1709529-06	Hg-CVAFS-S-7474	19			
7129007-CCV1	QC	20	1705628		
7129007-CCB1	QC	21			
1709607-13	Hg-CVAFS-S-7474	22			
1709607-14	Hg-CVAFS-S-7474	23			
1709607-15	Hg-CVAFS-S-7474	24			
1709607-16	Hg-CVAFS-S-7474	25			
1709607-17	Hg-CVAFS-S-7474	26			
1709607-18	Hg-CVAFS-S-7474	27			
1709609-13	Hg-CVAFS-S-7474	28			
1709609-14	Hg-CVAFS-S-7474	29			
1709609-15	Hg-CVAFS-S-7474	30			
1709609-16	Hg-CVAFS-S-7474	31			
7129007-CCV2	QC	32	1705628		
7129007-CCB2	QC	33			
1709609-17	Hg-CVAFS-S-7474	34			
1709609-18	Hg-CVAFS-S-7474	35			

Due Date: 10/12/2017

Instrument: Hg2600-2

Calibration ID: UNASSIGNED

Analyzed: 9/28/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
1709610-13	Hg-CVAFS-S-7474	36			
1709610-14	Hg-CVAFS-S-7474	37			
F709449-MS1	QC	38			
F709449-MSD1	QC	39			
F709449-MS2	QC	40			
F709449-MSD2	QC	41			
7129007-CCV3	QC	42	1705628		
7129007-CCB3	QC	43			

Becis 9/29/17
Samples Loaded By Date
Control 9/29/17

Becis 9/29/17
Data Processed By Date

ANALYSIS SEQUENCE

7129009



Instrument: Hg2600-2

Calibration ID: UNASSIGNED

Analyzed: 9/28/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
7129009-IBL1	QC	1			
7129009-IBL2	QC	2			
7129009-IBL3	QC	3			
7129009-CAL1	QC	4	1704505		
7129009-CAL2	QC	5	1704506		
7129009-CAL3	QC	6	1704507		
7129009-CAL4	QC	7	1704508		
7129009-CAL5	QC	8	1704509		
7129009-ICV1	QC	9	1705628		
7129009-CCV1	QC	10	1705628		
7129009-CCB1	QC	11			
7129009-CCV2	QC	12	1705628		
7129009-CCB2	QC	13			
7129009-CCV3	QC	14	1705628		
7129009-CCB3	QC	15			
7129009-CCV4	QC	16	1705628		
7129009-CCB4	QC	17			
7129009-CCV5	QC	18	1705628		
7129009-CCB5	QC	19			
7129009-CCV6	QC	20	1705628		
7129009-CCB6	QC	21			
F709474-BLK1	QC	22			
F709474-BLK2	QC	23			
7129009-CCV7	QC	24	1705628		
7129009-CCB7	QC	25			
F709474-BLK3	QC	26			
F709474-BLK4	QC	27			
F709474-BS1	QC	28			
F709474-BSD1	QC	29			
1709609-09	Hg-CVAFS-W-1631	30			
1709609-10	Hg-CVAFS-W-1631	31			
1709609-11	Hg-CVAFS-W-1631	32			
1709609-12	Hg-CVAFS-W-1631	33			
1709610-01	Hg-CVAFS-W-1631	34			
1709610-02	Hg-CVAFS-W-1631	35			

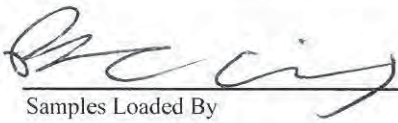
Due Date: 10/10/2017

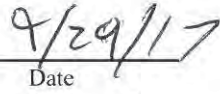
Instrument: Hg2600-2

Calibration ID: UNASSIGNED

Analyzed: 9/28/2017

Lab Number	Analysis	Order	STD ID	ISTD ID	Comments
7I29009-CCV8	QC	36	1705628		
7I29009-CCB8	QC	37			
1709700-01	Hg-CVAFS-W-1631	38			SCAN DATA - LEVEL IV
1709700-02	Hg-CVAFS-W-1631	39			SCAN DATA - LEVEL IV
1709700-03	Hg-CVAFS-W-1631	40			SCAN DATA - LEVEL IV
1709700-04	Hg-CVAFS-W-1631	41			SCAN DATA - LEVEL IV
1709609-12RE1	Hg-CVAFS-W-1631	42			Added 9/29/2017 by BC
1709610-01RE1	Hg-CVAFS-W-1631	43			Added 9/29/2017 by BC
F709474-DUP1	QC	44			
F709474-MS1	QC	45			
F709474-MSD1	QC	46			
7I29009-CCV9	QC	47	1703679		
7I29009-CCB9	QC	48			


Samples Loaded By


Date


Data Processed By


Date

10nd ed
9/20/17

PREPARATION BENCH SHEET

F709474

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: AFS - EPA 1631E BrCl Oxidation

Prepared: 9/28/2017

Lab Number	Sample ID and Source Sample	Initial (mL)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709474-BLK1	Blank	100	101					
F709474-BLK2	Blank	100	101					
F709474-BLK3	Blank	100	101					
F709474-BLK4	Blank	100	102					
F709474-BS1	LCS	50	50.5	1705054	100			
F709474-BSD1	LCS Dup	50	50.5	1705054	100			
F709474-DUP1	Duplicate [1709609-12RE1]	100	102					
F709474-MS1	Matrix Spike [1709609-12RE1]	4.901961	5	1704422	50			[Spk] 100mL->102mL; 101mL->101mL; Spiked 5mL
F709474-MSD1	Matrix Spike Dup [1709609-12RE1]	4.901961	5	1704422	50			[Spk] 100mL->102mL; 101mL->101mL; Spiked 5mL

<u>Standard ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>	<u>Reagent ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>
1704422	THg 10ng/mL Calibration Standard	21-Oct-17 00:00	1703182	25% Hydroxylamine-HCl working solution	24-Nov-17 00:00
1705054	Nist 1641D 200X	21-Aug-18 00:00	1704515	0.2 N BRCL JULY 2017	22-Jan-18 00:00
			1704516	THg Washstation (0.5% BrCl)	24-Nov-17 00:00
			1704517	THg Dilute 1% BrCl	18-Dec-17 00:00
			1705552	3% SnCl2 THg reductant	05-Mar-18 00:00

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F709474

Eurofins Frontier Global Sciences, Inc.

Matrix: Water

Prepared using: AFS - EPA 1631E BrCl Oxidation

Prepared: 9/28/2017

Lab Number	Sample ID	Initial (mL)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709609-09	WW2I FF52_091317_Leach_ELS_R3	100	102	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-10	WW2J FF52_091317_Leach_ELS_R4	100	102	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-11	WW2K FF52_091317_Leach_ELS_R5	100	102	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-12	WW2L FF52_091317_Leach_ELS_R6	100	102	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-12RE1	WW2L FF52_091317_Leach_ELS_R6	100	102	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	Added 9/29/2017 by BC
1709610-01	WW3A VN81_091217_Leach_EHS_R1	100	102	-	-	-	Wood Chip 1709529-04->06 - VN_25V	
1709610-01RE1	WW3A VN81_091217_Leach_EHS_R1	100	102	-	-	-	Wood Chip 1709529-04->06 - VN_25V	Added 9/29/2017 by BC
1709610-02	WW3B VN81_091217_Leach_EHS_R2	100	102	-	-	-	Wood Chip 1709529-04->06 - VN_25V	
1709700-01	B172934 OUTFALL 008	100	101	-	-	-	SCAN DATA - LEVEL IV	
1709700-02	B172945 OUTFALL 008 (DUP)	100	101	-	-	-	SCAN DATA - LEVEL IV	
1709700-03	B172928 FIELD BLANK	100	101	-	-	-	SCAN DATA - LEVEL IV	
1709700-04	B172953 OUTFALL 004	100	101	-	-	-	SCAN DATA - LEVEL IV	

Work Order Client Project

PREPARATION BENCH SHEET

F709449

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: AFS - EPA 7474

Prepared: 9/27/2017

Lab Number	Sample ID and Source Sample	Initial (g)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709449-BLK1	Blank	45	200					
F709449-BLK2	Blank	45	200					
F709449-BLK3	Blank	0.5	200					
F709449-BLK4	Blank	0.5	200					
F709449-BS1	Blank Spike	45	200	1705554	40			
F709449-BSD1	Blank Spike	45	200	1705554	40			
F709449-MS1	Matrix Spike [1709529-01]	0.5433	200	1705286	50			
F709449-MS2	Matrix Spike [1709529-06]	0.549	200	1705286	50			
F709449-MSD1	Matrix Spike Dup [1709529-01]	0.5617	200	1705286	50			
F709449-MSD2	Matrix Spike Dup [1709529-06]	0.5528	200	1705286	50			

<u>Standard ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>	<u>Reagent ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>
1705286	THg 10,000ng/mL Primary Spiking Standard	30-Nov-17 00:00	1703182	25% Hydroxylamine-HCl working solution	24-Nov-17 00:00
1705554	THg 1,000ng/mL Secondary Spiking Standard	18-Mar-18 00:00	1704424	Boiling Chips for AFS prep	21-Jan-18 00:00
			1704516	THg Washstation (0.5% BrCl)	24-Nov-17 00:00
			1704517	THg Dilute 1% BrCl	18-Dec-17 00:00
			1705287	Omnitrace Hydrochloric Acid	30-Aug-20 00:00
			1705552	3% SnCl2 THg reductant	05-Mar-18 00:00
			1705679	Fisher Nitric Acid, Tracemetal Grade	15-Mar-19 00:00
			1705794	7474 Potassium Bromate/Bromide Reagent	04-Oct-17 00:00

PREPARATION BENCH SHEET

F709449

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: AFS - EPA 7474

Prepared: 9/27/2017

Lab Number	Sample ID	Initial (g)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709529-01	FFBU_60WCH_091317_SED_05_R1	0.5116	200	-	-	-		
1709529-02	FFBU_60WCH_091317_SED_05_R2	0.5211	200	-	-	-		
1709529-03	FFBU_60WCH_091317_SED_05_R3	0.5546	200	-	-	-		
1709529-04	VN_25WCH_091217_SED_05_R1	0.543	200	-	-	-		
1709529-05	VN_25WCH_091217_SED_05_R2	0.5189	200	-	-	-		
1709529-06	VN_25WCH_091217_SED_05_R3	0.5262	200	-	-	-		
1709607-13	WW1D BU51_09122017_Leach_EHS_R4	0.5214	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-14	WW1E BU51_09122017_Leach_EHS_R5	0.5466	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-15	WW1F BU51_09122017_Leach_EHS_R6	0.5255	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-15RE1	WW1F BU51_09122017_Leach_EHS_R6	0.5255	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	Added 9/29/2017 by BC
1709607-16	WW1J BU51_09122017_Leach_ELS_R4	0.5722	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-16RE1	WW1J BU51_09122017_Leach_ELS_R4	0.5722	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	Added 9/29/2017 by BC
1709607-17	WW1K BU51_09122017_Leach_ELS_R5	0.5372	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709607-18	WW1L BU51_09122017_Leach_ELS_R6	0.526	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	
1709609-13	WW2D FF52_091317_Leach_EHS_R4	0.5871	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-14	WW2E FF52_091317_Leach_EHS_R5	0.563	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-15	WW2F FF52_091317_Leach_EHS_R6	0.5472	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-16	WW2J FF52_091317_Leach_ELS_R4	0.5898	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709609-17	WW2K FF52_091317_Leach_ELS_R5	0.5474	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	

Due Date: 10/12/2017

PREPARATION BENCH SHEET

F709449

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: AFS - EPA 7474

Prepared: 9/27/2017

1709609-18	WW2L FF52_091317_Leach_ELS_R6	0.514	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	
1709610-13	WW3D VN81_091217_Leach_EHS_R4	0.5443	200	-	-	-	Wood Chip 1709529-04->06 - VN_25V	
1709610-14	WW3E VN81_091217_Leach_EHS_R5	0.524	200	-	-	-	Wood Chip 1709529-04->06 - VN_25V	

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PREPARATION BENCH SHEET

F709464

Eurofins Frontier Global Sciences, Inc.

Matrix: Air

Prepared using: AFS - EFGS-009 FSTM Trap Nitric/Sulfuric Digestion

Prepared: 9/27/2017

Lab Number	Sample ID and Source Sample	Initial (Trap)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709464-BLK1	Blank	1	100					
F709464-BLK2	Blank	1	100					
F709464-BLK3	Blank	1	100					
F709464-BS1	LCS	1	100	1705554	200			
F709464-BSD1	LCS Dup	1	100	1705554	200			
F709464-DUP1	Duplicate [1709745-01]	1	100					
F709464-MS1	Matrix Spike [1709745-01]	0.00125	0.125	1704422	25			[Spk] 1Trap->100mL; 20mL->20mL; Spiked 0.125mL
F709464-MSD1	Matrix Spike Dup [1709745-01]	0.00125	0.125	1704422	25			[Spk] 1Trap->100mL; 20mL->20mL; Spiked 0.125mL

<u>Standard ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>	<u>Reagent ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>
1704422	THg 10ng/mL Calibration Standard	21-Oct-17 00:00	1703182	25% Hydroxylamine-HCl working solution	24-Nov-17 00:00
1705554	THg 1,000ng/mL Secondary Spiking Standard	18-Mar-18 00:00	1704516	THg Washstation (0.5% BrCl)	
			1704517	THg Dilute 1% BrCl	18-Dec-17 00:00
			1705552	3% SnCl2 THg reductant	05-Mar-18 00:00
			1705777	5% BrCl	22-Jan-18 00:00
			1705780	70/30 Digestion Acid	25-Mar-18 00:00

PREPARATION BENCH SHEET

F709464

Eurofins Frontier Global Sciences, Inc.

Matrix: Air

Prepared using: AFS - EFGS-009 FSTM Trap Nitric/Sulfuric Digestion

Prepared: 9/27/2017

Lab Number	Sample ID	Initial (Trap)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709703-01	EFGS09300 Trap A	1	100	-	-	-	Sample Volume: 2666.43 L	
1709703-01RE1	EFGS09300 Trap A	1	100	-	-	-	Sample Volume: 2666.43 L Added 9/29	Added 9/29/2017 by BC
1709703-02	EFGS10053 Trap B	1	100	-	-	-	Sample Volume: 2660.88 L	
1709703-02RE1	EFGS10053 Trap B	1	100	-	-	-	Sample Volume: 2660.88 L Added 9/29	Added 9/29/2017 by BC
1709745-01	EFGS09275 Unit 31-2 Trap A 9/18/17-9/19/17	1	100	-	-	-	Sample Volume: 1120.796 AFS - Take 1	
1709745-02	EFGS10187 Unit 31-2 Trap B 9/18/17-9/19/17	1	100	-	-	-	Sample Volume: 935.104 AFS - Take pl	
1709746-01	EFGS09169 U4 Trap A 9/13/17-9/20/17	1	100	-	-	-	Sample Volume: 4059.098 AFS - Take 1	
1709746-02	EFGS09261 U4 Trap B 9/13/17-9/20/17	1	100	-	-	-	Sample Volume: 2993.461 AFS - Take 1	
1709746-03	EFGS09262 33 Trap A 9/12/17-9/20/17	1	100	-	-	-	Sample Volume: 3306.861 AFS - Take 1	
1709746-04	EFGS09264 33 Trap B 9/12/17-9/20/17	1	100	-	-	-	Sample Volume: 4439.038 AFS - Take 1	
1709748-01	EFGS08854	1	100	-	-	-	Sample Volume: 1598.63 L	
1709748-02	EFGS09012	1	100	-	-	-	Sample Volume: 1597.87 L	

Work Order

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PREPARATION BENCH SHEET

2600-2
BC 9/28/17

F709449

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: AFS - EPA 7474

Prepared: 9/27/2017

Lab Number	Sample ID and Source Sample	Initial (g)	Final (mL)	Spike1 ID	µl Spike1	Spike2 ID	µl Spike2	Extraction Comments
F709449-BLK1	Blank	45	200					5mL
F709449-BLK2	Blank	45	200					5mL
F709449-BLK3	Blank	45	200					5mL
F709449-BS1	Blank Spike	45	200	1705554	40			5mL
F709449-BSD1	Blank Spike	45	200	1705554	40			5mL
F709449-MS1	Matrix Spike [1709529-01]	0.5433	200	1705286	50			125µL
F709449-MS2	Matrix Spike [1709529-06]	0.549	200	1705286	50			125µL
F709449-MSD1	Matrix Spike Dup [1709529-01]	0.5617	200	1705286	50			125µL
F709449-MSD2	Matrix Spike Dup [1709529-06]	0.5528	200	1705286	50			125µL

<u>Standard ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>	<u>Reagent ID(s):</u>	<u>Description:</u>	<u>Expiration:</u>
1705286	THg 10,000ng/mL Primary Spiking Standard	30-Nov-17 00:00	1704424	Boiling Chips for AFS prep	21-Jan-18 00:00
		30-Nov-17 00:00	1705287	Omnitrace Hydrochloric Acid	30-Aug-20 00:00
1705554	THg 1,000ng/mL Secondary Spiking Standard	18-Mar-18 00:00	1705679	Fisher Nitric Acid, Tracemetal Grade	15-Mar-19 00:00
			1705794	7474 Potassium Bromate/Bromide Reagent	04-Oct-17 00:00

5mL = 10X
1mL = 50X
125µL = 400X

1704516
1204517
1203182
1705552

PREPARATION BENCH SHEET

2600-2
BC 9/28/17

F709449

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: AFS - EPA 7474

Prepared: 9/27/2017

Lab Number	Sample ID	Initial (g)	Final (mL)	QC Sample	Sample Specs.	Raw Data	Sample Comments	Analysis Comments
1709529-01	FFBU_60WCH_091317_SED_05_R1	0.5116	200	-	-	-		1 mL
1709529-02	FFBU_60WCH_091317_SED_05_R2	0.5211	200	-	-	-		1 mL
1709529-03	FFBU_60WCH_091317_SED_05_R3	0.5546	200	-	-	-		1 mL
1709529-04	VN_25WCH_091217_SED_05_R1	0.543	200	-	-	-		1 mL
1709529-05	VN_25WCH_091217_SED_05_R2	0.5189	200	-	-	-		1 mL
1709529-06	VN_25WCH_091217_SED_05_R3	0.5262	200	-	-	-		1 mL
1709607-13	WW1D BU51_09122017_Leach_EHS_R4	0.5214	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1 mL
1709607-14	WW1E BU51_09122017_Leach_EHS_R5	0.5466	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1 mL
1709607-15	WW1F BU51_09122017_Leach_EHS_R6	0.5255	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1 mL
1709607-16	WW1J BU51_09122017_Leach_ELS_R4	0.5722	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1 mL
1709607-17	WW1K BU51_09122017_Leach_ELS_R5	0.5372	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1 mL
1709607-18	WW1L BU51_09122017_Leach_ELS_R6	0.526	200	-	-	-	Wood Chip 1709583-01->03 - BU_WC	1 mL
1709609-13	WW2D FF52_091317_Leach_EHS_R4	0.5871	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1 mL
1709609-14	WW2E FF52_091317_Leach_EHS_R5	0.563	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1 mL
1709609-15	WW2F FF52_091317_Leach_EHS_R6	0.5472	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1 mL
1709609-16	WW2J FF52_091317_Leach_ELS_R4	0.5898	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1 mL
1709609-17	WW2K FF52_091317_Leach_ELS_R5	0.5474	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1 mL
1709609-18	WW2L FF52_091317_Leach_ELS_R6	0.514	200	-	-	-	Wood Chip 1709529-01->03 - FFBU_6	1 mL
1709610-13	WW3D VN81_091217_Leach_EHS_R4	0.5443	200	-	-	-	Wood Chip 1709529-04->06 - VN_25V	1 mL

Due Date: 10/12/2017

2600-2
BC 9/29/17

PREPARATION BENCH SHEET

F709449

Eurofins Frontier Global Sciences, Inc.

Matrix: Soil/Sediment

Prepared using: AFS - EPA 7474

Prepared: 9/27/2017

1709610-14	WW3E VN81_091217_Leach_EHS_R5	0.524	200	-	-	-	Wood Chip 1709529-04->06 - VN_25V	gms
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Work Order

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APPENDIX B

Toxicological Evaluation of Sediment Samples

**TOXICOLOGICAL EVALUATION
OF SEDIMENT SAMPLES**

**United States District Court - District of Maine
Penobscot River Estuary Phase III Engineering Study
Winterport, Maine
Project No. 3616166052.02A.2A051**

***Leptocheirus plumulosus* 28 day
Survival, Growth and Reproduction Sediment Evaluation**

and

***Nereis virens* 28 day
Survival Sediment Evaluation**

Prepared For:

Wood PLC
511 Congress Street, Suite 200
Portland, Maine 04101

Prepared By:

EnviroSystems, Inc.
1 Lafayette Road
Hampton, New Hampshire 03842-2627

October 2017
Master Reference 29705
Specific Studies 29632 / 29633
Revision 1

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TOXICOLOGICAL EVALUATION OF SEDIMENT SAMPLES

United States District Court - District of Maine
Penobscot River Estuary Phase III Engineering Study
Winterport, Maine
Project No. 3616166052.02A.2A051

Leptocheirus plumulosus 28 day
Survival, Growth and Reproduction Sediment Evaluation
and
Nereis virens 28 day
Survival Sediment Evaluation

1.0 INTRODUCTION

This report presents the results of toxicity tests carried out on sediment collected from Mendall Marsh located in the Penobscot River Estuary, Winterport, Maine. Samples were provided by Wood PLC (formerly Amec Foster Wheeler Environment & Infrastructure, Inc.), Portland, Maine in support of the United States District Court (USDC) Phase III Engineering Study. The purpose of the study was to assess the efficacy of treating total and methyl mercury in Mendall Marsh sediment using three possible additives that included Activated Carbon (AC), SediMite™ (S) and Biochar (B). Biological testing was based on programs and protocols developed by the US Environmental Protection Agency, (US EPA 2001, 1994) and ASTM (2017) for evaluating impacts on the estuarine amphipod, *Leptocheirus plumulosus*, and marine polychaete worm, *Nereis virens*. All testing, toxicological and analytical, was performed at EnviroSystems, Incorporated (ESI), Hampton, New Hampshire.

Toxicity tests expose groups of organisms to environmental samples and control samples for a specified period to assess potential impacts. Endpoints evaluated as part of these assays include survival, growth and reproduction impacts on the amphipod, and survival impacts on the polychaete worm. Analysis of variance techniques are used to determine if differences in a measured endpoint for organisms exposed to a treated sediment sample are significantly different from responses obtained from organisms exposed to the control samples. Inter-treatment evaluations were also completed.

2.0 MATERIALS AND METHODS

2.1 General Methods, Biological Evaluations

Toxicological and analytical protocols used in this program follow procedures outlined in *Standard Test Method for Measuring the Toxicity of Sediment-Associated Contaminants with Estuarine and Marine Invertebrates* (ASTM 2017a), *Standard Guide for Determination of the Bioaccumulation of Sediment-Associated Contaminants by Benthic Invertebrates* (ASTM 2017b), *Methods for Assessing the Chronic Toxicity of Marine and Estuarine Sediment-associated Contaminants with the Amphipod, Leptocheirus plumulosus* (US EPA 2001), *Methods for Assessing the Toxicity of Sediment-Associated Contaminants with Estuarine and Marine Amphipods* (US EPA 1994), QA-1442-R0 *Chronic Toxicity of Sediment to the Amphipod, Leptocheirus plumulosus - Amec Foster Wheeler, Penobscot River Estuary Phase III Engineering Study* (ESI 2017) and *Standard Methods for the Examination of Water and Wastewater*, 22nd Edition (APHA 2012). These protocols provide standard approaches for physical and chemical analyses and for the evaluation of toxicological effects of sediments on aquatic invertebrates.

2.2 Test Species

Leptocheirus plumulosus were obtained from cultures maintained by Aquatic Research Organisms (ARO) of Hampton, New Hampshire. Amphipods used in the assay were size selected from those that pass through a 600µm sieve and are retained by a 500 µm screen at the start of the test.

Adult *N. virens* were also obtained from ARO. Worms were collected in the field from the Damariscotta River in Boothbay Harbor, Maine and delivered to ARO. At ESI, the worms were placed in seaweed until used for the assay. If not used the same day, worms were refrigerated overnight in seaweed. Damaged and inactive worms were not used in the assay.

2.3 Test Sediment and Laboratory Control Sediment

Sediment samples collected from Mendall Marsh for this project were received at ESI in 50 two-gallon polyethylene buckets under chain of custody. Once received, samples were inspected to determine integrity, given unique sample numbers and logged into the laboratory sample management database. Samples were stored in a refrigerator maintained at $4\pm 2^{\circ}\text{C}$. A listing of sample collection and receipt information is summarized in Table 1, and copies of original chains of custody and sample receipt records are included in Appendix A. Samples received on September 13, 2017 were eventually returned to Wood PLC on September 21, 2017 due to the tough, fibrous nature of the substrate. Samples used in this evaluation were re-collected and received on September 21, 2017 in 30 five-gallon polyethylene buckets.

All samples were press sieved through a 10-mm stainless steel sieve to remove large stones, sticks, roots, and man-made material. Once sieved, Mendall Marsh sediment was homogenized in a two-step process using a large plastic tub. The first step involved homogenizing sediment from individual buckets in three separate batches (homogenization #s 1, 2 and 3). The second step entailed homogenizing portions of each of the mixtures from the first step together in three separate batches to obtain a Mendall Marsh Final Mixture that was representative of the whole Mendall Marsh area. There were approximately 8 buckets of sediment that were not used and have been retained in storage. Once homogenized, the samples used for the *L. plumulosus* assay were press sieved through a 2-mm stainless steel sieve to remove small stones and indigenous organisms. Homogenization records are summarized in Table 2 and included in Appendix A.

Sediment for the laboratory control treatment was collected from the Hampton Estuary, Hampton, New Hampshire. The area is not known to receive any direct industrial inputs and has been used as a laboratory reference sediment in the testing of marine sediments for over 25 years. Overlying seawater was also obtained from the Hampton Estuary. Water from the estuary has been used for the culture and maintenance of test organisms at ESI since 1978. Seawater is obtained through a filter system located on the bottom of the estuary at a point approximately 1 mile from the open ocean. The laboratory control was included to demonstrate the relative health of the test organisms.

2.4 Sediment Amendments and Test Chamber Preparation

Following homogenization, each of the three additives (Activated Carbon [AC], SediMite™ [S] and Biochar [B]) were mixed with Mendall Marsh sediment at three different application rates by mass (g dry weight) to achieve 3%, 5% and 10% amendments, resulting in 9 amended sediment samples to be tested for each species. In addition, the un-treated Mendall Marsh sediment was included as a negative control. The amendment loading calculations for *L. plumulosus* and *N. virens* are summarized in Table 3 and are provided in more detail in Appendix A.

After adding the additives, sediment was loaded into test chambers. Overlying water was added immediately and the chambers were allowed to stabilize for a minimum of 10 days. During this period, the chambers for *L. plumulosus* testing received two volume additions daily and the pore water was measured for ammonia. The published ammonia threshold for *Leptocheirus* in waters with a pH of 7.7 is $<60\text{mg/L}$, measured as total ammonia, and $<0.8\text{mg/L}$, measured as unionized ammonia. Once the pore water ammonia was sufficiently below these levels, the assays proceeded. Chambers used in *N. virens* testing were on continuous flow through during this period. Ammonia is not a factor in the testing of *N. virens*.

2.5 *L. plumulosus* 28 Day Survival, Growth and Reproduction Sediment Evaluation

Endpoints measured at the completion of the 28 day amphipod sediment assay were survival, growth and reproduction. Growth was measured as dry weight and dry biomass. Reproduction was measured as juvenile production per surviving amphipod and juvenile production per surviving female amphipod.

Test vessels were 1000 mL glass beakers containing approximately 175 mL of sediment and approximately 725 mL of overlying water. Test vessels were drilled at a consistent height, approximately 3 cm below the lip, and the drilled hole covered with Nitex® screen to facilitate water exchange without the loss of test organisms. Vessels were maintained in a water bath during the test. Depth of the water in the bath was set below the drain hole in the test vessel to eliminate flow of water from the bath into the test vessel. Test chambers were placed in the water bath after addition of test sediments. The water bath was maintained in a limited access, temperature controlled room. Temperatures in the room and water bath were independently set to maintain a temperature of 25°C. Temperature was recorded on an hourly frequency using a temperature logger placed in a surrogate vessel. The photoperiod in the test chamber was set at 16:8 hour light:dark. Lighting was supplied by LED bulbs.

Each treatment group included 8 replicates with 20 randomly selected organisms (added by groups of 10 organisms), as well as a surrogate test chamber. The surrogate chamber was used to obtain water qualities during the assay without disturbing the test animals, and were treated the same as actual test chambers with the addition of animals and food but were not used to determine endpoint data.

Each day during testing, chambers received 1 volume addition of new seawater having similar salinity and temperature as the overlying water in the vessels. Water exchanges were facilitated by use of a distribution system designed to provide equal and regulated flow to each chamber. The system was activated manually by the addition of water during the test. Overlying water dissolved oxygen, pH, salinity, specific conductivity and temperature were measured daily in a surrogate chamber for each treatment. Test chambers were aerated in order to maintain dissolved oxygen levels at $\geq 60\%$ saturation. Water quality measurements were completed prior to overlying water renewals. The total ammonia concentration of the overlying and pore water was measured on days 0, 7, 14, 21 and 28. In order to calculate the unionized ammonia levels in the pore water, the pH and temperature were also measured.

Test chambers were observed daily and any organisms found floating on the surface were noted on the data sheets. Organisms were fed three times weekly with a 20mg/mL suspension of flake fish food, dried alfalfa leaves, wheat grass powder and shrimp maturation feed. During the first 2 weeks of the assay, amphipods in each replicate were fed 1mL of the suspension at each feeding. The amount of food was increased to 2mL for the last 2 weeks of the assay.

After the 28 days exposure, organisms were recovered from the sediments. Each test chamber was gently swirled to loosen the sediments and the test material was dumped into stacked 8" stainless steel sieves with 710 and 355 μm mesh (US Standard #25 and #45) sieves. The sediments were washed through the sieve using water and material left on the screen was sorted to recover all amphipods. This process was continued until the entire sample was evaluated. Juvenile *L. plumulosus* were discarded once they were counted. Adult *L. plumulosus* were differentiated from juveniles by sieving (adults are retained on the larger top sieve) and by a visual inspection of size. Adult organisms were preserved with formalin solution and sexed. Adults were then placed on tared weighing pans and dried overnight at $104\pm 6^\circ\text{C}$ to obtain dry weight to the nearest 0.01 mg. The mean weight of surviving adult organisms was determined to assess growth.

2.6 *N. virens* 28 Day Survival Evaluation

The endpoint measured at the completion of the 28 day polychaete sediment assay was survival. The assay was started by placing 6 L of sediment into 10 gallon aquaria designed for flow-through testing. Overlying water was then added to each aquarium. The volume of the overlying water in these chambers was approximately 6 gallons. Water flow was adjusted to provide approximately 6 volume additions of water/day to each aquarium. Flow into each aquarium was set so that incoming water mixed throughout the tank and did not stratify as a surface layer.

N. virens were indiscriminately selected from the pool of organisms and randomly added to the aquaria. A total of 20 worms were added (by groups of 10 organisms) to each of 5 replicates. Temperature was maintained at 12-16°C with no readings exceeding $\pm 3^\circ\text{C}$. Salinity was maintained at $30\pm 2\text{‰}$. The photoperiod was set at 16:8 hours light:dark. Dissolved oxygen, pH, temperature, specific conductance and salinity were measured daily in all tanks. Dissolved oxygen levels were maintained at a minimum level of

≥60% saturation by providing aeration to all tanks from the start of the assay. Organisms were not fed during the exposure period.

After 28 days exposure, *N. virens* were recovered from the test sediments and counted. Survival counts were used for statistical analysis. All living organisms were transferred to clean test vessels and maintained in clean seawater for 24 hours to allow for removal of sediment from the animals' digestive tract. After the depuration period, organisms were transferred to plastic bags and frozen for shipment to Eurofins located in Bothell, Washington for subsequent tissue analysis of total and methyl mercury.

2.7 Statistical Analysis

Survival, growth and reproduction data were analyzed using CETIS™ v. 1.9.3.0 software to determine significant differences between the amended sediments, untreated Mendall Marsh sediment and the laboratory control. Data sets were evaluated to determine normality of distribution and homogeneity of sample variance. Data sets were subsequently evaluated using the appropriate parametric or non-parametric Analysis of Variance (ANOVA) statistic. If outliers were found in the data set, then the analysis was conducted with and without the outlier. Statistical comparisons for survival were made for both species, and for the following endpoints for *L. plumulosus* only: dry weight, dry biomass, juvenile production per surviving amphipod and juvenile production per surviving female. Pair-wise comparisons were made using the appropriate statistical evaluation. Statistical difference was evaluated at $\alpha = 0.05$.

This study was designed, in part, to identify how the different sediment amendments performed relative to each other and to the untreated Mendall Marsh sediment. As such, statistical comparisons were completed within and between all treatments in order to determine if a specified endpoint performed better in one of the two treatments selected for the comparison. When samples are entered into CETIS™, the program characterizes samples based on where they are positioned in a sample list. Samples for this study were entered into CETIS™ by ascending sample number (listed below, for example, for *L. plumulosus*). Those ahead of another sample are considered as a "Control" (C) sample in a pair-wise comparison, and those following another sample are considered a "Treatment" (T) sample. As a result of these assignments, the program would characterize sample -001 as a "Control" and sample -002 as a "Treatment" when doing a pair-wise comparison. To determine if sample -001 performed better than sample -002, the hypothesis test "C>T" (is the control greater than the treatment) was applied. In order to determine the converse, if sample -002 performed better than sample -001, the hypothesis test "C<T" (is the control less than the treatment) was applied.

Order of Samples in CETIS™ program		
Sample Group	ESI Code	Amendment
1	29632-000	A/L/0%
2	29632-001	A/N/0%
3	29632-002	A/AC/3%
4	29632-003	A/AC/5%
5	29632-004	A/AC/10%
6	29632-005	A/S/3%
7	29632-006	A/S/5%
8	29632-007	A/S/10%
9	29632-008	A/B/3%
10	29632-009	A/B/5%
11	29632-010	A/B/10%

2.8 Reference Toxicant Evaluation

As part of the laboratory quality control program, reference toxicant evaluations are conducted by ESI on a regular basis for each test species. These results provide relative health and response data while allowing for comparison with historic data sets. Results are summarized in Table 4.

3.0 RESULTS AND DISCUSSION

Tables 5 and 6 provide summaries of assay acceptability criteria and control achievement for *L. plumulosus* and *N. virens*, respectively. Tables 7 through 11 provide summaries of assay endpoints and detailed statistical results for individual endpoints. Tables 12 and 13 summarize overlying and pore water ammonia data (respectively) for *L. plumulosus* measured during the assay. Laboratory bench sheets, water quality data, detailed summaries of survival, dry weights and associated statistical support data are included in Appendix A.

3.1 *L. plumulosus*

3.1.1 Laboratory Control and Mendall Marsh Sediment Performance:

Mean amphipod survival in the laboratory control sediment was 81% with a coefficient of variation (CV) of 32%. At the end of the assay, the mean dry weight of surviving amphipods was 1.44 mg/organism. The mean dry weight of 40 randomly selected amphipods at the start of the assay was 0.112 mg/organism. The overall mean juvenile production was calculated to be 5.0 juveniles/surviving amphipod. Minimum acceptable performance for the laboratory control is $\geq 80\%$ survival on day 28, with no individual replicate having less than 60% survival, and organisms must show some evidence of growth and reproduction (ASTM, US EPA). Based on these data, the amphipods are considered healthy and the overlying water was determined to have had no adverse impact on the outcome of the assay. See Section 3.3 for a discussion of the survival results.

Mean amphipod survival in the untreated Mendall Marsh sediment was 74% with a coefficient of variation (CV) of 27%. At the end of the assay, the mean dry weight of surviving amphipods was 1.02 mg/organism, and the overall mean juvenile production was calculated to be 0.87 juveniles/surviving amphipod.

3.1.2 Water Quality Data

Temperature data collected during the daily water quality observations documented a mean value of 24.0°C with a range of 22.9 to 25.1°C. Confirmation temperature data collected on an hourly basis from a data logger documented a mean value of 23.8°C with a range of 21.9 to 24.7°C. Salinity levels ranged from 18.5 to 21.5‰ with a mean value of 20.1‰. Test acceptability criteria requires a mean temperature of 25 ± 1 °C with maximum temporary fluctuations of 25 ± 3 °C, and salinity within a range of 20 ± 2 ‰. See Section 3.3 for a discussion of the temperature data.

3.2 *N. virens*

3.2.1 Laboratory Control and Mendall Marsh Sediment Performance:

Mean polychaete survival in the laboratory control sediment was 96% with a coefficient of variation (CV) of 2%. Minimum acceptable performance for the laboratory control is $\geq 90\%$ survival on day 28, and sufficient tissue mass for chemical analysis (ASTM, US EPA). Based on these data, the polychaetes are considered healthy and the overlying water was determined to have had no adverse impact on the outcome of the assay. Mean polychaete survival in the untreated Mendall Marsh sediment was 94% with a coefficient of variation (CV) of 2%.

3.2.2 Water Quality Data

Temperature data collected during the daily water quality observations documented a mean value of 12.3°C with a range of 10.7 to 13.4°C. Confirmation temperature data collected on an hourly basis from a data logger documented a mean value of 12.6°C with a range of 12.1 to 13.5°C. Salinity levels ranged from 28.2 to 31.7‰ with a mean value of 30.0‰. Test acceptability criteria requires a mean temperature of 12 ± 2 °C with maximum temporary fluctuations of 12 ± 3 °C, and salinity within a range of 30 ± 2 ‰.

3.3 Protocol Deviations

Review of data generated during the 28-day evaluations documented the following deviations from either the method or ESI's protocol:

Replicate 1 of the laboratory control in the *L. plumulosus* assay did not meet the acceptability criterion specified in the protocol (ASTM, US EPA) for amphipod survival in individual replicates. Survival in this replicate was 20% and the minimum specified in the protocol for individual replicates is 60%. It was noted on the initiation record that 1 replicate (out of the 99 total replicates in the study including surrogates) only received 10 organisms at the start because when additions were completed, there was one remaining cup containing 10 organisms. It was not possible at that point to determine which replicate (or surrogate) was missing organisms, although based on the technique used in adding organisms and discussion with the analysts, it was surmised that there was a higher likelihood that an early replicate in the study had been effected. On review of the recovery data (which does not include surrogates as they are not counted), there were over 15 replicates in 9 of the 11 treatments where ≤ 10 organisms were recovered at the end of the assay. Despite this, replicate 1 of the laboratory control stood out as an atypical response for that treatment, whereas replicate results for the other treatments appeared more variable. The statistical comparisons identified replicate 1 of the laboratory control as an outlier in 6 of the 10 pair-wise comparisons, meaning that the statistical analyses in these instances were completed both with and without this data point. Protocol requires that 8 replicates are used for endpoint determination in order to reduce the impact that a single replicate could have on the overall assessment, and the remaining 7 replicates provided sufficient statistical power for endpoint determination in instances when replicate 1 was removed as an outlier.

The weight of evidence suggests that replicate 1 of the laboratory control was the replicate that received only 10 organisms, but without definitive analyst notations that cannot be confirmed. The mean laboratory control survival of 81% does meet the test acceptability criterion for mean survival, even with the assumption that all replicates in the laboratory control contained 20 organisms at the start. Growth and reproduction in the laboratory control also met their criteria, which demonstrates that organisms were healthy and the assay is considered valid on this basis. It is the opinion of ESI's study director that this deviation did not adversely affect the outcome of the assay.

Protocol requires that the dissolved oxygen (DO) levels are maintained at or above 60% saturation for *N. virens*, and the assay was aerated from the start to ensure this requirement was met. Despite this, there was one DO measurement that fell below 60% on day 1 in replicate B of the untreated Mendall Marsh sediment sample. There were no notations indicating a reason for this, however it is most likely that aeration tube had fallen out of the test vessel and was replaced on discovery. The mean DO levels were well above the threshold, indicating that overall the desired DO levels were maintained. Therefore it is the opinion of ESI's technical director that this deviation had no adverse impact on the outcome of the assay.

4.0 SUMMARY

This program utilized toxicological protocols developed by the US EPA and ASTM to evaluate several treatment alternatives for total and methyl mercury in Mendall Marsh sediment. This was accomplished by exposing benthic invertebrates to Mendall Marsh sediment amended with Activated Carbon, SediMite™ and Biochar at 3 different application rates (3%, 5% and 10%). Endpoints included amphipod survival, growth and reproduction and polychaete survival. Pair-wise comparisons were made between all amendments, untreated Mendall Marsh sediment and the laboratory control for all the endpoints measured.

Generally speaking, SediMite™ applied at a rate of 3% achieved the best performance overall for nearly all endpoints measured based on mean survival, growth and reproduction that was observed for either test species. Activated Carbon applied at a rate of 5% also performed very well, with Activated Carbon applied at a rate of 10% a close third overall. The statistical analysis also demonstrates that SediMite™ applied at a rate of 3% generally achieved significantly higher endpoint performance in nearly every instance.

5.0 LITERATURE CITED

- APHA. 2012. *Standard Methods for the Examination of Water and Wastewater*, 22nd edition. Washington D.C.
- ASTM. 2017a. *Standard Test Method for Measuring the Toxicity of Sediment-Associated Contaminants with Estuarine and Marine Invertebrates*. ASTM Method E 1367-03, re-approved 2008. ASTM Annual Book of Standards, Volume 11.06. West Conshohocken, PA.
- ASTM. 2017b. *Standard Guide for Determination of the Bioaccumulation of Sediment-Associated Contaminants by Benthic Invertebrates*. ASTM Method E 1688-10. ASTM Annual Book of Standards, Volume 11.06. West Conshohocken, PA.
- ESI. 2017. QA-1442-R0. *Chronic Toxicity of Sediment to the Amphipod, Leptocheirus plumulosus - Amec Foster Wheeler, Penobscot River Estuary Phase III Engineering Study*. September 2017.
- US EPA. 1994. *Methods for Assessing the Toxicity of Sediment-Associated Contaminants with Estuarine and Marine Amphipods*. EPA 600/R-94/025.
- US EPA. 2001. *Methods for Assessing the Chronic Toxicity of Marine and Estuarine Sediment- Associated Contaminants with the Amphipod, Leptocheirus plumulosus*. EPA 600/R-01/020.

**Table 1. Sample Collection and Receipt Summary.
USDC Penobscot River Estuary. Winterport, ME. October 2017.**

Field ID	ESI Code	Sample Collected		Sample Received		Sample Returned Date
		Date	Time	Date	Time	
First Sampling						
Mendell Marsh Bulk #1	29662-001	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #2	29662-002	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #3	29662-003	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #4	29662-004	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #5	29662-005	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #6	29662-006	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #7	29662-007	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #8	29662-008	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #9	29662-009	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #10	29662-010	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #11	29662-011	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #12	29662-012	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #13	29662-013	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #14	29662-014	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #15	29662-015	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #16	29662-016	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #17	29662-017	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #18	29662-018	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #19	29662-019	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #20	29662-020	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #21	29662-021	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #22	29662-022	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #23	29662-023	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #24	29662-024	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #25	29662-025	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #26	29662-026	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #27	29662-027	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #28	29662-028	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #29	29662-029	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #30	29662-030	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #31	29662-031	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #32	29662-032	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #33	29662-033	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #34	29662-034	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #35	29662-035	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #36	29662-036	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #37	29662-037	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #38	29662-038	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #39	29662-039	09/12/17	1600	09/13/17	1250	09/21/17

Field ID	ESI Code	Sample Collected		Sample Received		Sample Returned
		Date	Time	Date	Time	Date
Mendell Marsh Bulk #40	29662-040	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #41	29662-041	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #42	29662-042	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #43	29662-043	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #44	29662-044	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #45	29662-045	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #46	29662-046	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #47	29662-047	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #48	29662-048	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #49	29662-049	09/12/17	1600	09/13/17	1250	09/21/17
Mendell Marsh Bulk #50	29662-050	09/12/17	1600	09/13/17	1250	09/21/17
Second Sampling						
Mendell Marsh Sediment	29705-001	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-002	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-003	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-004	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-005	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-006	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-007	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-008	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-009	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-010	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-011	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-012	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-013	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-014	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-015	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-016	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-017	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-018	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-019	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-020	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-021	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-022	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-023	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-024	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-025	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-026	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-027	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-028	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-029	09/21/17	0900	09/21/17	1530	-
Mendell Marsh Sediment	29705-030	09/21/17	0900	09/21/17	1530	-

**Table 2. Summary of Sample Homogenization.
USDC Penobscot River Estuary, Winterport, ME. October 2017.**

Composite ID	ESI Code	Components Field ID	ESI Code	Final Amount	Composite Date	Time
Step 1						
Homogenization 1 (A-G)	29705-101 (A-G)	Mendall Marsh Sediment	29705-001	35 gal	09/22/17	1100
		Mendall Marsh Sediment	29705-002			
		Mendall Marsh Sediment	29705-003			
		Mendall Marsh Sediment	29705-004			
		Mendall Marsh Sediment	29705-005			
		Mendall Marsh Sediment	29705-006			
		Mendall Marsh Sediment	29705-007			
Homogenization 2 (H-N)	29705-102 (H-N)	Mendall Marsh Sediment	29705-008	35 gal	09/22/17	1150
		Mendall Marsh Sediment	29705-009			
		Mendall Marsh Sediment	29705-010			
		Mendall Marsh Sediment	29705-011			
		Mendall Marsh Sediment	29705-012			
		Mendall Marsh Sediment	29705-013			
Homogenization 3 (O-U)	29705-103 (O-U)	Mendall Marsh Sediment	29705-015	35 gal	09/22/17	1300
		Mendall Marsh Sediment	29705-016			
		Mendall Marsh Sediment	29705-017			
		Mendall Marsh Sediment	29705-018			
		Mendall Marsh Sediment	29705-019			
		Mendall Marsh Sediment	29705-020			
Mendall Marsh Final Mixture	29705-200 (A-F)	Homogenization 1	29705-101A	30 gal	09/22/17	1345
		Homogenization 1	29705-101B			
		Homogenization 2	29705-102A			
		Homogenization 2	29705-102B			
		Homogenization 3	29705-103A			
		Homogenization 3	29705-103B			
Mendall Marsh Final Mixture	29705-200 (G-L)	Homogenization 1	29705-101C	30 gal	09/22/17	1415
		Homogenization 1	29705-101D			
		Homogenization 2	29705-102C			
		Homogenization 2	29705-102D			
		Homogenization 3	29705-103C			
		Homogenization 3	29705-103D			
Step 2						

Composite ID	ESI Code	Components		Final Amount	Composite Date	
		Field ID	ESI Code		Date	Time
Mendall Marsh Final Mixture	29705-200 (M-T)	Homogenization 1	29705-101E	39 gal	09/22/17	1450
		Homogenization 1	29705-101F			
		Homogenization 1	29705-101G			
		Homogenization 2	29705-102E			
		Homogenization 2	29705-102F			
		Homogenization 2	29705-102G			
		Homogenization 3	29705-103E			
		Homogenization 3	29705-103F			
		Homogenization 3	29705-103G			

**Table 3. Summary of Amendment Additions.
USDC Penobscot River Estuary. Winterport, ME. October 2017.**

Species / Amendment	Soil Volume (gal)	Desired % AC	Dry Amendment Mass (g)
<i>L. plumulosus</i>			
Activated Carbon	1	3	61
Activated Carbon	1	5	102
Activated Carbon	1	10	205
SediMite™	1	3	104
SediMite™	1	5	174
SediMite™	1	10	348
Biochar	1	3	52
Biochar	1	5	87
Biochar	1	10	174
<i>N. virens</i>			
Activated Carbon	8	3	491
Activated Carbon	8	5	818
Activated Carbon	8	10	1636
SediMite™	8	3	835
SediMite™	8	5	1391
SediMite™	8	10	2782
Biochar	8	3	417
Biochar	8	5	696
Biochar	8	10	1391

**Table 4. Reference Toxicant Evaluation.
USDC Penobscot River Estuary. Winterport, ME. October 2017.**

Date	Organism Lot	Endpoint	Value	Historic Mean	Acceptable Range	Reference Toxicant
<i>Leptocheirus plumulosus</i>						
11/04/17	99LpARO102717	LC-50:	0.92	1.1	0.0 - 3.3	Cadmium (mg/L)
11/17/17	99LpARO111717	LC-50:	295.0	208.3 ^a	108.0 - 308.5 ^a	Ammonia (mg/L)
11/28/17	99LpARO112817	LC-50:	180.0	202.6 ^b	110.1 - 295.1 ^b	Ammonia (mg/L)
<i>Nereis virens</i>						
10/25/17	Survival	LC-50	2.9	2.6	0.3 - 4.8	Copper (mg/L)

Notes:

^a Mean value is based on only 4 assays.

^b Mean value is based on only 5 assays.

Table 5. Summary of Acceptable Endpoints and Control Performance: *L. plumulosus*. USDC Penobscot River Estuary. Winterport, ME. October 2017.

Endpoint / Measurement	Protocol Criteria	Unit of Measure	Laboratory Control	Mendall Marsh ^a
Survival	Lab mean \geq 80%	Mean % Survival	81%	74%
	No replicates <60%	Minimum % Survival	20% ^b	40%
		Protocol Met	Yes	No
Growth	Measured Growth (mg/)	Start Dry Wt.	0.11175	0.11175
		End Dry Wt.	1.44	1.02
		Protocol Met	Yes	Yes
Reproduction	Juvenile Production	Juveniles per Adult	5.0	0.87
		Protocol Met	Yes	Yes
Endpoint / Measurement	Protocol Criteria	Unit of Measure	Assay Performance	
Temperature	Mean: 25 \pm 1°C	Daily / Hourly	24.0 / 23.8 ^c	
	Minimum: 22°C	Daily / Hourly	22.9 / 21.9 ^c	
	Maximum: 28°C	Daily / Hourly	25.1 / 24.7	
		Protocol Met	Yes / Yes	
Salinity	Mean: 20 \pm 2‰	Mean	20.1	
	Minimum: 17‰	Minimum	18.5	
	Maximum: 23‰	Maximum	21.5	
		Protocol Met	Yes	

Notes:

^a Assay acceptance based only on the performance of the Laboratory Control.

^b See Section 3.3 for a discussion of the deviation.

^c Value meets the criterion when rounded to the whole number precision reflected in the protocol.

Table 6. Summary of Acceptable Endpoints and Control Performance: *N. virens*. USDC Penobscot River Estuary. Winterport, ME. October 2017.

Endpoint / Measurement	Protocol Criteria	Unit of Measure	Laboratory Control	Mendall Marsh ^a
Survival	Lab mean \geq 90%	Mean % Survival	96%	94%
		Protocol Met	Yes	Yes
Endpoint / Measurement	Protocol Criteria	Unit of Measure	Assay Performance	
Temperature	Mean: 12 \pm 2°C	Daily / Hourly	12.3 / 12.6	
	Minimum: 9°C	Daily / Hourly	10.7 / 12.1	
	Maximum: 15°C	Daily / Hourly	13.4 / 13.5	
		Protocol Met	Yes / Yes	
Salinity	Mean: 30 \pm 2‰	Mean	30.0	
	Minimum: 28‰	Minimum	28.2	
	Maximum: 32‰	Maximum	31.7	
		Protocol Met	Yes	

Notes:

^a Assay acceptance based only on the performance of the Laboratory Control.

**Table 7. Survival Summary and Statistical Analysis: *L. plumulosus*.
USDC Penobscot River Estuary. Winterport, ME. October 2017.**

Survival Summary						
Amendment ID	ESI Code	Reps	Mean	Minimum	Maximum	CV
A/L/0%	29632-000	8	81%	20%	100%	32%
A/N/0%	29632-001	8	74%	40%	95%	27%
A/AC/3%	29632-002	8	74%	50%	95%	23%
A/AC/5%	29632-003	8	86%	55%	100%	17%
A/AC/10%	29632-004	8	82%	45%	95%	20%
A/S/3%	29632-005	8	94%	70%	100%	12%
A/S/5%	29632-006	8	71%	45%	95%	24%
A/S/10%	29632-007	8	67%	0%	100%	54%
A/B/3%	29632-008	8	43%	5%	95%	80%
A/B/5%	29632-009	8	71%	35%	95%	32%
A/B/10%	29632-010	8	71%	25%	95%	34%

Survival Statistical Analysis												
Statistically Significant Reduction as Compared to:												
Amendment ID	ESI Code	A/L/0%	A/N/0%	A/AC/3%	A/AC/5%	A/AC/10%	A/S/3%	A/S/5%	A/S/10%	A/B/3%	A/B/5%	A/B/10%
A/N/0%	29632-001	N/Y ^a	(C<T)↑ (C>T)↓	N	N	N	Y	N	N	N	N	N
A/AC/3%	29632-002	N/Y ^a	N	(C<T)↑ (C>T)↓	N	N	Y	N	N	N	N	N
A/AC/5%	29632-003	N/N	N	N	(C<T)↑ (C>T)↓	N	N	N	N	N	N	N
A/AC/10%	29632-004	N/N	N	N	N	(C<T)↑ (C>T)↓	Y	N	N	N	N	N
A/S/3%	29632-005	N/N	N	N	N	N	(C<T)↑ (C>T)↓	N	N/N	N	N	N
A/S/5%	29632-006	N/Y ^a	N	N	Y	N	Y	(C<T)↑ (C>T)↓	N	N	N	N
A/S/10%	29632-007	N	N	N	N	N	Y/Y	N	(C<T)↑ (C>T)↓	N	N	N
A/B/3%	29632-008	Y	Y	Y	Y	Y	Y	Y	N	(C<T)↑ (C>T)↓	Y	Y
A/B/5%	29632-009	N	N	N	N	N	Y	N	N	N	(C<T)↑ (C>T)↓	N
A/B/10%	29632-010	N	N	N	N	N	Y	N	N	N	N	(C<T)↑ (C>T)↓

Note:

^a Indicates that the analysis was conducted with the exclusion of a statistical outlier.

“N/N” and “Y/Y” Indicates that there was no difference in outcome when an outlier was excluded from the analysis.

Table 8. Mean Dry Weight (mg) Summary and Statistical Analysis: *L. plumulosus*. USDC Penobscot River Estuary. Winterport, ME. October 2017.

Dry Weight Summary												
Amendment ID	ESI Code	Reps	Mean	Minimum	Maximum	CV						
A/L/0%	29632-000	8	1.44	0.45	1.83	31%						
A/N/0%	29632-001	8	1.02	0.516	1.46	36%						
A/AC/3%	29632-002	8	0.973	0.552	1.5	32%						
A/AC/5%	29632-003	8	1.21	0.742	1.53	22%						
A/AC/10%	29632-004	8	1.11	0.442	1.64	31%						
A/S/3%	29632-005	8	1.13	0.566	1.55	31%						
A/S/5%	29632-006	8	0.848	0.719	1.02	13%						
A/S/10%	29632-007	7	0.66	0.248	1.11	48%						
A/B/3%	29632-008	8	0.577	0.19	1.11	52%						
A/B/5%	29632-009	8	0.806	0.28	1.51	45%						
A/B/10%	29632-010	8	0.674	0.238	1.4	59%						

Dry Weight Statistical Analysis												
Statistically Significant Reduction as Compared to:												
Amendment ID	ESI Code	A/L/0%	A/N/0%	A/AC/3%	A/AC/5%	A/AC/10%	A/S/3%	A/S/5%	A/S/10%	A/B/3%	A/B/5%	A/B/10%
A/N/0%	29632-001	Y	(C<T)† (C>T)‡	N	N	N	N	N	N	N	N	N
A/AC/3%	29632-002	Y/Y	N	(C<T)† (C>T)‡	N	N	N	N	N	N	N	N
A/AC/5%	29632-003	N/Y ^a	N	N	(C<T)† (C>T)‡	N	N	N	N	N	N	N
A/AC/10%	29632-004	N/Y ^a	N	N	N	(C<T)† (C>T)‡	N	N/N	N	N	N	N
A/S/3%	29632-005	N	N	N	N	N	(C<T)† (C>T)‡	N	N	N	N	N
A/S/5%	29632-006	Y/Y	N	N	Y	Y/Y	Y	(C<T)† (C>T)‡	N	N	N/N	N
A/S/10%	29632-007	Y/Y	Y	Y	Y	Y	Y	N	(C<T)† (C>T)‡	N	N	N
A/B/3%	29632-008	Y/Y	Y	Y	Y	Y	Y	Y	N	(C<T)† (C>T)‡	N	N
A/B/5%	29632-009	Y	N	N	Y	N	Y	N/N	N	N	(C<T)† (C>T)‡	N
A/B/10%	29632-010	Y	Y	N	Y	Y	Y	N	N	N	N	(C<T)† (C>T)‡

Note:

^a Indicates that the analysis was conducted with the exclusion of a statistical outlier.

“N/N” and “Y/Y” Indicates that there was no difference in outcome when an outlier was excluded from the analysis.

Table 9. Mean Dry Biomass (mg) Summary and Statistical Analysis: *L. plumulosus*. USDC Penobscot River Estuary. Winterport, ME. October 2017.

Dry Biomass Summary						
Amendment ID	ESI Code	Reps	Mean	Minimum	Maximum	CV
A/L/0%	29632-000	8	1.27	0.09	1.83	42%
A/N/0%	29632-001	8	0.773	0.258	1.35	50%
A/AC/3%	29632-002	8	0.765	0.276	1.35	51%
A/AC/5%	29632-003	8	1.06	0.408	1.4	31%
A/AC/10%	29632-004	8	0.945	0.199	1.47	39%
A/S/3%	29632-005	8	1.09	0.396	1.55	38%
A/S/5%	29632-006	8	0.603	0.411	0.817	26%
A/S/10%	29632-007	8	0.491	0.005	1.11	80%
A/B/3%	29632-008	8	0.336	0.0095	1.05	108%
A/B/5%	29632-009	8	0.624	0.112	1.36	62%
A/B/10%	29632-010	8	0.545	0.0595	1.26	78%

Dry Biomass Statistical Analysis												
Statistically Significant Reduction as Compared to:												
Amendment ID	ESI Code	A/L/0%	A/N/0%	A/AC/3%	A/AC/5%	A/AC/10%	A/S/3%	A/S/5%	A/S/10%	A/B/3%	A/B/5%	A/B/10%
A/N/0%	29632-001	Y/Y	(C<T)† (C>T)‡	N	N	N	N	N	N	N	N	N
A/AC/3%	29632-002	Y/Y	N	(C<T)† (C>T)‡	N	N	N	N	N	N	N	N
A/AC/5%	29632-003	N/Y ^a	N	N	(C<T)† (C>T)‡	N	N	N/N	N	N	N	N
A/AC/10%	29632-004	N/Y ^a	N	N	N	(C<T)† (C>T)‡	N	N/N	N	N	N	N
A/S/3%	29632-005	N	N	N	N	N	(C<T)† (C>T)‡	N	N	N	N	N
A/S/5%	29632-006	Y/Y	N	N	Y/Y	Y/Y	Y	(C<T)† (C>T)‡	N	N/N	N	N
A/S/10%	29632-007	Y/Y	N	N	Y	Y	Y	N	(C<T)† (C>T)‡	N	N	N
A/B/3%	29632-008	Y/Y	Y	Y	Y	Y	Y	Y/Y	N	(C<T)† (C>T)‡	N	N
A/B/5%	29632-009	Y/Y	N	N	Y	N	Y	N	N	N	(C<T)† (C>T)‡	N
A/B/10%	29632-010	Y	N	N	Y	Y	Y	N	N	N	N	(C<T)† (C>T)‡

Note:

^a Indicates that the analysis was conducted with the exclusion of a statistical outlier.

"N/N" and "Y/Y" Indicates that there was no difference in outcome when an outlier was excluded from the analysis.

Table 10. Juvenile Production per Surviving Amphipod Summary and Statistical Analysis: *L. plumulosus*. USDC Penobscot River Estuary. Winterport, ME. October 2017.

Juvenile Production per Surviving Amphipod Summary												
Amendment ID	ESI Code	Reps	Mean	Minimum	Maximum	CV						
A/L/0%	29632-000	8	5.0	0.1	10.8	71%						
A/N/0%	29632-001	8	0.9	0.0	2.1	81%						
A/AC/3%	29632-002	8	1.2	0.3	2.9	77%						
A/AC/5%	29632-003	8	2.1	0.8	3.7	56%						
A/AC/10%	29632-004	8	2.2	0.4	4.1	51%						
A/S/3%	29632-005	8	3.3	1.6	4.5	27%						
A/S/5%	29632-006	8	0.3	0.0	0.6	62%						
A/S/10%	29632-007	7	0.6	0.0	2.9	174%						
A/B/3%	29632-008	8	0.2	0.0	1.3	215%						
A/B/5%	29632-009	8	1.0	0.0	3.4	111%						
A/B/10%	29632-010	8	0.6	0.0	2.1	119%						

Juvenile Production per Surviving Amphipod Statistical Analysis												
Statistically Significant Reduction as Compared to:												
Amendment ID	ESI Code	A/L/0%	A/N/0%	A/AC/3%	A/AC/5%	A/AC/10%	A/S/3%	A/S/5%	A/S/10%	A/B/3%	A/B/5%	A/B/10%
A/N/0%	29632-001	Y	(C<T)† (C>T)‡	N	Y	Y	Y	N	N/N	N	N	N
A/AC/3%	29632-002	Y	N	(C<T)† (C>T)‡	N	Y	Y	N/N	N	N	N	N
A/AC/5%	29632-003	Y	N	N	(C<T)† (C>T)‡	N	Y	N	N	N	N	N
A/AC/10%	29632-004	Y	N	N	N	(C<T)† (C>T)‡	Y	N	N	N	N	N
A/S/3%	29632-005	N	N	N	N	N	(C<T)† (C>T)‡	N/N	N	N	N	N
A/S/5%	29632-006	Y	Y	Y/Y	Y	Y	Y/Y	(C<T)† (C>T)‡	N/N	N/N	N/N	N/N
A/S/10%	29632-007	Y	N/Y ^a	N	Y	Y	Y	N/N	(C<T)† (C>T)‡	N/N	N	N/N
A/B/3%	29632-008	Y	Y	Y	Y	Y	Y	Y/Y	N/N	(C<T)† (C>T)‡	Y/Y	Y/N ^a
A/B/5%	29632-009	Y	N	N	Y	Y	Y	N/N	N	N/N	(C<T)† (C>T)‡	N
A/B/10%	29632-010	Y	N	N	Y	Y	Y	N/N	N/N	N/N	N	(C<T)† (C>T)‡

Note:

^a Indicates that the analysis was conducted with the exclusion of a statistical outlier.

“N/N” and “Y/Y” Indicates that there was no difference in outcome when an outlier was excluded from the analysis.

Table 11. Juvenile Production per Female Amphipod Summary and Statistical Analysis: *L. plumulosus*. USDC Penobscot River Estuary. Winterport, ME. October 2017.

Juvenile Production per Female Amphipod Summary												
Amendment ID	ESI Code	Reps	Mean	Minimum	Maximum	CV						
A/L/0%	29632-000	8	15.5	0.3	42.7	82%						
A/N/0%	29632-001	8	3.5	0.0	10.0	100%						
A/AC/3%	29632-002	8	3.6	1.3	8.3	67%						
A/AC/5%	29632-003	8	4.8	2.3	9.3	48%						
A/AC/10%	29632-004	8	5.1	1.0	10.2	52%						
A/S/3%	29632-005	8	6.8	2.7	10.4	37%						
A/S/5%	29632-006	8	0.9	0.0	1.6	54%						
A/S/10%	29632-007	7	1.1	0.0	4.8	159%						
A/B/3%	29632-008	8	0.4	0.0	2.5	215%						
A/B/5%	29632-009	8	2.3	0.0	5.2	89%						
A/B/10%	29632-010	8	1.6	0.0	6.8	141%						

Juvenile Production per Female Amphipod Statistical Analysis												
Statistically Significant Reduction as Compared to:												
Amendment ID	ESI Code	A/L/0%	A/N/0%	A/AC/3%	A/AC/5%	A/AC/10%	A/S/3%	A/S/5%	A/S/10%	A/B/3%	A/B/5%	A/B/10%
A/N/0%	29632-001	Y/Y	(C<T)† (C>T)‡	N	N	N	Y	N/N	N	N/N	N	N
A/AC/3%	29632-002	Y/Y	N	(C<T)† (C>T)‡	N	N	Y	N/N	N	N/N	N	N
A/AC/5%	29632-003	Y/Y	N	N	(C<T)† (C>T)‡	N	N	N/N	N	N/N	N	N
A/AC/10%	29632-004	Y/Y	N	N	N	(C<T)† (C>T)‡	N	N/N	N	N/N	N	N
A/S/3%	29632-005	Y/Y	N	N	N	N	(C<T)† (C>T)‡	N	N	N	N	N
A/S/5%	29632-006	Y/Y	Y/N ^a	Y/Y	Y/Y	Y/Y	Y	(C<T)† (C>T)‡	N/N	N/N	N	N/N
A/S/10%	29632-007	Y/Y	N	Y	Y	Y	Y	N/N	(C<T)† (C>T)‡	N/N	N	N/N
A/B/3%	29632-008	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Y	Y/Y	N/N	(C<T)† (C>T)‡	Y	Y/Y
A/B/5%	29632-009	Y/Y	N	N	Y	Y	Y	N	N	N	(C<T)† (C>T)‡	N
A/B/10%	29632-010	Y/Y	N	Y	Y	Y	Y	N/N	N/N	N/N	N	(C<T)† (C>T)‡

Note:

^a Indicates that the analysis was conducted with the exclusion of a statistical outlier.

“N/N” and “Y/Y” Indicates that there was no difference in outcome when an outlier was excluded from the analysis.

**Table 12. Survival Summary and Statistical Analysis: *N. virens*.
USDC Penobscot River Estuary. Winterport, ME. October 2017.**

Survival Summary												
Amendment ID	ESI Code	Reps	Mean	Minimum	Maximum	CV						
P/L/0%	29633-000	5	96%	95%	100%	2%						
P/N/0%	29633-001	5	94%	90%	95%	2%						
P/AC/3%	29633-002	5	94%	85%	100%	6%						
P/AC/5%	29633-003	5	99%	95%	100%	2%						
P/AC/10%	29633-004	5	95%	85%	100%	6%						
P/S/3%	29633-005	5	100%	100%	100%	0%						
P/S/5%	29633-006	5	99%	95%	100%	2%						
P/S/10%	29633-007	5	98%	90%	100%	5%						
P/B/3%	29633-008	5	96%	95%	100%	2%						
P/B/5%	29633-009	5	96%	90%	100%	6%						
P/B/10%	29633-010	5	98%	90%	100%	5%						

Survival Statistical Analysis												
Statistically Significant Reduction as Compared to:												
Amendment ID	ESI Code	P/L/0%	P/N/0%	P/AC/3%	P/AC/5%	P/AC/10%	P/S/3%	P/S/5%	P/S/10%	P/B/3%	P/B/5%	P/B/10%
P/N/0%	29633-001	N	(C<T)† (C>T)‡	N	Y	N	Y/Y	Y	Y/Y	N	N	Y/Y
P/AC/3%	29633-002	N	N	(C<T)† (C>T)‡	Y	N	Y/Y	Y	N	N	N	N
P/AC/5%	29633-003	N	N	N	(C<T)† (C>T)‡	N	N/N	N	N/N	N	N	N/N
P/AC/10%	29633-004	N	N	N	N	(C<T)† (C>T)‡	N/N	N	N	N	N	N
P/S/3%	29633-005	N/N	N/N	N	N/N	N/N	(C<T)† (C>T)‡	N/N	N/N	N/N	N	N/N
P/S/5%	29633-006	N	N	N	N	N	N/N	(C<T)† (C>T)‡	N/N	N	N	N/N
P/S/10%	29633-007	N/N	N/N	N	N/N	N	N/N	N/N	(C<T)† (C>T)‡	N/N	N	N
P/B/3%	29633-008	N	N	N	Y	N	Y/Y	Y	N/Y ^a	(C<T)† (C>T)‡	N	N/Y ^a
P/B/5%	29633-009	N	N	N	N	N	N	N	N	N	(C<T)† (C>T)‡	N
P/B/10%	29633-010	N/N	N/N	N	N/N	N	N/N	N/N	N	N/N	N	(C<T)† (C>T)‡

Note:

^a Indicates that the analysis was conducted with the exclusion of a statistical outlier.

“N/N” and “Y/Y” Indicates that there was no difference in outcome when an outlier was excluded from the analysis.

**Table 13. Summary of Overlying Water Qualities: *L. plumulosus*.
USDC Penobscot River Estuary. Winterport, ME. October 2017.**

Sample ID	Day	Temperature (°C)	pH (SU)	Total Ammonia (mg/L)	Unionized Ammonia (mg/L)
A/L/0%	00	24.4	8.02	<0.1	<0.0027
A/N/0%	00	24.5	8.00	<0.1	<0.0026
A/AC/3%	00	24.5	7.92	<0.1	<0.0022
A/AC/5%	00	24.4	7.84	<0.1	<0.0018
A/AC/10%	00	24.4	7.87	<0.1	<0.0019
A/S/3%	00	24.4	7.88	<0.1	<0.0020
A/S/5%	00	24.4	7.90	<0.1	<0.0021
A/S/10%	00	24.3	7.89	<0.1	<0.0020
A/B/3%	00	24.4	7.96	<0.1	<0.0024
A/B/5%	00	24.3	7.90	<0.1	<0.0021
A/B/10%	00	24.4	7.87	<0.1	<0.0019
A/L/0%	07	23.6	7.63	<0.1	<0.0011
A/N/0%	07	23.8	7.70	<0.1	<0.0013
A/AC/3%	07	23.7	7.73	<0.1	<0.0014
A/AC/5%	07	23.7	7.66	<0.1	<0.0012
A/AC/10%	07	23.7	7.71	<0.1	<0.0013
A/S/3%	07	23.6	7.76	<0.1	<0.0014
A/S/5%	07	23.7	7.77	<0.1	<0.0015
A/S/10%	07	23.6	7.78	<0.1	<0.0015
A/B/3%	07	23.6	7.84	<0.1	<0.0017
A/B/5%	07	23.5	7.85	<0.1	<0.0017
A/B/10%	07	23.6	7.83	<0.1	<0.0017
A/L/0%	14	23.7	7.69	<0.1	<0.0012
A/N/0%	14	23.8	7.73	<0.1	<0.0014
A/AC/3%	14	23.6	7.71	<0.1	<0.0013
A/AC/5%	14	23.7	7.74	<0.1	<0.0014
A/AC/14%	14	23.6	7.72	<0.1	<0.0013
A/S/3%	14	23.6	7.77	<0.1	<0.0015
A/S/5%	14	23.7	7.80	<0.1	<0.0016
A/S/14%	14	23.6	7.79	<0.1	<0.0015
A/B/3%	14	23.6	7.81	<0.1	<0.0016
A/B/5%	14	23.6	7.84	<0.1	<0.0017
A/B/14%	14	23.6	7.86	<0.1	<0.0018
A/L/0%	21	24.4	7.54	<0.1	<0.0009
A/N/0%	21	24.5	7.52	0.13	0.0023
A/AC/3%	21	24.2	7.63	<0.1	<0.0011
A/AC/5%	21	24.3	7.58	<0.1	<0.0010

Sample ID	Day	Temperature (°C)	pH (SU)	Total Ammonia (mg/L)	Unionized Ammonia (mg/L)
A/AC/21%	21	24.4	7.60	<0.1	<0.0011
A/S/3%	21	24.3	7.63	<0.1	<0.0011
A/S/5%	21	24.4	7.68	<0.1	<0.0013
A/S/21%	21	24.3	7.70	<0.1	<0.0013
A/B/3%	21	24.3	7.69	<0.1	<0.0013
A/B/5%	21	24.2	7.68	<0.1	<0.0013
A/B/21%	21	24.2	7.71	<0.1	<0.0013
A/L/0%	28	24.1	7.70	<0.1	<0.0013
A/N/0%	28	24.4	7.56	0.11	0.0021
A/AC/3%	28	24.2	7.64	<0.1	<0.0011
A/AC/5%	28	24.4	7.58	<0.1	<0.0010
A/AC/28%	28	24.4	7.60	<0.1	<0.0011
A/S/3%	28	24.4	7.57	<0.1	<0.0010
A/S/5%	28	24.5	7.66	<0.1	<0.0012
A/S/28%	28	24.4	7.67	<0.1	<0.0012
A/B/3%	28	24.4	7.65	<0.1	<0.0012
A/B/5%	28	24.3	7.60	<0.1	<0.0011
A/B/28%	28	24.4	7.69	<0.1	<0.0013

Note: Data in summary are obtained from the “Surrogate” replicate of each treatment.

**Table 14. Summary of Pore Water Qualities: *L. plumulosus*.
USDC Penobscot River Estuary, Winterport, ME. October 2017.**

Sample ID	Day	Temperature (°C)	pH (SU)	Total Ammonia (mg/L)	Unionized Ammonia (mg/L)
<u>Pre-Assay</u>^a					
A/L/0%	-07	-	-	20	-
A/N/0%	-07	-	-	2.5	-
A/AC/3%	-07	-	-	1.25	-
A/AC/5%	-07	-	-	2.5	-
A/AC/10%	-07	-	-	0	-
A/S/3%	-07	-	-	0	-
A/S/5%	-07	-	-	1.25	-
A/S/10%	-07	-	-	2.5	-
A/B/3%	-07	-	-	5.0	-
A/B/5%	-07	-	-	5.0	-
A/B/10%	-07	-	-	10	-
A/L/0%	-04	22	7.15	4.9	0.0315
A/N/0%	-04	22	7.01	0.53	0.0025
A/AC/3%	-04	22	7.08	0.31	0.0017
A/AC/5%	-04	22	7.03	0.53	0.0026
A/AC/10%	-04	22	7.05	1.1	0.0056
A/S/3%	-04	22	7.20	0.39	0.0028
A/S/5%	-04	22	7.04	0.69	0.0034
A/S/10%	-04	22	7.24	0.61	0.0048
A/B/3%	-04	22	7.07	1.8	0.0096
A/B/5%	-04	22	7.20	0.92	0.0066
A/B/10%	-04	22	7.14	1.8	0.0113
<u>In-Life Assay</u>					
A/L/0%	00	24	6.83	2.5	0.0089
A/N/0%	00	24	7.13	0.15	0.0011
A/AC/3%	00	24	7.13	0.12	0.0008
A/AC/5%	00	24	7.25	0.14	0.0013
A/AC/10%	00	24	7.22	0.18	0.0016
A/S/3%	00	24	7.01	0.68	0.0037
A/S/5%	00	24	7.29	0.17	0.0017
A/S/10%	00	24	7.34	0.51	0.0058
A/B/3%	00	24	7.10	1.25	0.0083
A/B/5%	00	24	7.05	1.4	0.0082
A/B/10%	00	24	7.22	1.1	0.0096
A/L/0%	07	22	6.48	1	0.0014
A/N/0%	07	22	7.18	<0.1	<0.0003

Sample ID	Day	Temperature (°C)	pH (SU)	Total Ammonia (mg/L)	Unionized Ammonia (mg/L)
A/AC/3%	07	22	7.29	<0.1	<0.0004
A/AC/5%	07	22	7.17	0.11	0.0007
A/AC/10%	07	22	7.14	<0.1	<0.0003
A/S/3%	07	22	6.85	0.31	0.0010
A/S/5%	07	22	7.30	<0.1	<0.0005
A/S/10%	07	22	7.49	0.13	0.0018
A/B/3%	07	22	6.85	0.585	0.0019
A/B/5%	07	22	7.08	0.4	0.0022
A/B/10%	07	22	7.24	0.11	0.0009
A/L/0%	14	22	6.62	0.36	0.0007
A/N/0%	14	22	7.52	<0.1	<0.0007
A/AC/3%	14	22	6.97	0.19	0.0008
A/AC/5%	14	22	7.14	0.13	0.0008
A/AC/10%	14	22	7.40	<0.1	<0.0006
A/S/3%	14	22	7.03	0.31	0.0015
A/S/5%	14	22	7.55	<0.1	<0.0008
A/S/10%	14	22	7.32	0.17	0.0016
A/B/3%	14	22	7.12	0.54	0.0032
A/B/5%	14	22	7.69	0.13	0.0029
A/B/10%	14	22	7.42	0.41	0.0049
A/L/0%	21	23	6.85	1.2	0.0042
A/N/0%	21	23	7.20	0.55	0.0043
A/AC/3%	21	23	7.01	0.24	0.0012
A/AC/5%	21	23	7.29	0.18	0.0017
A/AC/10%	21	23	7.08	0.16	0.0009
A/S/3%	21	23	7.10	0.28	0.0017
A/S/5%	21	23	7.31	0.25	0.0025
A/S/10%	21	23	7.24	0.19	0.0016
A/B/3%	21	23	7.05	0.48	0.0026
A/B/5%	21	23	7.53	0.25	0.0041
A/B/10%	21	23	7.21	0.4	0.0032
A/L/0%	28	24	7.03	1.1	0.0062
A/N/0%	28	24	7.38	0.83	0.0104
A/AC/3%	28	24	7.30	0.52	0.0054
A/AC/5%	28	24	7.26	0.51	0.0049
A/AC/10%	28	24	7.17	0.2	0.0016
A/S/3%	28	24	7.48	0.37	0.0058
A/S/5%	28	24	7.39	0.54	0.0069
A/S/10%	28	24	7.34	0.27	0.0031
A/B/3%	28	24	7.54	1	0.0180

Sample ID	Day	Temperature (°C)	pH (SU)	Total Ammonia (mg/L)	Unionized Ammonia (mg/L)
A/B/5%	28	24	7.56	0.34	0.0064
A/B/10%	28	24	7.22	0.62	0.0054


Note: Data in summary are obtained from the “Surrogate” replicate of each treatment.

^a Pre-assay ammonia values were measured by colorimetric techniques on day -07 (10/17/17). These data can be found on the pre-assay monitoring bench sheet in Appendix A.

APPENDIX A: RAW DATA AND STATISTICAL SUPPORT

Contents	Number of Pages
Chains of Custody and Sample Receipt Documentation	11
Email Communications	4
Homogenization Records	6
Amendment Calculations	2
Sample Key	1
<u><i>L. plumulosus</i> Assay (29632)</u>	
Amendment Addition Record	4
Pre-Assay Monitoring Record; Pre-Assay Pore Water pH Record	2
Organism History Record	1
Start Dry Weights	1
Initiation Record	1
Daily Observation Records	2
Pore Water pH Records	3
Day 28 Recovery Record	5
Day 28 Dry Weights	2
CETIS™ Data Worksheet	3
CETIS™ Survival Statistical Analysis	112
CETIS™ Mean Dry Weight Statistical Analysis	110
CETIS™ Mean Dry Biomass Statistical Analysis	110
CETIS™ Juvenile Production per Surviving Amphipod Statistical Analysis	111
CETIS™ Juvenile Production per Female Statistical Analysis	113
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Ammonia Data: Overlying and Pore Water	4
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Pre-Assay Monitoring Record	1
Organism History Record	1
Initiation Record	1
Daily Observation Record	5
Day 28 Recovery Record	2
CETIS™ Data Worksheet	3
CETIS™ Survival Statistical Analysis	112
Daily Water Quality Measurements	37
Telatemp Graph and Data	21
Assay Review Checklist	1
Total Appendix Pages	825


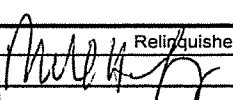
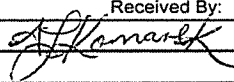
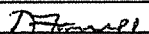
29662

 <p>4021 Stirrup Creek Dr. #100 Durham, NC 27703 (919) 381-9900</p>	<input type="checkbox"/> CHAIN OF CUSTODY		Page <u>21</u> of <u>45</u>	<input type="checkbox"/> Date Rec'd in Lab:	<input checked="" type="checkbox"/>								
	Project Information Project Name: USDC Penobscot Site Name: Penobscot River		Report Information <input type="checkbox"/> FAX <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> ADEX <input type="checkbox"/> Add'l Deliverables		Billing Information <input checked="" type="checkbox"/> Same as Client Info PO #								
Client Information Client: Amec Foster Wheeler Address: 511 Congress St. Suite 200 Portland, ME 04101 Phone: 207-775-5401 Fax: 207-772-4762 Email: denise.king@amecfw.com		Project Location: Winterport, ME AMECFW Project # 3616166052.04A.0225 Project Manager: Rod Pendleton		Please Indicate PWS Class Below <input type="checkbox"/> COM <input type="checkbox"/> NTNC <input type="checkbox"/> TNC									
Turn-Around Time Standard <input checked="" type="checkbox"/> Due Date: Rush (only if pre approved) <input type="checkbox"/> Time:													
These samples have been previously analyzed by Alpha <input type="checkbox"/>		ANALYSIS											
Other Project Specific Requirements/ Comments/Detection Limits FedEx # _____ # of Coolers _____ Sample disposal - Standard 30 days after report				Sample Comments									
AMECFW Lab ID (Lab Use Only)	Location Code	Collection		Sample Matrix	Sampler's Initials	2 gallon bucket							
		Date	Time										
	Mendell Marsh Bulk #1	9/12/2017	12:00	Soils	MHL	1							
	Mendell Marsh Bulk #2	9/12/2017		Soils	MHL	1							
	Mendell Marsh Bulk #3	9/12/2017		Soils	MHL	1							
	Mendell Marsh Bulk #4	9/12/2017		Soils	MHL	1							
	Mendell Marsh Bulk #5	9/12/2017		Soils	MHL	1							
	Mendell Marsh Bulk #6	9/12/2017		Soils	MHL	1							
	Mendell Marsh Bulk #7	9/12/2017		Soils	MHL	1							
	Mendell Marsh Bulk #8	9/12/2017		Soils	MHL	1							
	Mendell Marsh Bulk #9	9/12/2017		Soils	MHL	1							
	Mendell Marsh Bulk #10	9/12/2017		Soils	MHL	1							
	Mendell Marsh Bulk #11	9/12/2017		Soils	MHL	1							
	Mendell Marsh Bulk #12	9/12/2017		Soils	MHL	1							
Container Code P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Preservative Code: A = None B = HCl C = HNO3 D = H2SO4 E = NaOH F = MeOH G = NaHSO4 H = Na2S2O3 I = Ascorbic Acid J = NH4Cl K = Zn Acetate O = Other		Container Type P Preservative A							Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY THE LAB'S TERMS AND CONDITIONS		
		Relinquished By: <i>[Signature]</i>		Date/Time 9/13/17 12:00		Received By: <i>[Signature]</i>		Date/Time 9/13/17 12:50					
		Relinquished By: <i>[Signature]</i>		Date/Time 9/21/17 15:30		Received By: <i>[Signature]</i>		Date/Time 09/21/17 15:30					

Form No: 01-24 (rev 18-Sept-2013)

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 <p>4021 Stirrup Creek Dr. #100 Durham, NC 27703 (919) 381-9900</p>		CHAIN OF CUSTODY		Page <u>18</u> of <u>45</u>	Date Rec'd in Lab:	AMECFW Job #		
Client Information Client: Amec Foster Wheeler Address: 511 Congress St. Suite 200 Portland, ME 04101 Phone: 207-775-5401 Fax: 207-772-4762 Email: denise.king@amecfw.com		Project Information Project Name: USDC Penobscot Site Name: Penobscot River Project Location: Winterport, ME AMECFW Project #: 3616166052.04A.0225 Project Manager: Rod Pendleton		Report Information <input type="checkbox"/> FAX <input type="checkbox"/> ADEX		Data Deliverables <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> Add'l Deliverables		
Turn-Around Time Standard <input checked="" type="checkbox"/> Due Date: Rush (only if pre approved) <input type="checkbox"/> Time:		Billing Information <input checked="" type="checkbox"/> Same as Client Info PO #		Please Indicate PWS Class Below <input type="checkbox"/> COM <input type="checkbox"/> NTNC <input type="checkbox"/> TNC				
These samples have been previously analyzed by Alpha <input type="checkbox"/>		Other Project Specific Requirements/ Comments/Detection Limits FedEx # _____ # of Coolers _____ Sample disposal - Standard 30 days after report		ANALYSIS		Tot Bottle		
AMECFW Lab ID (Lab Use Only)	Location Code	Collection Date Time	Sample Matrix	Sampler's Initials	2 gallon bucket	Sample Comments		
	Mendell Marsh Bulk #13	9/12/2017	Soils	MHL	1			
	Mendell Marsh Bulk #14	9/12/2017	Soils	MHL	1			
	Mendell Marsh Bulk #15	9/12/2017	Soils	MHL	1			
	Mendell Marsh Bulk #16	9/12/2017	Soils	MHL	1			
	Mendell Marsh Bulk #17	9/12/2017	Soils	MHL	1			
	Mendell Marsh Bulk #18	9/12/2017	Soils	MHL	1			
	Mendell Marsh Bulk #19	9/12/2017	Soils	MHL	1			
	Mendell Marsh Bulk #20	9/12/2017	Soils	MHL	1			
	Mendell Marsh Bulk #21	9/12/2017	Soils	MHL	1			
	Mendell Marsh Bulk #22	9/12/2017	Soils	MHL	1			
	Mendell Marsh Bulk #23	9/12/2017	Soils	MHL	1			
	Mendell Marsh Bulk #24	9/12/2017	Soils	MHL	1			
Container Code P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle	Preservative Code: A = None B = HCl C = HNO3 D = H2SO4 E = NaOH F = MeOH G = NaHSO4 H = Na2S2O3 I = Ascorbic Acid J = NH4Cl K = Zn Acetate O = Other	Relinquished By: 		Date/Time 9/10/17 12:50 9/13/17 9/21/17 1530	Container Type P	Preservative A	Received By:  	Date/Time 9/13/17 1250 9/21/17 1530
		Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY THE LAB'S TERMS AND CONDITIONS						

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4021 Stirrup Creek Dr. #100
Durham, NC 27703
(919) 381-9900

CHAIN OF CUSTODY

Page 43
of 45

Date Rec'd in Lab:

AMECFW Job #

Client Information

Client: Amec Foster Wheeler
Address: 511 Congress St. Suite 200
Portland, ME 04101
Phone: 207-775-5401
Fax: 207-772-4762
Email: denise.king@amecfw.com

Project Information

Project Name: USDC Penobscot
Site Name: Penobscot River
Project Location: Winterport, ME
AMECFW Project #: 3616166052.04.04
Project Manager: Rod Pendleton

Report Information

FAX EMAIL
 ADEX Add'l Deliverables
Please Indicate PWS Class Below
 COM
 NTNC
 TNC

Data Deliverables

Same as Client Info
PO #

Billing Information

Turn-Around Time

Standard Due Date:
Rush (only if pre approved) Time:

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/ Comments/Detection Limits

FedEx # _____
of Coolers _____
Sample disposal - Standard 30 days after report

ANALYSIS

AMECFW Lab ID (Lab Use Only)	Location Code	Collection		Sample Matrix	Sampler's Initials	2 gallon bucket	ANALYSIS										Sample Comments	
		Date	Time															
	Mendell Marsh Bulk #25	9/12/2017	1200-1600	Soils	MHL	1												
	Mendell Marsh Bulk #26	9/12/2017		Soils	MHL	1												
	Mendell Marsh Bulk #27	9/12/2017		Soils	MHL	1												
	Mendell Marsh Bulk #28	9/12/2017		Soils	MHL	1												
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	Mendell Marsh Bulk #31	9/12/2017		Soils	MHL	1												
	Mendell Marsh Bulk #32	9/12/2017		Soils	MHL	1												
	Mendell Marsh Bulk #33	9/12/2017		Soils	MHL	1												
	Mendell Marsh Bulk #34	9/12/2017		Soils	MHL	1												
	Mendell Marsh Bulk #35	9/12/2017		Soils	MHL	1												
	Mendell Marsh Bulk #36	9/12/2017		Soils	MHL	1												

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Preservative Code:
A = None
B = HCl
C = HNO3
D = H2SO4
E = NaOH
F = MeOH
G = NaHSO4
H = Na2S2O3
I = Ascorbic Acid
J = NH4Cl
K = Zn Acetate
O = Other


Container Type: P
Preservative: A

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	9/16/17 1250	<i>[Signature]</i>	9/13/17 1250
<i>[Signature]</i>	9/21/17 1530	<i>[Signature]</i>	09/21/17 1530

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY THE LAB'S TERMS AND CONDITIONS

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 <p>amec foster wheeler 4021 Stirrup Creek Dr. #100 Durham, NC 27703 (919) 381-9900</p>	CHAIN OF CUSTODY		Page <u>4</u> of <u>5</u>		Date Rec'd in Lab:	AMECFW Job #								
	Project Information			Report Information		Data Deliverables		Billing Information						
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Site Name: Penobscot River			<input type="checkbox"/> ADEX		<input type="checkbox"/> Add'l Deliverables		PO #							
Project Location: Winterport, ME			Please Indicate PWS Class Below											
AMECFW Project # 3616166052.04.04			<input type="checkbox"/> COM											
Project Manager: Rod Pendleton			<input type="checkbox"/> NTNC											
Turn-Around Time			<input type="checkbox"/> TNC											
Standard <input checked="" type="checkbox"/>			Due Date:											
Rush (only if pre approved) <input type="checkbox"/>			Time:											
Client Information														
Client: Amec Foster Wheeler														
Address: 511 Congress St. Suite 200 Portland, ME 04101														
Phone: 207-775-5401														
Fax: 207-772-4762														
Email: denise.king@amecfw.com														
These samples have been previously analyzed by Alpha <input type="checkbox"/>			ANALYSIS					BOTTLE						
Other Project Specific Requirements/ Comments/Detection Limits FedEx # _____ # of Coolers _____ Sample disposal - Standard 30 days after report									Sample Comments					
AMECFW Lab ID (Lab Use Only)	Location Code	Collection		Sample Matrix	Sampler's Initials	2 gallon bucket								
		Date	Time											
	Mendell Marsh Bulk #37	9/12/2017	1000-1400	Soils	MHL	1								
	Mendell Marsh Bulk #38	9/12/2017		Soils	MHL	1								
	Mendell Marsh Bulk #39	9/12/2017		Soils	MHL	1								
	Mendell Marsh Bulk #40	9/12/2017		Soils	MHL	1								
	Mendell Marsh Bulk #41	9/12/2017		Soils	MHL	1								
	Mendell Marsh Bulk #42	9/12/2017		Soils	MHL	1								
	Mendell Marsh Bulk #43	9/12/2017		Soils	MHL	1								
	Mendell Marsh Bulk #44	9/12/2017		Soils	MHL	1								
	Mendell Marsh Bulk #45	9/12/2017		Soils	MHL	1								
	Mendell Marsh Bulk #46	9/12/2017		Soils	MHL	1								
	Mendell Marsh Bulk #47	9/12/2017		Soils	MHL	1								
	Mendell Marsh Bulk #48	9/12/2017	20	Soils	MHL	1								
Container Code P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Preservative Code: A = None B = HCl C = HNO3 D = H2SO4 E = NaOH F = MeOH G = NaHSO4 H = Na2S2O3 I = Ascorbic Acid J = NH4Cl K = Zn Acetate O = Other		Container Type		P							Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY THE LAB'S TERMS AND CONDITIONS	
		Preservative		A										
Relinquished By:		Date/Time		Received By:		Date/Time								
<i>[Signature]</i>		9/13/17 1250		<i>[Signature]</i>		9/13/17 1250								
<i>[Signature]</i>		9/21/17 1530		<i>[Signature]</i>		9/21/17 1530								

Returned to Client

29662



4021 Stirrup Creek Dr. #100
Durham, NC 27703
(919) 381-9900

CHAIN OF CUSTODY

Page 5
of 5

Date Rec'd in Lab: _____ AMECFW Job # _____

Client Information	Project Information	Report Information	Data Deliverables	Billing Information
Client: Amec Foster Wheeler Address: 511 Congress St. Suite 200 Portland, ME 04101 Phone: 207-775-5401 Fax: 207-772-4762 Email: denise.king@amecfw.com	Project Name: USDC Penobscot Site Name: Penobscot River Project Location: Winterport, ME AMECFW Project #: 3616166052.04.04 Project Manager: Rod Pendleton Turn-Around Time: Standard <input checked="" type="checkbox"/> Rush (only if pre approved) <input type="checkbox"/>	<input type="checkbox"/> FAX <input type="checkbox"/> ADEx	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> Add'l Deliverables	<input checked="" type="checkbox"/> Same as Client Info PO # _____
Please Indicate PWS Class Below		<input type="checkbox"/> COM <input type="checkbox"/> NTNC <input type="checkbox"/> TNC		
Due Date: _____ Time: _____				

These samples have been previously analyzed by Alpha


Other Project Specific Requirements/ Comments/Detection Limits					ANALYSIS							Sample Comments	BOTTLE	
FedEx # _____ # of Coolers _____ Sample disposal - Standard 30 days after report					2 gallon bucket									
AMECFW Lab ID (Lab Use Only)	Location Code	Collection		Sample Matrix											Sampler's Initials
		Date	Time											
	Mendell Marsh Bulk #49	9/12/2017	12:02 - 1:00	Soils	MHL	1								
	Mendell Marsh Bulk #50	9/12/2017	↓	Soils	MHL	1								

Container Code: P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle	Preservative Code: A = None B = HCl C = HNO3 D = H2SO4 E = NaOH F = MeOH G = NaHSO4 H = Na2S2O3 J = Ascorbic Acid I = NH4Cl K = Zn Acetate O = Other	Relinquished By:	Date/Time: 9/15/16 1250	Received By:	Date/Time: 9/13/17 1250
			Date/Time: 9/21/17 1530		Date/Time: 9/21/17 1530

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY THE LAB'S TERMS AND CONDITIONS

Returned to Client

SAMPLE RECEIPT AND CONDITION DOCUMENTATION


STUDY NO: 29662
 SDG No:
 Project: USDC Penobscot
 Delivered via: **Client**
 Date and Time Received: 09/13/17 1250 Date and Time Logged into Lab: 09/14/17 0910
 Received By: PK, AK Logged into Lab by: JTP 
 Air bill / Way bill: N/A Air bill included in folder if received? N/A
 Cooler on ice/packs: Yes Custody Seals present? N/A
 Cooler Blank Temp (C) at arrival: N/A Custody Seals intact? N/A
 Number of COC Pages: 5
 COC Serial Number(s): N/A
 COC Complete: Yes Does the info on the COC match the samples? Yes
 Sampled Date: Yes Were samples received within holding time? Yes
 Field ID complete: Yes Were all samples properly labeled? Yes
 Sampled Time: Yes Were proper sample containers used? Yes
 Analysis request: Yes Were samples received intact? (none broken or leaking) Yes
 COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes
 Were all samples received? Yes Were VOC vials free of headspace? N/A
 Client notification/authorization: Not required pH Test strip ID number: N/A

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
Mendell Marsh Bulk #1	29662-001	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #2	29662-002	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #3	29662-003	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #4	29662-004	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #5	29662-005	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #6	29662-006	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #7	29662-007	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #8	29662-008	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #9	29662-009	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #10	29662-010	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #11	29662-011	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #12	29662-012	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #13	29662-013	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #14	29662-014	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #15	29662-015	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #16	29662-016	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #17	29662-017	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #18	29662-018	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #19	29662-019	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #20	29662-020	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #21	29662-021	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #22	29662-022	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #23	29662-023	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes

Notes and qualifications:

Samples arrived in back of pickup truck with ice on top and were immediately moved into a 4C refrigerator. JTP
 More than half of the lids were re-secured in house upon arrival, as they were not fully closed in the field. JTP

SAMPLE RECEIPT AND CONDITION DOCUMENTATION


STUDY NO: 29662
 SDG No:
 Project: USDC Penobscot
 Delivered via: **Client**
 Date and Time Received: 09/13/17 1250 Date and Time Logged into Lab: 09/14/17 0910
 Received By: PK, AK Logged into Lab by: JTP 

Air bill / Way bill: N/A Air bill included in folder if received? N/A
 Cooler on ice/packs: Yes Custody Seals present? N/A
 Cooler Blank Temp (C) at arrival: N/A Custody Seals intact? N/A
 Number of COC Pages: 5
 COC Serial Number(s): N/A
 COC Complete: Yes Does the info on the COC match the samples? Yes
 Sampled Date: Yes Were samples received within holding time? Yes
 Field ID complete: Yes Were all samples properly labeled? Yes
 Sampled Time: Yes Were proper sample containers used? Yes
 Analysis request: Yes Were samples received intact? (none broken or leaking) Yes
 COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes
 Were all samples received? Yes Were VOC vials free of headspace? N/A
 Client notification/authorization: Not required pH Test strip ID number: N/A

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
Mendell Marsh Bulk #24	29662-024	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #25	29662-025	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #26	29662-026	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #27	29662-027	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #28	29662-028	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #29	29662-029	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #30	29662-030	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #31	29662-031	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #32	29662-032	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #33	29662-033	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #34	29662-034	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #35	29662-035	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #36	29662-036	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #37	29662-037	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #38	29662-038	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #39	29662-039	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #40	29662-040	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #41	29662-041	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #42	29662-042	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #43	29662-043	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #44	29662-044	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #45	29662-045	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #46	29662-046	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes

Notes and qualifications:

SAMPLE RECEIPT AND CONDITION DOCUMENTATION

STUDY NO: 29662
 SDG No:
 Project: USDC Penobscot
 Delivered via: **Client**
 Date and Time Received: 09/13/17 1250 Date and Time Logged into Lab: 09/14/17 0910
 Received By: PK, AK Logged into Lab by: JTP 
 Air bill / Way bill: N/A Air bill included in folder if received? N/A
 Cooler on ice/packs: Yes Custody Seals present? N/A
 Cooler Blank Temp (C) at arrival: N/A Custody Seals intact? N/A
 Number of COC Pages: 5
 COC Serial Number(s): N/A
 COC Complete: Yes Does the info on the COC match the samples? Yes
 Sampled Date: Yes Were samples received within holding time? Yes
 Field ID complete: Yes Were all samples properly labeled? Yes
 Sampled Time: Yes Were proper sample containers used? Yes
 Analysis request: Yes Were samples received intact? (none broken or leaking) Yes
 COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes
 Were all samples received? Yes Were VOC vials free of headspace? N/A
 Client notification/authorization: Not required pH Test strip ID number: N/A

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
Mendell Marsh Bulk #47	29662-047	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #48	29662-048	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #49	29662-049	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes
Mendell Marsh Bulk #50	29662-050	S	Lp28D, Nv28D	1 x 2 gallon I4C		Yes


Notes and qualifications:

Environmental Analysis Request/Chain of Custody

EnviroSystems		Client: Amec Foster Wheeler / 511 Congress St. Suite 200 Portland, ME 04101		Matrix		Analyses Requested				For Lab Use Only	
Project Name/#: USDC Penobscot		PN #: 3616166052.02A.2A0511		<input type="checkbox"/> Soil <input type="checkbox"/> Sediment <input type="checkbox"/> Tissue		Preservation Codes				SF #: _____	
Project Manager: Rod Pendleton		P.O. #:		<input type="checkbox"/> Potable <input type="checkbox"/> Ground						SCR #: _____	
Sampler: MW, JC, TG		PWSID #:		<input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Surface						Preservation Codes	
Phone #:		Quote #:		Other: Tissue						H = HCl T = Thiocyanate	
State where samples were collected: ME		For Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Total # of Containers						N = HNO ₃ B = NaOH	
						Bulk Sediment (see Client work order for Analytical) S gal. 4 Deg C				S = H ₂ SO ₄ P = H ₂ PO ₄	
										O = Other	
Sample Identification		Collection		Grab		Composite				Remarks	
1 Mendall Marsh Sediment		Date: 081517		Time: 0900		X		X		X	
2		092117		0900							
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
Turnaround Time Requested (TAT) (please check):		Standard <input type="checkbox"/> Rush <input type="checkbox"/>		Relinquished by:		Date		Time		Received by:	
(Rush TAT is subject to laboratory approval and surcharges.)				<i>[Signature]</i>		9/21/2017		1530		<i>[Signature]</i>	
Notes:				Relinquished by:		Date		Time		Received by:	
				<i>[Signature]</i>		9/21/17		1530			
FedEx # _____ Courier (AFW) _____		# of Coolers 0		Relinquished by:		Date		Time		Received by:	
Sample disposal - Hold Equipment Blanks 1-4 until 30 days after delivery of report		Report and EDD to: denise.king@amectw.com / 978-692-0633									
Data Package Options (please check if required)		High <input type="checkbox"/> Standard <input checked="" type="checkbox"/>		Relinquished by Commercial Carrier:		Date		Time		Received by:	
EDD Required? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		If yes, format: _____		UPS _____ FedEx _____ Other _____						Temperature upon receipt _____ °C	

EnviroSystems 1 Lafayette Rd. Hampton NH

SAMPLE RECEIPT AND CONDITION DOCUMENTATION


STUDY NO: 29705
 SDG No:
 Project: USDC Penobscot
 Delivered via: Client
 Date and Time Received: 09/21/17 1530 Date and Time Logged into Lab: 09/22/17 0820
 Received By: AK Logged into Lab by: JTP 

Air bill / Way bill: No Air bill included in folder if received? N/A
 Cooler on ice/packs: Yes Custody Seals present? N/A
 Cooler Blank Temp (C) at arrival: N/A Custody Seals intact? N/A
 Number of COC Pages: 1
 COC Serial Number(s): N/A
 COC Complete: Yes Does the info on the COC match the samples? Yes
 Sampled Date: Yes Were samples received within holding time? Yes
 Field ID complete: Yes Were all samples properly labeled? Yes
 Sampled Time: Yes Were proper sample containers used? Yes
 Analysis request: Yes Were samples received intact? (none broken or leaking) Yes
 COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes
 Were all samples received? Yes Were VOC vials free of headspace? N/A
 Client notification/authorization: Not required pH Test strip ID number: N/A

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
Mendell Marsh Sediment	29705-001	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-002	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-003	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-004	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-005	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-006	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-007	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-008	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-009	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-010	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-011	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-012	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-013	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-014	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-015	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-016	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-017	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-018	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-019	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-020	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-021	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-022	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-023	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes

Notes and qualifications:

Samples arrived on ice in the back of a pickup truck and were immediately put into 4C sample storage refrigerator. JTP

STUDY NO: 29705
 SDG No:
 Project: USDC Penobscot
 Delivered via: Client
 Date and Time Received: 09/21/17 1530 Date and Time Logged into Lab: 09/22/17 0820
 Received By: AK Logged into Lab by: JTP 

Air bill / Way bill: No Air bill included in folder if received? N/A
 Cooler on ice/packs: Yes Custody Seals present? N/A
 Cooler Blank Temp (C) at arrival: N/A Custody Seals intact? N/A
 Number of COC Pages: 1
 COC Serial Number(s): N/A
 COC Complete: Yes Does the info on the COC match the samples? Yes
 Sampled Date: Yes Were samples received within holding time? Yes
 Field ID complete: Yes Were all samples properly labeled? Yes
 Sampled Time: Yes Were proper sample containers used? Yes
 Analysis request: Yes Were samples received intact? (none broken or leaking) Yes
 COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes
 Were all samples received? Yes Were VOC vials free of headspace? N/A
 Client notification/authorization: Not required pH Test strip ID number: N/A
 Were all samples received? Yes Were VOC vials free of headspace? NA
 Client notification/authorization: Not required

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
Mendell Marsh Sediment	29705-024	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-025	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-026	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-027	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-028	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-029	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes
Mendell Marsh Sediment	29705-030	S	Homogenize, Subsample: Lp28D, Nv28D	1 x 5 gallon I4C		Yes

Notes and qualifications: 29705-024 S Homogenize, Subsample: Lp28D, Nv28D

Subject: Re: 3 samples of homogenized sediment RE: Penobscot - Toxicity Testing Procedures
From: "Stemper, Margaret L." <Margaret.Stemper@amecfw.com>
Date: 10/4/2017 5:11 PM
To: Kirk Cram <kcram@envirosystems.com>
CC: James T Provencher <jprovencher@envirosystems.com>, Amanda Komarek <akomarek@envirosystems.com>, "Walter, Nelson" <Nelson.Walter@amecfw.com>, "Merritt, Karen" <karen.merritt@amecfw.com>, "King, Denise" <Denise.King@amecfw.com>

Hi Kirk,

The calculations look good, and the bulk density should be adjusted for actual vs. predicted.

Thanks,

Meg Stemper
Senior 2 Engineer, CPM
Amec Foster Wheeler
978-954-4332 mobile/office

On Oct 4, 2017, at 4:22 PM, Kirk Cram <kcram@envirosystems.com> wrote:

Hi Meg,

Just following up on my email yesterday as I have calculated a bulk density based on the dry weight calculation we obtained in-house.

3 replicates were used and averaged for the dry weight value, which was 0.41 g
A measured Liter of sample weighed 1272.4 g (total/wet weight)
 $1272.4\text{g} \times 0.41 = 521.7\text{ g/L dry weight} = 0.5217\text{ kg/L}^3\text{ bulk density}$

Based on this, I'm wondering if the bulk density factor in the calculator wants to be changed to 0.5 kg/L³?

On 10/3/2017 3:35 PM, Stemper, Margaret L. wrote:

Hi Kirk,

Thanks for the update and providing the calculations. We'll review them and give you a call if any questions later today.

Meg Stemper, CPM
Senior 2 Engineer – Engineering/Construction Management
Amec Foster Wheeler Environment & Infrastructure, Inc.
(978) 954 4332
271 Mill Road, 3rd Floor, Chelmsford, MA 01824 USA
margaret.stemper@amecfw.com<<mailto:margaret.stemper@amecfw.com>> amecfw.com

From: Kirk Cram [<mailto:kcram@envirosystems.com>]
Sent: Tuesday, October 03, 2017 2:02 PM
To: Stemper, Margaret L. <Margaret.Stemper@amecfw.com>

<mailto:Margaret.Stemper@amecfw.com>; James T Provencher jprovencher@envirosystems.com
<mailto:jprovencher@envirosystems.com>

Cc: Amanda Komarek akomarek@envirosystems.com<mailto:akomarek@envirosystems.com>;
Breton, Nelson M. Nelson.Breton@amecfw.com<mailto:Nelson.Breton@amecfw.com>; Walter,
Nelson Nelson.Walter@amecfw.com<mailto:Nelson.Walter@amecfw.com>; Merritt, Karen
karen.merritt@amecfw.com<mailto:karen.merritt@amecfw.com>; King, Denise
Denise.King@amecfw.com<mailto:Denise.King@amecfw.com>

Subject: Re: 3 samples of homogenized sediment RE: Penobscot - Toxicity Testing
Procedures

Hi Meg,

I hope you are doing well. We will be applying the sediment amendments and loading test chambers this week and I wanted to touch base quickly regarding a couple of items. First, I have attached an updated amendments calculation sheet that has an additional sheet with calculations for the amphipod study. This is due to the fact that 1 gallon of sediment per treatment was sieved for the amphipod at a smaller sieve size that was used in the initial sample homogenization. This is per protocol and to ensure no predatory organisms are present. Second, we have obtained our average dry weight for the sample and my assumption is that this should be used in the calculation sheet for the current estimated bulk density, can you confirm? We still need to obtain our mass per liter for this calculation. Finally, you

ll note that I've added a gram calculation for amendment mass, whereas, we will be using an analytical balance for doing weight measurements and lbs are not an available unit. I imagine this is acceptable, but please let me know if any of the above presents questions or concerns. Thanks and take care. -Kirk

On 9/26/2017 4:32 PM, Stemper, Margaret L. wrote:

Hi Kirk - We've reviewed the amendment calculations and they are accurate, so you can get started with the mixing this week. Since you haven't heard back from Amy Goodall on ordering the sample containers, I've cc'd our Project Chemist & Point of Contact with Eurofins (Denise King).

Hi Denise - Could you please ask Eurofins to contact Kirk so he can order the sample containers and have them shipped to ESI by next week. See the attached Final Toxicity Testing Procedures - the analyses are highlighted in color for clarity (orange = total mercury, blue = methyl mercury). The 3 upfront sediment samples (Procedure #11) have already been collected so ESI only needs containers for tissue samples (nereis) for methyl mercury (Procedures #18 & #20). Kirk can provide the total number & extras they will need.

Thanks,

Meg Stemper, CPM

Senior 2 Engineer - Engineering/Construction Management
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271 Mill Road, 3rd Floor, Chelmsford, MA 01824 USA

margaret.stemper@amecfw.com<mailto:margaret.stemper@amecfw.com> amecfw.com

From: Kirk Cram [<mailto:krcram@envirosystems.com>]

Sent: Tuesday, September 26, 2017 4:00 PM

To: Stemper, Margaret L. Margaret.Stemper@amecfw.com

<mailto:Margaret.Stemper@amecfw.com>; James T Provencher jprovencher@envirosystems.com
<mailto:jprovencher@envirosystems.com>

Cc: Amanda Komarek akomarek@envirosystems.com<mailto:akomarek@envirosystems.com>;

Breton, Nelson M. Nelson.Breton@amecfw.com<mailto:Nelson.Breton@amecfw.com>

Subject: Re: 3 samples of homogenized sediment RE: Penobscot - Toxicity Testing Procedures

Good Afternoon Meg,

I know Amanda has followed up with you regarding our calculated amendment masses using the calculator provided by Amec-FW. I'm hoping the project team has (or has had) an opportunity to review these calculations, whereas, our hope is to begin amending the samples and loading the test chambers between this week and the end of next week. I know you are aware of the request already, so I apologize for the additional email. It's simply the case that we have a few projects pending and I want to ensure we accommodate this project first and foremost.

Additionally, I've reached out to the contact you provided at Eurofins a couple of times and have not received a response. The situation isn't critical, given that the bulk of samples will be generated at the end of the study, but I felt it was worth mentioning just in case something has changed (i.e. point of contact).

Please let me know if you or anyone else has any questions or concerns. Thanks and take care, -Kirk

On 9/22/2017 4:26 PM, Stemper, Margaret L. wrote:

Thanks for the update that the homogenization is complete, and you've collected the 3 samples.

Here is the final version of the procedures for the record with your edits and ours related to the chemical analyses incorporated, with blue highlights on methyl mercury & orange highlights on total mercury analyses for clarity.

Have a good weekend!

Meg Stemper, CPM

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margaret.stemper@amecfw.com<<mailto:margaret.stemper@amecfw.com>> amecfw.com

From: James T Provencher [<mailto:jprovencher@envirosystems.com>]

Sent: Friday, September 22, 2017 3:36 PM

To: Stemper, Margaret L. <Margaret.Stemper@amecfw.com>

<<mailto:Margaret.Stemper@amecfw.com>>

Cc: Kirk Cram <kccram@envirosystems.com><<mailto:kccram@envirosystems.com>>; Amanda Komarek <akomarek@envirosystems.com><<mailto:akomarek@envirosystems.com>>

Subject: Re: 3 samples of homogenized sediment RE: Penobscot - Toxicity Testing Procedures

Meg,

Sounds good to me. Homogenization process is complete. We have records and pictures throughout the process, knowing documentation is key for the oversight on this project. I have also subsequently taken 3 separate and distinct samples of the final homogenized sediment and placed them in our deep freeze for the methyl and total mercury analysis.

Look forward to keeping in contact as we work through this testing for you.

Jim

On 9/22/2017 1:25 PM, Stemper, Margaret L. wrote:

Hi Jim,

Thanks for the edits, they look good. I have a new/final version of the procedures I'll send back to you this afternoon.

In the mean time, please note that we have added an initial task upfront for ESI to collect 3 discrete samples of the homogenized sediments prior to dividing up into tanks & mixing with amendments.

Once you have completed the homogenization, please collect 3 separate, discrete and random samples from 3 different locations within the homogenized material, and prep & freeze for methyl mercury and total mercury analyses.

Please let me know if you have questions.

Thanks,

Meg Stemper, CPM

Senior 2 Engineer - Engineering/Construction Management

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margaret.stemper@amecfw.com<<mailto:margaret.stemper@amecfw.com>> amecfw.com

From: James T Provencher [<mailto:jprovencher@envirosystems.com>]

Sent: Friday, September 22, 2017 8:05 AM

To: Stemper, Margaret L. <Margaret.Stemper@amecfw.com>

<<mailto:Margaret.Stemper@amecfw.com>>

Cc: Kirk Cram <krcram@envirosystems.com><<mailto:krcram@envirosystems.com>>; Amanda Komarek <akomarek@envirosystems.com><<mailto:akomarek@envirosystems.com>>

Subject: Penobscot - Toxicity Testing Procedures

Good Morning Meg,

Kirk and I have read over the Toxicity Testing Procedures that you had sent over, and applied edits using the "track changes" mode.

Please let us know if we can further clarify anything for you.

Thanks,

Jim

--

Laboratory Homogenization Documentation

Project Number: 29705
 Project Name: Penobscot
 Sample Identifier: Homogenization 1 (A - G)
 Sample Lab ID.: 29705-101 Final Volume: ~ 35 gal
 Matrix: Solid Container(s): 7x5 gallon P
 Prepared Date: 9/22/17
 Prepared Time: 1100
 Initials: AK
 Protocol: ESI SOP 1478

Homogenization took place according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
Mendall Marsh Sediment	29705-001	Solid	NA	yes	~ 5 gal	a few small rocks excluded from each sample
Mendall Marsh Sediment	29705-002	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-003	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-004	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-005	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-006	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-007	Solid	↓	↓	~ 5 gal	↓

Subsamples Removed:

Lab Number	Sample Use

Laboratory Homogenization Documentation

Project Number: 29705
 Project Name: Penobscot
 Sample Identifier: Homogenization 2 (A-G) (H-N) ^{9/22}
 Sample Lab ID.: 29705-102 Final Volume: ~ 35 gal
 Matrix: Solid Container(s): 7x5 gallon P
 Prepared Date: 9/22/17
 Prepared Time: 1150
 Initials: AK
 Protocol: ESI SOP 1478

Homogenization took place according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
Mendall Marsh Sediment	29705-008	Solid	NA	Yes	~ 5 gal	Small rocks, shell hash and worms excluded from all samples
Mendall Marsh Sediment	29705-009	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-010	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-011	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-012	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-013	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-014	Solid	↓	↓	~ 5 gal	↓

Subsamples Removed:

Lab Number	Sample Use

Laboratory Homogenization Documentation

Project Number: 29705
 Project Name: Penobscot
 Sample Identifier: Homogenization 3 (A-G) (0-U) ^{SEP 09/22}
 Sample Lab ID.: 29705-103 Final Volume: ~ 35 gal
 Matrix: Solid Container(s): 7x5 gallon P
 Prepared Date: 9/22/17
 Prepared Time: 1300
 Initials: AK
 Protocol: ESI SOP 1478

Homogenization took place according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
Mendall Marsh Sediment	29705-015	Solid	NA	Yes	~ 5 gal	a few small rocks, shell hash and worms were excluded from all samples
Mendall Marsh Sediment	29705-016	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-017	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-018	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-019	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-020	Solid	↓	↓	~ 5 gal	↓
Mendall Marsh Sediment	29705-021	Solid	↓	↓	~ 5 gal	↓

Subsamples Removed:

Lab Number	Sample Use

Laboratory Homogenization Documentation

Project Number: 29705
 Project Name: Penobscot
 Sample Identifier: Mendall Marsh Final Mixture
 Sample Lab ID.: 29705-200 (A-F) Final Volume: ~ 30 gal
 Matrix: Solid Container(s): 6 x 5 gallon P
 Prepared Date: 9/22/17
 Prepared Time: 1345
 Initials: AK
 Protocol: ESI SOP 1478

Homogenization took place according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
Homogenization 1	29705-101 A	Solid	NA	NA	~ 5 gal	After homogenization samples were given new ID: 29705-200A
Homogenization 1	29705-101 B	Solid	↓	↓	~ 5 gal	-200 B
Homogenization 2	29705-102 A	Solid	↓	↓	~ 5 gal	-200 C
Homogenization 2	29705-102 B	Solid	↓	↓	~ 5 gal	-200 D
Homogenization 3	29705-103 A	Solid	↓	↓	~ 5 gal	-200 E
Homogenization 3	29705-103 B	Solid	↓	↓	~ 5 gal	-200 F

Subsamples Removed:

Lab Number	Sample Use
29632	L.p. 28 Day
29633	N.v. 28 Day

Laboratory Homogenization Documentation

Project Number: 29705
 Project Name: Penobscot
 Sample Identifier: Mendall Marsh Final Mixture
 Sample Lab ID.: 29705-200 (G-L) Final Volume: ~ 30 gal
 Matrix: Solid Container(s): 6 x 5 gallon P
 Prepared Date: 9/22/17
 Prepared Time: 1415
 Initials: AK
 Protocol: ESI SOP 1478

Homogenization took place according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
Homogenization 1	29705-101 C	Solid	NA	NA	~ 5 gal	After homogenization samples were given new ID: 29705-200G
Homogenization 1	29705-101 D	Solid	↓	↓	~ 5 gal	-200 H
Homogenization 2	29705-102 C	Solid	↓	↓	~ 5 gal	-200 I
Homogenization 2	29705-102 D	Solid	↓	↓	~ 5 gal	-200 J
Homogenization 3	29705-103 C	Solid	↓	↓	~ 5 gal	-200 K
Homogenization 3	29705-103 D	Solid	↓	↓	~ 5 gal	-200 L

Subsamples Removed:

Lab Number	Sample Use
29632	L.p. 28 Day
29633	N.v. 28 Day

Laboratory Homogenization Documentation

Project Number: 29705
 Project Name: Penobscot
 Sample Identifier: Mendall Marsh Final Mixture
 Sample Lab ID.: 29705-200 (M-T) Final Volume: ^{AK 12/21/17} ~30 gal 39 gal
 Matrix: Solid Container(s): 6 x 5 gallon P
 Prepared Date: 9/22/17 3 x 3 gallon P
 Prepared Time: 1450
 Initials: AK
 Protocol: ESI SOP 1478

Homogenization took place according to protocols cited using the samples and amounts listed below:

Field ID	ESI Lab ID	Matrix	Liquids Excluded	Solids Excluded	Amount Added	Notes
Homogenization 1	29705-101 E	Solid	NA	NA	~ 5 gal	After homogenization samples were given new ID: 29705-200 M
Homogenization 1	29705-101 F	Solid			~ 5 gal	-200 N
Homogenization 1	29705-101 G	Solid			~ 3 gal	-200 O
Homogenization 2	29705-102 E	Solid			~ 5 gal	-200 P
Homogenization 2	29705-102 F	Solid			~ 5 gal	-200 Q
Homogenization 2	29705-102 G	Solid			~ 3 gal	-200 R
Homogenization 3	29705-103 E	Solid			~ 5 gal	-200 S
Homogenization 3	29705-103 F	Solid			~ 5 gal	-200 T
Homogenization 3	29705-103 G	Solid	↓	↓	~ 3 gal	AK (E10) 9/22/17 -200 U AK (E2) 9/22/17

Subsamples Removed:

(E10) After homogenization only 8 buckets were needed to hold the sample. AK 9/22/17

Lab Number	Sample Use
29632	L.p. 28 Day
29633	N.v. 28 Day

**Amendment Volume Estimates for Toxicity Testing - *L. plumulosus*
Penobscot River Phase III Engineering Study**

Amendment	Application Rate Used in Phase II Test Plots (kg/plot) ^a	Soil Volume Per Amendment [ESI Estimate] (gallons) ^b	Estimated Dry Bulk Density (kg/L) ^c	Desired %AC ^d	AC in Amendment (%)	Amendment Mass Needed for Testing - (lbs) ^e	Amendment Mass Needed - ROUND + extra (lbs) ^e	check (%) AC	Dry Amendment Mass in Grams
Biochar	1	1	0.46	3	85	0.14	0.00	3.0	61
Biochar	1	1	0.46	5	85	0.23	0.00	5.0	102
Biochar	1	1	0.46	10	85	0.45	1.00	9.9	205
Total									368
SediMite™	2.3	1	0.46	3	50	0.23	0.00	3.0	104
SediMite™	2.3	1	0.46	5	50	0.38	0.00	5.0	174
SediMite™	2.3	1	0.46	10	50	0.77	1.00	9.9	348
Total									626
Activated Carbon	1	1	0.46	3	100	0.12	0.00	3.0	52
Activated Carbon	1	1	0.46	5	100	0.19	0.00	5.0	87
Activated Carbon	1	1	0.46	10	100	0.38	0.00	9.9	174
Total									313

^a As presented in the Phase II Report; a plot = 1 m² area x 10 cm depth = 0.1 m³; this application rate as defined for dry sediment at a bulk density of 0.2 kg/L results in a 5% AC application rate.

^b 1 gallon of sediment amended per test treatment, with ~800 mL of sample used per test replicate. Representative aliquot of each amendment retained.

^c Bulk Density calculated based on dry weight value obtained at ESI. Average dry weight calculated as 0.41 g/mL, weight of measured 1 L of whole sediment = 1272.4 g, final bulk density calculation based on kg = 0.5217 kg/L.

^d Assumes the high end AC application rate of 10%; cell can be changed to reflect different desired AC application rates.

^e Mixture is defined here on a dry weight basis per a 1 gallon volume estimate for sample collection.

Unit conversion			BD=m/v
plot	0.1	m3	m= 4.64 g (average dry weight of the three sediments weighed)
kg	2.2	lbs	v= 10 cm^3 (volume of sample)
m3	35.3	ft3	
L	0.035	ft3	0.464 g/cm^3 = kg/L
ft3	7.48	gallon	
L	0.264	gallon	

Amendment Volume Estimates for Toxicity Testing - *N. virens*
Penobscot River Phase III Engineering Study

Amendment	Application Rate Used in Phase II Test Plots (kg/plot) ^a	Soil Volume Per Amendment [ESI Estimate] (gallons) ^b	Estimated Dry Bulk Density (kg/L) ^c	Desired %AC ^d	AC in Amendment (%)	Amendment Mass Needed for Testing - (lbs) ^e	Amendment Mass Needed - ROUND + extra (lbs) ^e	check (%) AC	Dry Amendment Mass in Grams
Biochar	1	8	0.46	3	85	1.08	1.0	3.0	491
Biochar	1	8	0.46	5	85	1.80	2.0	5.0	818
Biochar	1	8	0.46	10	85	3.61	5.0	9.9	1636
Total									2946
SediMite™	2.3	8	0.46	3	50	1.84	2.0	3.0	835
SediMite™	2.3	8	0.46	5	50	3.07	4.0	5.0	1391
SediMite™	2.3	8	0.46	10	50	6.13	8.0	9.9	2782
Total									5008
Activated Carbon	1	8	0.46	3	100	0.92	1.0	3.0	417
Activated Carbon	1	8	0.46	5	100	1.53	2.0	5.0	696
Activated Carbon	1	8	0.46	10	100	3.07	4.0	9.9	1391
Total									2504

^a As presented in the Phase II Report; a plot = 1 m² area x 10 cm depth = 0.1 m³; this application rate as defined for dry sediment at a bulk density of 0.2 kg/L results in a 5% AC application rate.

^b 1 gallon of sediment amended per test treatment, with ~800 mL of sample used per test replicate. Representative aliquot of each amendment retained.

^c Bulk Density calculated based on dry weight value obtained at ESI. Average dry weight calculated as 0.41 g/mL, weight of measured 1 L of whole sediment = 1272.4 g, final bulk density calculation based on kg = 0.5217 kg/L.

^d Assumes the high end AC application rate of 10%; cell can be changed to reflect different desired AC application rates.

^e Mixture is defined here on a dry weight basis per a 1 gallon volume estimate for sample collection.

Unit conversion			BD=m/v	
plot	0.1	m3	m= 4.64 g	(average dry weight of the three sediments weighed)
kg	2.2	lbs	v= 10 cm ³	(volume of sample)
m3	35.3	ft3	0.464	g/cm ³ = kg/L
L	0.035	ft3		
ft3	7.48	gallon		
L	0.264	gallon		

Sample Key

STUDY: 29632 & 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* and *N. virens* 28 Day Sediment Evaluations

Organism	Sample Field ID	Laboratory Manipulations	Final ID	ESI Sample Number
Amphipod (A)	Laboratory Control Sample (L)	0%	A/L/0%	29632-000
Amphipod (A)	Mendall Marsh Control (N)	0%	A/N/0%	29632-001
Amphipod (A)	Activated Carbon (AC)	3%	A/AC/3%	29632-002
Amphipod (A)	Activated Carbon (AC)	5%	A/AC/5%	29632-003
Amphipod (A)	Activated Carbon (AC)	10%	A/AC/10%	29632-004
Amphipod (A)	SediMite™ (S)	3%	A/S/3%	29632-005
Amphipod (A)	SediMite™ (S)	5%	A/S/5%	29632-006
Amphipod (A)	SediMite™ (S)	10%	A/S/10%	29632-007
Amphipod (A)	Biochar & Iron (B)	3%	A/B/3%	29632-008
Amphipod (A)	Biochar & Iron (B)	5%	A/B/5%	29632-009
Amphipod (A)	Biochar & Iron (B)	10%	A/B/10%	29632-010
Polychaete (P)	Laboratory Control Sample (L)	0%	P/L/0%	29633-000
Polychaete (P)	Mendall Marsh Control (N)	0%	P/N/0%	29633-001
Polychaete (P)	Activated Carbon (AC)	3%	P/AC/3%	29633-002
Polychaete (P)	Activated Carbon (AC)	5%	P/AC/5%	29633-003
Polychaete (P)	Activated Carbon (AC)	10%	P/AC/10%	29633-004
Polychaete (P)	SediMite™ (S)	3%	P/S/3%	29633-005
Polychaete (P)	SediMite™ (S)	5%	P/S/5%	29633-006
Polychaete (P)	SediMite™ (S)	10%	P/S/10%	29633-007
Polychaete (P)	Biochar & Iron (B)	3%	P/B/3%	29633-008
Polychaete (P)	Biochar & Iron (B)	5%	P/B/5%	29633-009
Polychaete (P)	Biochar & Iron (B)	10%	P/B/10%	29633-010

Amendment Addition Documentation

L. plumulosus

Project Number: 29632 Balance ID: Mettler PJ4000
 Project Name: Penobscot Tier III Prepared Date: 6/16/17
 Amendment Added: None Prepared Time: 1140
 Protocol: ESI SOP: QA-1442 R0 Initials: JTP
 Image Obtained? Yes

These amended samples were prepared according to protocols cited using the samples and amounts listed below:

Concentration	Final ID	ESI Sample ID	Total Amendment Added per Treatment (g)	Final Volume (G)	# Of Test Replicates	Volume Added per Test Replicate (mL)
Laboratory Control	A/L/0%	29632-000	0	NA	5	200
Mendall Marsh Control	A/N/0%	29632-001	0	1	5	200
NOTES						
Samples were thoroughly homogenized prior to amendment addition.						
9oz jars were filled with a representative aliquot of the amended sample.						
G = Gallons, g = grams						

Amendment Addition Documentation

L. plumulosus

Project Number: 29632
 Project Name: Penobscot Tier III
 Amendment Added: Activated Carbon (A-484)
 Protocol: ESI SOP: QA-1442 R0

Balance ID: Mettler PJ4000
 Prepared Date: 10/10/17
 Prepared Time: 1020
 Initials: BG/DD/STP
 Image Obtained? Yes

These amended samples were prepared according to protocols cited using the samples and amounts listed below:

Concentration (%)	Final ID	ESI Sample ID	Total Amendment Added per Treatment (g)	Final Volume (G)	# Of Test Replicates	Volume Added per Test Replicate (mL)
3	A/AC/3%	29632-002	52	1	5	200
5	A/AC/5%	29632-003	87	1	5	200
10	A/AC/10%	29632-004	174	1	5	200
NOTES						
Samples were thoroughly homogenized prior to amendment addition.						
9oz jars were filled with a representative aliquot of the amended sample.						
G = Gallons, g = grams						

Amendment Addition Documentation

L. plumulosus

Project Number: 29632 Balance ID: Mettler PJ4000
 Project Name: Penobscot Tier III Prepared Date: 10/10/17
 Amendment Added: SediMite (A-4781) Prepared Time: 1045
 Protocol: ESI SOP: QA-1442 R0 Initials: BG/ JTP/DD
 Image Obtained? Yes

These amended samples were prepared according to protocols cited using the samples and amounts listed below:

Concentration (%)	Final ID	ESI Sample ID	Total Amendment Added per Treatment (g)	Final Volume (G)	# Of Test Replicates	Volume Added per Test Replicate (mL)
3	A/S/3%	29632-005	104	1	5	200
5	A/S/5%	29632-006	174	1	5	200
10	A/S/10%	29632-007	348	1	5	200
NOTES						
Samples were thoroughly homogenized prior to amendment addition.						
9oz jars were filled with a representative aliquot of the amended sample.						
G = Gallons, g = grams						

Amendment Addition Documentation

L. plumulosus

Project Number: 29632 Balance ID: Mettler PJ4000
 Project Name: Penobscot Tier III Prepared Date: 10/10/17
 Amendment Added: Biochar (A-479b) Prepared Time: 1220
 Protocol: ESI SOP: QA-1442 R0 Initials: BG-1 JTP/DD
 Image Obtained? Yes

These amended samples were prepared according to protocols cited using the samples and amounts listed below:

Concentration (%)	Final ID	ESI Sample ID	Total Amendment Added per Treatment (g)	Final Volume (G)	# Of Test Replicates	Volume Added per Test Replicate (mL)
3	A/B/3%	29632-008	61	1	5	200
5	A/B/5%	29632-009	102	1	5	200
10	A/B/10%	29632-010	205	1	5	200

NOTES

Samples were thoroughly homogenized prior to amendment addition.

9oz jars were filled with a representative aliquot of the amended sample.

G = Gallons, g = grams

Pre-Assay Monitoring
Leptocheirus plumulosus
 ACUTE EXPOSURE SEDIMENT ASSAY

STUDY #: 29632

WATER BATH ID: #3

CLIENT: AMEC - Penobscot

PROJECT: Penobscot Tier III

Day	Renew		Pore Water Ammonia Measured	Date	Initial
	FIRST	SECOND			
sediment loaded to vessels				10/10/17	DD
1	✓	✓	—	10/11/17	DD
2	✓	✓	—	10/12/17	BG
3	✓	✓	—	10/13/17	BG
4	✓	✓	—	10/14/17	BG
5	✓	✓	—	10/15/17	DD
6	✓	✓	—	10/16/17	BG
7	✓	✓	✓ (ED) bb 10/17 see additional comment page	10/17/17	BG
8	✓	✓	—	10/18/17	DD
9	✓	✓	—	10/19/17	BG
10	✓	✓		10/20/17	BG
11	✓	✓		10/21/17	BG
12	✓	✓		10/22/17	BG
13	✓	✓		10/23/17	DD
14	—	—	—	—	—

Notes: Temp: 25°C Salinity: 20 ppt Renew Daily - Two Volume Exchanges

COMMENTS
Test started on 10/11/17 @ 10/12/17
Day 07 Pre-Assay pore water NH ₃ using colorimetric test: Lab: 20mg/L Ref: 2.5mg/L
3% A/C: 1.25mg/L 3% Sediment: 0mg/L 3% Biochar: 5.0mg/L
5% A/C: 2.5mg/L 5% Sediment: 1.25mg/L 5% Biochar: 5.0mg/L
10% A/C: 0mg/L 10% Sediment: 2.5mg/L 10% Biochar: 10mg/L

Pre-Assay Pore Water pH Record

Study: 29632
Client: Amec Foster Wheeler
Project: Penobscot

Pore Water Quality

Sample	Temperature	pH value
000	22	7.15
001		7.01
002		7.08
003		7.03
004		7.05
005		7.20
006		7.04
007		7.24
008		7.07
009		7.20
010	↓	7.14

Date: 10/20/17
Initial: DD

pH Meter ID: 1097



014PAR0102417

Aquatic Research Organisms

DATA SHEET

I. Organism History

Species Leptocleirus plumulosus

Source: Lab reared Hatchery reared _____ Field collected _____

Hatch date 10/23/17 Receipt date _____

Lot number 10 23 17LP Strain ARO

Brood origination Chesapeake Bay, VA

II. Water Quality

Temperature 24 °C Salinity ~20 ppt D.O. SAT ppm

pH ~8.0 su Hardness _____ ppm Alkalinity _____ ppm

III. Culture Conditions

Freshwater _____ Saltwater Other _____

Recirculating _____ Flow through _____ Static renewal

DIET: Flake food Phytoplankton _____ Trout chow

Artemia _____ Rotifers _____ YCT _____ Other "GORP"

Prophylactic treatments: _____

Comments: 355 m → 500 m size size

IV. Shipping Information

Client: ESI # of Organisms 2500+

Carrier: FedEx Date shipped 10/24/17

Biologist: ~~_____~~

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

Leptocheirus plumulosus Sediment Evaluation

Initial Weight

Study: 29632

Client: Amec Foster Wheeler - Wood Group

Project: Penobscot

	REP	TARE WEIGHT (mg)	L. Plumulosus + FOIL (mg)	NET WEIGHT (mg)	# L. plumulosus	MEAN DRY WEIGHT PER Individual (mg)
START ORGANISMS	A	209.18	210.23	1.05	10	0.105
	B	209.49	210.06	0.57 ^(E10) _{NR-12/12/17}	10	0.057
	C	206.430 206.430 ^(E10) _{NR-12/12/17}	207.85	1.55	10	0.155
	D	210.62	211.92	1.30	10	0.130
RECORDED BY:		BG	BG	Overall Mean Dry Weight Per Individual: 0.11175 mg		
DATE:		12/09/17	12/12/17			
Balance ID: Ohaus Discovery Balance, Model DV215CD Serial Number: 1124024313						

NOTES: (E10) NR 12/12/17 Organisms in Rep B appear to be smaller than in other reps, so if this rep was treated as an outlier and removed from calculations, then the overall mean dry weight per individual = 0.13 mg.

Initiation Record for *Leptocheirus plumulosus* - 28 Day

STUDY #: 29632 WATER BATH ID: #3
 CLIENT: Wood PROJECT: Penobscot

INITIATION RECORD			
CONTROL: Laboratory Control			
Treatment:	Control	Counted by:	UB/MS
Organism Lot ID:	01LPAR0102417	Added by:	UB
Number of Organisms added to each vessel:	20	Temp Data Logger No:	010015860
CONTROL: Mendall Marsh Control			
Organism Lot ID:	01LPAR0102417	Counted by:	UB/MS
Number of Organisms added to each vessel:	20	Added by:	UB

AMENDMENT: Activated Carbon			
Organism Lot ID:	01LPAR0102417	Counted by:	UB/MS
Number of Organisms added to each vessel:	20	Added by:	UB
AMENDMENT: SediMite			
Organism Lot ID:	01LPAR0102417	Counted by:	AK/MS 10/24/17
Number of Organisms added to each vessel:	20	Added by:	UB
AMENDMENT: BioChar			
Organism Lot ID:	01LPAR0102417	Counted by:	AK/MS 10/24/17
Number of Organisms added to each vessel:	20	Added by:	UB

E10 LB 10/24/17
 Extra cup of organisms after addition
 one rep may have only
 10 organisms

Data Summary for *Leptocheirus plumulosus* - 28 Day

STUDY #: 29632

WATER BATH ID: #3

CLIENT: Wood

PROJECT: Penobscott

DAILY LOG

Day	Date	Daily Water Quality Performed	Feeding (A-C-9191)	Renew Daily (One Exchange)	Overlying & Pore water collected for NH ₃	Comments
0	10/24/17	✓	1mL ✓	✓	✓	Water quality parameters were performed on Oct 24/17. (E) BG 10/24
1	10/25/17	✓	(1mL) ✓	✓		BG
2	10/26/17	✓	NA	✓		BG
3	10/27/17	✓	(1mL) AK @ 1700	✓		BG
4	10/28/17	✓	NA	✓		BG
5	10/29/17	✓	NA	✓		DD
6	10/30/17	✓	(1mL) ✓	✓		DD
7	10/31/17	✓	NA	✓	✓	DD
8	11/01/17	✓	(1mL) ✓	✓		DD
9	11/02/17	✓	NA	✓		DD
10	11/03/17	✓	(1mL) ✓	✓		BG
11	11/04/17	✓	NA	✓		BG
12	11/05/17	✓	NA	✓		DD
13	11/06/17	✓	(1mL) ✓	✓		DD
14	11/07/17	✓	NA	✓	✓	DD
15	11/08/17	✓	(2mL) ✓	✓		DD
16	11/09/17	✓	NA	✓		DD
17	11/10/17	✓	(2mL) ✓	✓		BG
18	11/11/17	✓	NA	✓		temperature low room temperature increased. BG
19	11/12/17	✓	NA	✓		DD
20	11/13/17	✓	(2mL) ✓	✓		DD
21	11/14/17	✓	NA	✓	✓	BG
22	11/15/17	✓	(2mL)	✓		DD
23	11/16/17	✓	NA	✓		DD
24	11/17/17	✓	(2mL) ✓	✓		BG
25	11/18/17	✓	NA	✓		DD
26	11/19/17	✓	NA	✓		DD
27	11/20/17	✓	(2mL) ✓	✓		DD
28	11/21/17	✓	NA	—	✓	DD

(E) BG 10/24/17

Study #: 29632
 CLIENT: Wood

Daily Observations for *Leptocheirus plumulosus* - 28 Day

WATER BATH ID: #3
 PROJECT: Penobscot

Day	Amendment <u>Activated Carbon</u>			Amendment <u>Sedimente</u>			Amendment <u>Biochar</u>			Date	Initial
	All Reps			All Reps			All Reps				
	3%	5%	10%	3%	5%	10%	3%	5%	10%		
0	N	N	N	N	N	N	N	N	N	10/24/17	CFS
1	N	N	N	N	N	N	N	N	N	10/25/17	BG
2	N	N	N	N	N	N	N	N	N	10/26/17	BG
3	N	N	N	N	N	N	N	N	N	10/27/17	BG
4	N	N	N	N	N	N	N	N	N	10/28/17	BG
5	N	N	N	N	N	N	N	N	N	10/29/17	DD
6	N	N	N	N	N	N	N	N	N	10/30/17	DD
7	N	N	N	N	N	N	N	N	N	10/31/17	DD
8	N	N	N	N	N	N	N	N	N	11/01/17	DD
9	N	N	N	N	N	N	N	N	N	11/02/17	DD
10	N	N	N	N	N	N	N	N	N	11/03/17	BG
11	N	N	N	N	N	N	N	N	N	11/04/17	BG
12	N	N	N	N	N	N	N	N	N	11/05/17	DD
13	N	N	N	N	N	N	N	N	N	11/06/17	DD
14	N	N	N	N	N	N	N	N	N	11/07/17	DD
15	N	N	N	N	N	N	N	N	N	11/08/17	DD
16	N	N	N	N	N	N	N	N	N	11/09/17	DD
17	N	N	N	N	N	N	N	N	N	11/10/17	BG
18	N	N	N	N	N	N	N	N	N	11/11/17	BG
19	N	N	N	N	N	N	N	N	N	11/12/17	DD
20	N	N	N	N	N	N	N	N	N	11/13/17	DD
21	N	N	N	N	N	N	N	N	N	11/14/17	BG
22	N	N	N	N	N	N	N	N	N	11/15/17	DD
23	N	N	N	N	N	N	N	N	N	11/16/17	DD
24	N	N	N	N	N	N	N	N	N	11/17/17	BG
25	N	N	N	N	N	N	N	N	N	11/18/17	DD
26	N	N	N	N	N	N	N	N	N	11/19/17	DD
27	N	N	N	N	N	N	N	N	N	11/20/17	DD

Observation Codes: N=Normal

Pore Water pH Record

Study: 29632
Client: Amec Foster Wheeler
Project: Penobscot

Day 0 Pore Water Quality

Sample	Temperature	pH value
000	24°C	6.83
001	|	7.13
002	|	7.13
003	|	7.25
004	|	7.22
005	|	7.01
006	|	7.29
007	|	7.34
008	|	7.10
009	|	7.05
010	↓	7.22
Date: 10/24/17 pH Meter ID: 470 Initial: DD		

Day 7 Pore Water Quality

Sample	Temperature	pH value
000	22°C	6.48
001	|	7.18
002	|	7.29
003	|	7.17
004	|	7.14
005	|	6.85
006	|	7.30
007	|	7.49
008	|	6.85
009	|	7.08
010	↓	7.24
Date: 10/31/17 pH Meter ID: 470 Initial: DL		

Pore Water pH Record

Study: 29632 Client: Amec Foster Wheeler Project: Penobscot
--

Day 14 Pore Water Quality

Sample	Temperature	pH value
000	22	6.62
001		7.52
002		6.97
003		7.14
004		7.40
005		7.03
006		7.55
007		7.32
008		7.12
009		7.69
010	↓	7.42

Date: 11/07/17	pH Meter ID: 470
Initial: TBE	

Day 21 Pore Water Quality

Sample	Temperature	pH value
000	23	6.85
001		7.20
002		7.01
003		7.29
004		7.08
005		7.10
006		7.31
007		7.24
008		7.05
009		7.53
010	↓	7.21

Date: 11/14/17	pH Meter ID: 1097
Initial: DD	

Pore Water pH Record

Study: 29632
Client: Amec Foster Wheeler
Project: Penobscot

Day 28 Pore Water Quality

Sample	Temperature	pH value
000	24	7.03
001		7.38
002		7.30
003		7.26
004		7.17
005		7.48
006		7.39
007		7.34
008		7.54
009		7.56
010	↓	7.22

Date: 11/21/17 pH Meter ID: 1097
Initial: DD

Leptocheirus plumulosus Day 28 Recovery

STUDY: 29632			CLIENT: Wood Group (AMEC FW)					
DATE: 11/21/17			PROJECT: Penobscot					
Sample Code	Rep	Pos	# Alive			(survival counts)	(sex determination, check counts)	
			Adults	Juveniles	Females	Initials	Initials	
A P/L/0% (000)	1	1	5 (4)	0 (1)	3	AK 11/21/17	KB	
A P/L/0% (000)	2	2	16	128	3	AK 11/21/17	KB	
A P/L/0% (000)	3	3	20	217	11	↓	KB	
A P/L/0% (000)	4	4	17	34	7		KB	
A P/L/0% (000)	5	5	19	87	8		KB	
A P/L/0% (000)	6	6	17	167	12		KB	
A P/L/0% (000)	7	7	18	91	5		KB	
A P/L/0% (000)	8	8	19	68	5		KB	
A P/N/0% (001)	1	9	1314	0	3		AK 11/21/17	KB
A P/N/0% (001)	2	10	18	41	6		↓	KB
A P/N/0% (001)	3	11	17	27	7	KB		
A P/N/0% (001)	4	12	8	10	1	KB		
A P/N/0% (001)	5	13	14	26	9	KB		
A P/N/0% (001)	6	14	18	15	15	KB		
A P/N/0% (001)	7	15	19	20	6	KB		
A P/N/0% (001)	8	16	10	0	5	KB		
A P/AC/3% (002)	1	17	19	26	8	AK 11/21/17		KB
A P/AC/3% (002)	2	18	12	27	5	↓	KB	
A P/AC/3% (002)	3	19	10	5	3		KB	
A P/AC/3% (002)	4	20	17	39	9		KB	

(E10) KB 11/21/17
 1 organism determined to be juvenile
 4 Adults four (E11) NR 12/6/17 ∴ 1 treated as juvenile

Leptocheirus plumulosus Day 28 Recovery

STUDY: 29632			CLIENT: Wood Group (AMEC FW)				
DATE: 11/21/17			PROJECT: Penobscot				
Sample Code	Rep	Pos	# Alive			(survival counts)	(sex determination, check counts)
			Adults	Juveniles	Females	Initials	Initials
[ⓔ] P/AC/3% (002)	5	[ⓔ] 21	[ⓔ] 18	58	7	AK 11/21/17	KB
P/AC/3% (002)	6	22	18	8	6	↓	KB
P/AC/3% (002)	7	23	12	5	4		AM
P/AC/3% (002)	8	24	13	23	7		KB
P/AC/5% (003)	1	25	18	62	10		MW	UB
P/AC/5% (003)	2	26	18	23	10	MW	MW
P/AC/5% (003)	3	27	11	22	5	MW	MW
P/AC/5% (003)	4	28	19	69	12	MW	CFS
P/AC/5% (003)	5	29	19	36	10	MW	MW
P/AC/5% (003)	6	30	20	31	8	MW	MW
P/AC/5% (003)	7	31	18	74	8	MW	CFS
P/AC/5% (003)	8	32	15	16	6	MW	MW
P/AC/10% (004)	1	33	18	82	8	CFS	MW
P/AC/10% (004)	2	34	[ⓔ] 19 20	63	11	CFS	CFS
P/AC/10% (004)	3	35	[ⓔ] 19(18)	[ⓔ] 46(47)	[ⓔ] 11(12)	CFS	MW
P/AC/10% (004)	4	36	15	48	8	CFS	MW
P/AC/10% (004)	5	37	16	25	5	CFS	CFS
P/AC/10% (004)	6	38	18	44	9	CFS	MW
P/AC/10% (004)	7	39	[ⓔ] 9	8	8	CFS	MW

[ⓔ] Worm found in replicate and removed. Ak 11/21/17

Leptocheirus plumulosus Day 28 Recovery

STUDY: 29632			CLIENT: Wood Group (AMEC FW)				
DATE: 11/21/17			PROJECT: Penobscot				
Sample Code	Rep	Pos	# Alive			(survival counts)	(sex determination, check counts)
			Adults	Juveniles	Females	Initials	Initials
A [Ⓢ] P/AC/10% (004)	8	40	18	36	11	KB	KB
A [Ⓢ] P/S/3% (005)	1	41	19 (20)	59	10	KB	MW
A P/S/3% (005)	2	42	14	62	9	KB	CFS
A P/S/3% (005)	3	43	18	32	12	KB	Ⓢ MW
A P/S/3% (005)	4	44	20	73	7	KB	CFS
A P/S/3% (005)	5	45	17	57	10	KB	MW
A P/S/3% (005)	6	46	20	82	14	KB	MW
A P/S/3% (005)	7	47	20	70	7	KB	MW
A P/S/3% (005)	8	48	20	89	13	KB	CFS
A P/S/5% (006)	1	49	16	11	7	MW	AM
A P/S/5% (006)	2	50	12	8	6	KB	AM
A P/S/5% (006)	3	51	12	3	5	KB	AM
A P/S/5% (006)	4	52	13	0	5	KB	MW
A P/S/5% (006)	5	53	19	10	12	KB	MW
A P/S/5% (006)	6	54	15	8	6	MW	AM
A P/S/5% (006)	7	55	9	3	4	MW	CFS
A P/S/5% (006)	8	56	18	11	11	MW	MW
A [Ⓢ] P/S/10% (007)	1	57	0	0	0	AK 11/21/17	UB
A P/S/10% (007)	2	58	5	0	3	↓	UB

Leptocheirus plumulosus Day 28 Recovery

STUDY: 29632			CLIENT: Wood Group (AMEC FW)				
DATE: 11/21/17			PROJECT: Penobscot				
Sample Code	Rep	Pos	# Alive			(survival counts)	(sex determination, check counts)
			Adults	Juveniles	Females	Initials	Initials
^{ES 11/28} A P/S/10% (007)	3	^{ES 11/21/17} 59	20	57	12	AK 11/21/17	UB
A P/S/10% (007)	4	60	13	0	9	↓	UB
A P/S/10% (007)	5	61	^{ES 11/21/17} 16	6	8		UB
A P/S/10% (007)	6	62	19	10	9		UB
A P/S/10% (007)	7	63	17	9	11		UB
A P/S/10% (007)	8	64	15	0	9		UB
^{ES 11/28} A P/B/3% (008)	1	65	1	0	1	AK 11/21/17	AM
A P/B/3% (008)	2	66	19	25	10	↓	AM
A P/B/3% (008)	3	67	11	0	5		AM
A P/B/3% (008)	4	68	1	0	1		AM
A P/B/3% (008)	5	69	9(8)	0	6 ^{ES 11/21/17} AM 11/21/17		AM
A P/B/3% (008)	6	70	^{ES 11/21/17} 39	0	5		AM
A P/B/3% (008)	7	71	3	0	1		AM
A P/B/3% (008)	8	72	17	8	10		AM
A P/B/5% (009)	1	73	^{ES 11/21/17} 7	9	5		AM 11/21/17
A P/B/5% (009)	2	74	15	8	10	AK 11/21/17	AM
A P/B/5% (009)	3	75	8	0	6	↓	AM
A P/B/5% (009)	4	76	13	9	7	MW	AM
A P/B/5% (009)	5	77	17	31	8	AM 11/21/17	AM

^{ES} Worm found in replicate and removed. Aug 11/21/17

USDC Penobscot River Estuary Phase III Engineering Study. Wood Project No. 3616166052.02A.2A051.

Leptocheirus and Nereis Day Sediment Evaluations. ESI Studies 29632 / 29633 Revision 1.

Leptocheirus plumulosus Day 28 Recovery

STUDY: 29632			CLIENT: Wood Group (AMEC FW)					
DATE: 11/21/17			PROJECT: Penobscot					
Sample Code	Rep	Pos	# Alive			(survival counts)	(sex determination, check counts)	
			Adults	Juveniles	Females	Initials	Initials	
A ^{ES 11/23} P/B/5% (009)	6	^{ES 12/1/17} 78	17	4	^{ES AM 11/21/17} 7	MW	AM	
A P/B/5% (009)	7	79	19	67	13	MW	AM	
A P/B/5% (009)	8	80	18	39	8	^{ES MW 11/21/17} MW	AM	
A P/B/10% (010)	1	81	18	41	6	CFS	LB	
A P/B/10% (010)	2	82	14	11	10	CFS	LB	
A P/B/10% (010)	3	83	5	1	3	CFS	LB	
A P/B/10% (010)	4	84	18	8	9	CFS	LB	
A P/B/10% (010)	5	85	^{ES KB 11/21} 18	9	3	9	KB	LB
A P/B/10% (010)	6	86	15	7	8	KB	LB	
A P/B/10% (010)	7	87	16	21	9	KB	LB	
A P/B/10% (010)	8	88	9	0	6	KB	LB	

^{ES MW 11/21/17} worm removed from replicate.

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot River Estuary Phase III Engineering Study
ASSAY: L. plumulosus 28-day Survival, Growth and Reproduction Evaluation
TASK: Dry Weight Data - Balance Output File
BALANCE: Ohaus Discovery Balance Model DV215CD
Serial #: 112402024313

Sample	Rep	Date / Init: 11/29/17 MS		11/15/17 BG		Duplicates	
		Total Wt (mg)	Tare Wt (mg)	Total Wt (mg)	Tare Wt (mg)	Total Wt (mg)	Tare Wt (mg)
A/L/0%	A	203.32	201.52	203.3	201.55		
A/L/0%	B	226.36	201.72				
A/L/0%	C	239.69	203.17				
A/L/0%	D	228.65	205.6				
A/L/0%	E	231.02	204.27				
A/L/0%	F	228.46	204.08				
A/L/0%	G	235.98	203.34				
A/L/0%	H	236.08	203.4				
A/N/0%	A	212.63	203.32				
A/N/0%	B	221.7	202.89				
A/N/0%	C	227.99	203.18				
A/N/0%	D	217.75	206.58				
A/N/0%	E	214.86	203.78				
A/N/0%	F	219.26	203.03				
A/N/0%	G	230.5	203.47				
A/N/0%	H	208.89	203.73				
A/AC/3%	A	227.01	203.82				
A/AC/3%	B	214.65	204.5				
A/AC/3%	C	211.5	205.98				
A/AC/3%	D	223.49	203.11				
A/AC/3%	E	230.84	203.79	230.87	203.78		
A/AC/3%	F	224.82	207.46				
A/AC/3%	G	212.57	203.49				
A/AC/3%	H	213.11	203.49				
A/AC/5%	A	231.64	204.05				
A/AC/5%	B	228.07	203.93				
A/AC/5%	C	210.8	202.64				
A/AC/5%	D	225.08	206.07				
A/AC/5%	E	223.46	203.42				
A/AC/5%	F	231.34	203.36				
A/AC/5%	G	227.64	202.23				
A/AC/5%	H	223.44	205.51				
A/AC/10%	A	234.07	204.61				
A/AC/10%	B	227.13	203.60				
A/AC/10%	C	219.10	201.27				
A/AC/10%	D	220.39	203.18				
A/AC/10%	E	221.19	201.46				
A/AC/10%	F	230.12	207.35				
A/AC/10%	G	207.3	203.32				
A/AC/10%	H	220.44	203.78				
A/S/3%	A	234.37	203.39	234.36	203.35		
A/S/3%	B	212.2	204.28				
A/S/3%	C	234.17	219.19				
A/S/3%	D	230.68	204.7				

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot River Estuary Phase III Engineering Study
ASSAY: L. plumulosus 28-day Survival, Growth and Reproduction Evaluation
TASK: Dry Weight Data - Balance Output File
BALANCE: Ohaus Discovery Balance Model DV215CD
Serial #: 112402024313

Sample	Rep	Date / Init: 11/29/17 MS		11/15/17 BG		Duplicates	
		Total Wt (mg)	Tare Wt (mg)	Total Wt (mg)	Tare Wt (mg)	Total Wt (mg)	Tare Wt (mg)
A/S/3%	E	223.11	207.46				
A/S/3%	F	239.09	208.03				
A/S/3%	G	229.38	204.38				
A/S/3%	H	230.07	207.33				
A/S/5%	A	219.23	202.9				
A/S/5%	B	215.62	206.65				
A/S/5%	C	215.6	204.4				
A/S/5%	D	213.92	204.57				
A/S/5%	E	222.15	208.29				
A/S/5%	F	219.51	207.08				
A/S/5%	G	216.69	208.46				
A/S/5%	H	224.17	208.08				
A/S/10%	A	206.77	206.67				
A/S/10%	B	204.93	203.69				
A/S/10%	C	230.15	207.85				
A/S/10%	D	208.29	203.4				
A/S/10%	E	216.27	207.93	216.25	207.92		
A/S/10%	F	220.27	202.91				
A/S/10%	G	224.23	209.71				
A/S/10%	H	216.65	206.86				
A/B/3%	A	207.1	206.78				
A/B/3%	B	229.26	208.22				
A/B/3%	C	211.89	203.86				
A/B/3%	D	201.23	201.04				
A/B/3%	E	209.24	204.62				
A/B/3%	F	208.99	203.29				
A/B/3%	G	206.42	205.54				
A/B/3%	H	214.97	201.96				
A/B/5%	A	206.94	203.42				
A/B/5%	B	217.54	205.91				
A/B/5%	C	206.51	204.27				
A/B/5%	D	219.6	207.43				
A/B/5%	E	215.56	203.67				
A/B/5%	F	228.09	212.32				
A/B/5%	G	215.76	200.23				
A/B/5%	H	246.02	218.85				
A/B/10%	A	227.41	202.16	227.39	202.2		
A/B/10%	B	208.03	203.36				
A/B/10%	C	209.52	208.33				
A/B/10%	D	218.01	205.07				
A/B/10%	E	222.15	201.13				
A/B/10%	F	211.88	203.91				
A/B/10%	G	216.79	206.38				
A/B/10%	H	209.28	205.56				

28 day *Leptocheirus plumulosus*
Survival, Growth and Reproduction
Sediment Toxicity Test

CETIS™ Data Worksheet

CETIS Test Data Worksheet

Report Date: 07 Dec-17 09:09 (p 1 of 2)
Test Code/ID: 20-0235-9323/29632Lp

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.		
Start Date: 24 Oct-17 11:00	Species: Leptocheirus plumulosus				Sample Code: 29632-000							
End Date: 21 Nov-17 11:00	Protocol: EPA/600/R-01/020 (2001)				Sample Source: USDC Penobscot, Winterport ME							
Sample Date: 10 Oct-17 11:40	Material: Laboratory Control Sediment				Sample Station: A/L/0% (Lp Lab)							

Sample	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Tare Weight-mg	Pan Count	Neonate Weight-mg	# Offspring	#Females	Total Weight - Females in mg	Tare Weight - Females in mg	Pan Count - Females
29632-000	1	9	20	4	203.32	201.52	4		1	3			
29632-000	2	18	20	16	226.36	201.72	16		128	3			
29632-000	3	24	20	20	239.69	203.17	20		217	11			
29632-000	4	40	20	17	228.65	205.6	17		34	7			
29632-000	5	49	20	19	231.02	204.27	19		87	8			
29632-000	6	59	20	17	228.46	204.08	17		167	12			
29632-000	7	75	20	18	235.98	203.34	18		91	5			
29632-000	8	87	20	19	236.08	203.4	19		68	5			
29632-001	1	4	20	14	212.63	203.32	14		0	3			
29632-001	2	12	20	18	221.7	202.89	18		41	6			
29632-001	3	23	20	17	227.99	203.18	17		27	7			
29632-001	4	41	20	8	217.75	206.58	8		10	1			
29632-001	5	53	20	14	214.86	203.78	14		26	9			
29632-001	6	65	20	18	219.26	203.03	18		15	15			
29632-001	7	71	20	19	230.5	203.47	19		20	6			
29632-001	8	78	20	10	208.89	203.73	10		0	5			
29632-002	1	10	20	19	227.01	203.82	19		26	8			
29632-002	2	16	20	12	214.65	204.5	12		27	5			
29632-002	3	32	20	10	211.5	205.98	10		5	3			
29632-002	4	44	20	17	223.49	203.11	17		39	9			
29632-002	5	50	20	18	230.84	203.79	18		28	7			
29632-002	6	58	20	18	224.82	207.46	18		8	6			
29632-002	7	72	20	12	212.57	203.49	12		5	4			
29632-002	8	84	20	13	213.11	203.49	13		23	7			
29632-003	1	7	20	18	231.64	204.05	18		62	10			
29632-003	2	19	20	18	228.07	203.93	18		23	10			
29632-003	3	30	20	11	210.8	202.64	11		22	5			
29632-003	4	35	20	19	225.08	206.07	19		69	12			
29632-003	5	54	20	19	223.46	203.42	19		36	10			
29632-003	6	60	20	20	231.34	203.36	20		31	8			
29632-003	7	76	20	18	227.64	202.23	18		74	8			
29632-003	8	79	20	15	223.44	205.51	15		16	6			
29632-004	1	2	20	18	234.07	204.61	18		82	8			
29632-004	2	17	20	19	227.13	203.6	19		65	11			
29632-004	3	29	20	18	219.1	201.27	18		47	11			
29632-004	4	39	20	15	220.39	203.18	15		48	8			
29632-004	5	55	20	16	221.19	201.46	16		25	5			
29632-004	6	57	20	18	230.12	207.35	18		44	9			
29632-004	7	74	20	9	207.3	203.32	9		8	8			
29632-004	8	81	20	18	220.44	203.78	18		36	11			
29632-005	1	6	20	20	234.37	203.39	20		59	10			
29632-005	2	14	20	14	212.2	204.28	14		62	9			
29632-005	3	28	20	19	234.17	219.19	19		32	12			

CETIS Test Data Worksheet

Report Date: 07 Dec-17 09:09 (p 2 of 2)
Test Code/ID: 20-0235-9323/29632Lp

Sample	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Tare Weight-mg	Pan Count	Neonate Weight-mg	# Offspring	#Females	Total Weight - Females in mg	Tare Weight - Females in mg	Pan Count - Females
29632-005	4	38	20	20	230.68	204.7	20		73	7			
29632-005	5	47	20	17	223.11	207.46	17		57	10			
29632-005	6	56	20	20	239.09	208.03	20		82	14			
29632-005	7	77	20	20	229.38	204.38	20		70	7			
29632-005	8	86	20	20	230.07	207.33	20		89	13			
29632-006	1	3	20	16	219.23	202.9	16		11	7			
29632-006	2	20	20	12	215.62	206.65	12		8	6			
29632-006	3	25	20	12	215.6	204.4	12		3	5			
29632-006	4	36	20	13	213.92	204.57	13		0	5			
29632-006	5	45	20	19	222.15	208.29	19		10	12			
29632-006	6	62	20	15	219.51	207.08	15		8	6			
29632-006	7	67	20	9	216.69	208.46	9		3	4			
29632-006	8	85	20	18	224.17	208.08	18		11	11			
29632-007	1	1	20	0	206.77	206.67	0		0	0			
29632-007	2	13	20	5	204.93	203.69	5		0	3			
29632-007	3	31	20	20	230.15	207.85	20		57	12			
29632-007	4	43	20	13	208.29	203.4	13		0	9			
29632-007	5	46	20	18	216.27	207.93	18		6	8			
29632-007	6	63	20	19	220.27	202.91	19		10	9			
29632-007	7	70	20	17	224.23	209.71	17		9	11			
29632-007	8	83	20	15	216.65	206.86	15		0	9			
29632-008	1	8	20	1	207.1	206.78	1		0	1			
29632-008	2	15	20	19	229.26	208.22	19		25	10			
29632-008	3	33	20	11	211.89	203.86	11		0	5			
29632-008	4	34	20	1	201.23	201.04	1		0	1			
29632-008	5	52	20	8	209.24	204.62	8		0	6			
29632-008	6	64	20	9	208.99	203.29	9		0	5			
29632-008	7	73	20	3	206.42	205.54	3		0	1			
29632-008	8	82	20	17	214.97	201.96	17		8	10			
29632-009	1	5	20	7	206.94	203.42	7		9	5			
29632-009	2	22	20	15	217.54	205.91	15		8	10			
29632-009	3	27	20	8	206.51	204.27	8		0	6			
29632-009	4	42	20	13	219.6	207.43	13		9	7			
29632-009	5	51	20	17	215.56	203.67	17		31	8			
29632-009	6	66	20	17	228.09	212.32	17		4	7			
29632-009	7	69	20	19	215.76	200.23	19		67	13			
29632-009	8	80	20	18	246.02	218.85	18		39	8			
29632-010	1	11	20	18	227.41	202.16	18		41	6			
29632-010	2	21	20	14	208.03	203.36	14		11	10			
29632-010	3	26	20	5	209.52	208.33	5		1	3			
29632-010	4	37	20	18	218.01	205.07	18		8	9			
29632-010	5	48	20	19	222.15	201.13	19		3	9			
29632-010	6	61	20	15	211.88	203.91	15		7	8			
29632-010	7	68	20	16	216.79	206.38	16		21	9			
29632-010	8	88	20	9	209.28	205.56	9		0	6			

28 day *Leptocheirus plumulosus*
Survival, Growth and Reproduction
Sediment Evaluation

CETIS™ Summary, Ad Hoc Query and
Analytical Reports

Survival Statistical Analysis

CETIS Summary Report

Report Date: 08 Dec-17 12:52 (p 1 of 4)
 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test EnviroSystems, Inc.

Batch ID: 00-1863-2192	Test Type: Leptocheirus (28-d)	Analyst: Nancy Roka
Start Date: 24 Oct-17 11:00	Protocol: EPA/600/R-01/020 (2001)	Diluent: Not Applicable
Ending Date: 21 Nov-17 11:00	Species: Leptocheirus plumulosus	Brine: Not Applicable
Duration: 28d 0h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h		
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)	
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)	
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car	
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car	
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca	
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)	
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)	
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)	
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)	
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)	
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
13-9049-9422	Proportion Survived	Equal Variance t Two-Sample Test	0.2258	29632-001 passed proportion survived
14-2091-1787	Proportion Survived	Equal Variance t Two-Sample Test	0.0299	29632-001 failed proportion survived
03-5176-5721	Proportion Survived	Equal Variance t Two-Sample Test	0.5187	29632-002 passed proportion survived
08-4107-5015	Proportion Survived	Equal Variance t Two-Sample Test	0.2290	29632-002 passed proportion survived
12-3746-2555	Proportion Survived	Equal Variance t Two-Sample Test	0.4813	29632-002 passed proportion survived
15-6158-4239	Proportion Survived	Equal Variance t Two-Sample Test	0.0239	29632-002 failed proportion survived
01-9772-5644	Proportion Survived	Equal Variance t Two-Sample Test	0.9232	29632-003 passed proportion survived
07-7584-7714	Proportion Survived	Equal Variance t Two-Sample Test	0.0768	29632-003 passed proportion survived
08-4709-3774	Proportion Survived	Equal Variance t Two-Sample Test	0.9283	29632-003 passed proportion survived
11-8180-1766	Proportion Survived	Equal Variance t Two-Sample Test	0.3167	29632-003 passed proportion survived
18-7766-4070	Proportion Survived	Equal Variance t Two-Sample Test	0.0717	29632-003 passed proportion survived
15-6274-6959	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.6351	29632-003 passed proportion survived
02-4450-0758	Proportion Survived	Equal Variance t Two-Sample Test	0.2465	29632-004 passed proportion survived
05-6996-7537	Proportion Survived	Equal Variance t Two-Sample Test	0.1089	29632-004 passed proportion survived
05-8212-9296	Proportion Survived	Equal Variance t Two-Sample Test	0.8045	29632-004 passed proportion survived
07-5690-4998	Proportion Survived	Equal Variance t Two-Sample Test	0.8038	29632-004 passed proportion survived
13-0240-4045	Proportion Survived	Equal Variance t Two-Sample Test	0.1955	29632-004 passed proportion survived
13-6599-2105	Proportion Survived	Equal Variance t Two-Sample Test	0.7535	29632-004 passed proportion survived
14-0470-9649	Proportion Survived	Equal Variance t Two-Sample Test	0.1962	29632-004 passed proportion survived
11-9596-7884	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.3229	29632-004 passed proportion survived
01-0264-8333	Proportion Survived	Equal Variance t Two-Sample Test	0.0055	29632-005 failed proportion survived
03-7406-0626	Proportion Survived	Equal Variance t Two-Sample Test	0.9945	29632-005 passed proportion survived
07-0106-4432	Proportion Survived	Equal Variance t Two-Sample Test	0.0072	29632-005 failed proportion survived

CETIS Summary Report

Report Date: 08 Dec-17 12:52 (p 2 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test **EnviroSystems, Inc.**

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
15-2249-0038	Proportion Survived	Equal Variance t Two-Sample Test	0.8483	29632-005 passed proportion survived
19-8031-6410	Proportion Survived	Equal Variance t Two-Sample Test	0.9928	29632-005 passed proportion survived
02-5094-6968	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.9847	29632-005 passed proportion survived
07-5717-8496	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.9445	29632-005 passed proportion survived
10-8380-7687	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0583	29632-005 passed proportion survived
14-8891-1880	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.9517	29632-005 passed proportion survived
15-0551-8724	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0172	29632-005 failed proportion survived
00-5086-0956	Proportion Survived	Equal Variance t Two-Sample Test	0.6458	29632-006 passed proportion survived
03-3174-4329	Proportion Survived	Equal Variance t Two-Sample Test	0.1063	29632-006 passed proportion survived
03-8122-7852	Proportion Survived	Equal Variance t Two-Sample Test	0.0090	29632-006 failed proportion survived
03-8936-9292	Proportion Survived	Equal Variance t Two-Sample Test	0.1492	29632-006 passed proportion survived
05-1617-6931	Proportion Survived	Equal Variance t Two-Sample Test	0.8937	29632-006 passed proportion survived
07-3239-9291	Proportion Survived	Equal Variance t Two-Sample Test	0.0336	29632-006 failed proportion survived
09-9504-3341	Proportion Survived	Equal Variance t Two-Sample Test	0.3542	29632-006 passed proportion survived
10-5908-8332	Proportion Survived	Equal Variance t Two-Sample Test	0.9979	29632-006 passed proportion survived
10-8187-6096	Proportion Survived	Equal Variance t Two-Sample Test	0.9664	29632-006 passed proportion survived
12-5704-2264	Proportion Survived	Equal Variance t Two-Sample Test	0.3800	29632-006 passed proportion survived
16-9716-1128	Proportion Survived	Equal Variance t Two-Sample Test	0.6200	29632-006 passed proportion survived
18-0764-1406	Proportion Survived	Equal Variance t Two-Sample Test	0.0021	29632-006 failed proportion survived
00-0431-1040	Proportion Survived	Equal Variance t Two-Sample Test	0.0942	29632-007 passed proportion survived
03-6228-3700	Proportion Survived	Equal Variance t Two-Sample Test	0.3230	29632-007 passed proportion survived
04-6991-5429	Proportion Survived	Equal Variance t Two-Sample Test	0.6770	29632-007 passed proportion survived
05-7689-2617	Proportion Survived	Equal Variance t Two-Sample Test	0.4043	29632-007 passed proportion survived
08-4433-6088	Proportion Survived	Equal Variance t Two-Sample Test	0.9751	29632-007 passed proportion survived
09-3750-0302	Proportion Survived	Equal Variance t Two-Sample Test	0.5957	29632-007 passed proportion survived
09-6371-0933	Proportion Survived	Equal Variance t Two-Sample Test	0.3369	29632-007 passed proportion survived
10-4399-9046	Proportion Survived	Equal Variance t Two-Sample Test	0.1793	29632-007 passed proportion survived
14-4669-1324	Proportion Survived	Equal Variance t Two-Sample Test	0.0388	29632-007 failed proportion survived
15-7894-8344	Proportion Survived	Equal Variance t Two-Sample Test	0.9058	29632-007 passed proportion survived
17-6465-3227	Proportion Survived	Equal Variance t Two-Sample Test	0.6631	29632-007 passed proportion survived
20-2663-3018	Proportion Survived	Equal Variance t Two-Sample Test	0.8311	29632-007 passed proportion survived
20-3171-1176	Proportion Survived	Equal Variance t Two-Sample Test	0.1689	29632-007 passed proportion survived
20-3476-6603	Proportion Survived	Equal Variance t Two-Sample Test	0.9612	29632-007 passed proportion survived
20-8954-0656	Proportion Survived	Equal Variance t Two-Sample Test	0.0249	29632-007 failed proportion survived
00-3045-9381	Proportion Survived	Equal Variance t Two-Sample Test	0.0345	29632-008 failed proportion survived
01-4407-5286	Proportion Survived	Equal Variance t Two-Sample Test	0.0228	29632-008 failed proportion survived
01-5249-0713	Proportion Survived	Equal Variance t Two-Sample Test	0.0119	29632-008 failed proportion survived
08-4568-8667	Proportion Survived	Equal Variance t Two-Sample Test	0.9968	29632-008 passed proportion survived
09-3007-6047	Proportion Survived	Equal Variance t Two-Sample Test	0.0072	29632-008 failed proportion survived
09-4353-3920	Proportion Survived	Equal Variance t Two-Sample Test	0.9733	29632-008 passed proportion survived
10-0806-3925	Proportion Survived	Equal Variance t Two-Sample Test	5.8E-04	29632-008 failed proportion survived
10-7881-9551	Proportion Survived	Equal Variance t Two-Sample Test	0.8893	29632-008 passed proportion survived
11-5597-6143	Proportion Survived	Equal Variance t Two-Sample Test	0.0032	29632-008 failed proportion survived
12-6466-6502	Proportion Survived	Equal Variance t Two-Sample Test	0.9928	29632-008 passed proportion survived
12-9852-0380	Proportion Survived	Equal Variance t Two-Sample Test	0.9655	29632-008 passed proportion survived
14-0950-8216	Proportion Survived	Equal Variance t Two-Sample Test	0.0267	29632-008 failed proportion survived
14-4781-6360	Proportion Survived	Equal Variance t Two-Sample Test	0.9994	29632-008 passed proportion survived
16-5875-3837	Proportion Survived	Equal Variance t Two-Sample Test	0.9772	29632-008 passed proportion survived
19-1804-2918	Proportion Survived	Equal Variance t Two-Sample Test	0.1107	29632-008 passed proportion survived
03-3946-0717	Proportion Survived	Equal Variance t Two-Sample Test	0.4119	29632-009 passed proportion survived
04-5337-4809	Proportion Survived	Equal Variance t Two-Sample Test	0.8503	29632-009 passed proportion survived
05-2923-5617	Proportion Survived	Equal Variance t Two-Sample Test	0.9604	29632-009 passed proportion survived
05-4017-9244	Proportion Survived	Equal Variance t Two-Sample Test	0.1497	29632-009 passed proportion survived

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test **EnviroSystems, Inc.**

Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
05-6323-0340	Proportion Survived	Equal Variance t Two-Sample Test	0.3908	29632-009 passed proportion survived
07-7083-5347	Proportion Survived	Equal Variance t Two-Sample Test	0.9412	29632-009 passed proportion survived
07-8196-4588	Proportion Survived	Equal Variance t Two-Sample Test	0.5881	29632-009 passed proportion survived
10-0940-8008	Proportion Survived	Equal Variance t Two-Sample Test	0.6037	29632-009 passed proportion survived
10-9271-3204	Proportion Survived	Equal Variance t Two-Sample Test	0.6092	29632-009 passed proportion survived
10-9336-9085	Proportion Survived	Equal Variance t Two-Sample Test	0.9939	29632-009 passed proportion survived
12-4126-3670	Proportion Survived	Equal Variance t Two-Sample Test	0.0588	29632-009 passed proportion survived
13-4736-5380	Proportion Survived	Equal Variance t Two-Sample Test	0.0061	29632-009 failed proportion survived
14-8388-9336	Proportion Survived	Equal Variance t Two-Sample Test	0.1805	29632-009 passed proportion survived
17-0938-5627	Proportion Survived	Equal Variance t Two-Sample Test	0.3963	29632-009 passed proportion survived
19-9096-0908	Proportion Survived	Equal Variance t Two-Sample Test	0.0396	29632-009 failed proportion survived
20-0479-8664	Proportion Survived	Equal Variance t Two-Sample Test	0.4793	29632-009 passed proportion survived
21-3340-8998	Proportion Survived	Equal Variance t Two-Sample Test	0.5207	29632-009 passed proportion survived
01-7968-6275	Proportion Survived	Equal Variance t Two-Sample Test	0.3971	29632-010 passed proportion survived
02-4008-9498	Proportion Survived	Equal Variance t Two-Sample Test	0.6029	29632-010 passed proportion survived
04-3472-6492	Proportion Survived	Equal Variance t Two-Sample Test	0.8382	29632-010 passed proportion survived
04-3711-7331	Proportion Survived	Equal Variance t Two-Sample Test	0.1618	29632-010 passed proportion survived
04-8406-1604	Proportion Survived	Equal Variance t Two-Sample Test	0.5830	29632-010 passed proportion survived
07-8597-9680	Proportion Survived	Equal Variance t Two-Sample Test	0.0674	29632-010 passed proportion survived
13-0029-6180	Proportion Survived	Equal Variance t Two-Sample Test	0.0422	29632-010 failed proportion survived
13-0906-1508	Proportion Survived	Equal Variance t Two-Sample Test	0.0081	29632-010 failed proportion survived
14-2106-0825	Proportion Survived	Equal Variance t Two-Sample Test	0.4170	29632-010 passed proportion survived
17-4972-3761	Proportion Survived	Equal Variance t Two-Sample Test	0.9578	29632-010 passed proportion survived
17-9837-8096	Proportion Survived	Equal Variance t Two-Sample Test	0.9326	29632-010 passed proportion survived
18-0035-8203	Proportion Survived	Equal Variance t Two-Sample Test	0.5017	29632-010 passed proportion survived
18-8851-8614	Proportion Survived	Equal Variance t Two-Sample Test	0.4784	29632-010 passed proportion survived
19-2306-3696	Proportion Survived	Equal Variance t Two-Sample Test	0.9919	29632-010 passed proportion survived
19-8672-4863	Proportion Survived	Equal Variance t Two-Sample Test	0.6030	29632-010 passed proportion survived
19-9748-2114	Proportion Survived	Equal Variance t Two-Sample Test	0.4983	29632-010 passed proportion survived
20-4726-2571	Proportion Survived	Equal Variance t Two-Sample Test	0.5216	29632-010 passed proportion survived
20-5052-0065	Proportion Survived	Equal Variance t Two-Sample Test	0.1887	29632-010 passed proportion survived
21-0029-0772	Proportion Survived	Equal Variance t Two-Sample Test	0.3970	29632-010 passed proportion survived

Test Acceptability							
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
01-5249-0713	Proportion Survived	Control Resp	0.812	0.8	>>	Yes	Passes Criteria
03-8122-7852	Proportion Survived	Control Resp	0.9	0.8	>>	Yes	Passes Criteria
03-8936-9292	Proportion Survived	Control Resp	0.812	0.8	>>	Yes	Passes Criteria
05-6996-7537	Proportion Survived	Control Resp	0.9	0.8	>>	Yes	Passes Criteria
08-4107-5015	Proportion Survived	Control Resp	0.812	0.8	>>	Yes	Passes Criteria
10-4399-9046	Proportion Survived	Control Resp	0.812	0.8	>>	Yes	Passes Criteria
11-8180-1766	Proportion Survived	Control Resp	0.9	0.8	>>	Yes	Passes Criteria
11-9596-7884	Proportion Survived	Control Resp	0.812	0.8	>>	Yes	Passes Criteria
13-9049-9422	Proportion Survived	Control Resp	0.812	0.8	>>	Yes	Passes Criteria
14-2091-1787	Proportion Survived	Control Resp	0.9	0.8	>>	Yes	Passes Criteria
14-8388-9336	Proportion Survived	Control Resp	0.812	0.8	>>	Yes	Passes Criteria
14-8891-1880	Proportion Survived	Control Resp	0.812	0.8	>>	Yes	Passes Criteria
15-2249-0038	Proportion Survived	Control Resp	0.9	0.8	>>	Yes	Passes Criteria
15-6158-4239	Proportion Survived	Control Resp	0.9	0.8	>>	Yes	Passes Criteria
15-6274-6959	Proportion Survived	Control Resp	0.812	0.8	>>	Yes	Passes Criteria
20-5052-0065	Proportion Survived	Control Resp	0.812	0.8	>>	Yes	Passes Criteria

CETIS Summary Report

Report Date: 08 Dec-17 12:52 (p 4 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test											EnviroSystems, Inc.
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29632-000	LC	8	0.812	0.598	1.000	0.200	1.000	0.091	0.256	31.51%	0.00%
29632-001	N	8	0.738	0.569	0.906	0.400	0.950	0.071	0.201	27.30%	9.23%
29632-002		8	0.744	0.598	0.889	0.500	0.950	0.062	0.174	23.41%	8.46%
29632-003		8	0.862	0.741	0.984	0.550	1.000	0.052	0.146	16.90%	-6.15%
29632-004		8	0.819	0.683	0.955	0.450	0.950	0.057	0.162	19.84%	-0.77%
29632-005		8	0.938	0.846	1.000	0.700	1.000	0.039	0.109	11.67%	-15.38%
29632-006		8	0.712	0.572	0.853	0.450	0.950	0.060	0.169	23.65%	12.31%
29632-007		8	0.669	0.368	0.969	0.000	1.000	0.127	0.360	53.76%	17.69%
29632-008		8	0.431	0.143	0.719	0.050	0.950	0.122	0.344	79.83%	46.92%
29632-009		8	0.712	0.522	0.903	0.350	0.950	0.081	0.228	31.99%	12.31%
29632-010		8	0.712	0.508	0.917	0.250	0.950	0.087	0.245	34.33%	12.31%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.200	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

Endpoint: Survival

Analysis ID	Station	Method	Sample Code	Code 1	Tails	Sample Code	Code 2	Statistic	Critical	P Level	Alpha	Reject Null	MSD	DF	Ties	P-Type
1009408008	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-007		C > T	29632-009		-0.268055	1.76131	0.603717	0.05	FALSE	0.3256383	14		C
1986724863	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-007		C > T	29632-010		-0.2661436	1.76131	0.6029959	0.05	FALSE	0.3317449	14		C
1990960908	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-008		C < T	29632-009		1.893762	1.76131	0.03955386	0.05	TRUE	0.3046657	14		C
1300296180	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-008		C < T	29632-010		1.857315	1.76131	0.0422131	0.05	TRUE	0.3111841	14		C
529235617	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-008		C > T	29632-009		-1.893762	1.76131	0.9604461	0.05	FALSE	0.3046657	14		C
1749723761	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-008		C > T	29632-010		-1.857315	1.76131	0.9577869	0.05	FALSE	0.3111841	14		C
1997482114	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-009		C < T	29632-010		0.004218114	1.76131	0.498347	0.05	FALSE	0.237745	14		C
1800358203	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-009		C > T	29632-010		-0.004218114	1.76131	0.501653	0.05	FALSE	0.237745	14		C

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 1 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-9049-9422		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-001 passed proportion survived				21.64%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Negative Control	0.775	1.76	0.241	14	CDF	0.2258	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.65	2.59	0.0344	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0447808	0.0447808	1	0.6	0.4515	Non-Significant Effect					
Error	1.04509	0.0746494	14								
Total	1.08987		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.67	8.89	0.5147	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.873	0.841	0.0300	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	0.813	0.598	1.000		0.200	1.000	0.091	31.51%	0.00%
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	9.23%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.16	0.909	1.42		0.464	1.46	0.108	26.24%	0.00%
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	9.09%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.200	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-001	N										

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 2 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-2091-1787		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	07 Dec-17 11:27		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-001 failed proportion survived				12.86%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Negative Control*	2.06	1.77	0.177	13	CDF	0.0299	Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.158301	0.158301	1	4.25	0.0598	Non-Significant Effect					
Error	0.483855	0.0372196	13								
Total	0.642156										
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	3.63	10.8	0.1375	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.961	0.833	0.7056	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	0.900	0.835	0.965		0.800	1.000	0.027	7.86%	0.00%
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	18.06%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	1.26	1.15	1.38		1.11	1.46	0.0469	9.82%	0.00%
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	16.28%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	Outlier	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-001	N										

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 3 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-4107-5015		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C > T	29632-002 passed proportion survived					20.61%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-002	0.763	1.76	0.232	14	CDF	0.2290	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.76	2.59	0.0190	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.04036	0.04036	1	0.582	0.4580	Non-Significant Effect					
Error	0.970111	0.0692936	14								
Total	1.01047		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.07	8.89	0.3591	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.882	0.841	0.0420	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	0.813	0.598	1.000		0.200	1.000	0.091	31.51%	0.00%
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	8.46%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.16	0.909	1.42		0.464	1.46	0.108	26.24%	0.00%
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	8.63%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.200	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-002											

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 4 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	15-6158-4239		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	07 Dec-17 11:27		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-002 failed proportion survived				11.57%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-002*	2.19	1.77	0.163	13	CDF	0.0239	Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.15017	0.15017	1	4.77	0.0478	Significant Effect					
Error	0.408874	0.0314519	13								
Total	0.559044		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.93	10.8	0.2111	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.942	0.833	0.4127	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	0.900	0.835	0.965		0.800	1.000	0.027	7.86%	0.00%
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	17.36%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	1.26	1.15	1.38		1.11	1.46	0.0469	9.82%	0.00%
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	15.86%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	Outlier	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-002											

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 5 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test											EnviroSystems, Inc.	
Analysis ID: 15-6274-6959		Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Nonparametric-Two Sample				Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project						
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm						
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h								
Sample Code	Material Type	Sample Source	Station Location	Lat/Long								
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)									
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car)									
Data Transform	Alt Hyp	Comparison Result							PMSD			
Angular (Corrected)	C > T	29632-003 passed proportion survived							19.93%			
Wilcoxon Rank Sum Two-Sample Test												
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)			
Lab Control Sedime		29632-003	71	n/a	3	14	Exact	0.6351	Non-Significant Effect			
Auxiliary Tests												
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)							
Extreme Value	Grubbs Extreme Value Test	2.83	2.59	0.0120	Outlier Detected							
ANOVA Table												
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)						
Between	0.0134433	0.0134433	1	0.204	0.6584	Non-Significant Effect						
Error	0.922329	0.0658807	14									
Total	0.935773		15									
Distributional Tests												
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)							
Variances	Variance Ratio F Test	2.43	8.89	0.2634	Equal Variances							
Distribution	Shapiro-Wilk W Normality Test	0.831	0.841	0.0073	Non-Normal Distribution							
Proportion Survived Summary												
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
29632-000	LC	8	0.813	0.598	1.000		0.200	1.000	0.091	31.51%	0.00%	
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	-6.15%	
Angular (Corrected) Transformed Summary												
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
29632-000	LC	8	1.16	0.909	1.42		0.464	1.46	0.108	26.24%	0.00%	
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	-4.98%	
Proportion Survived Detail												
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
29632-000	LC	0.200	0.800	1.000	0.850	0.950	0.850	0.900	0.950			
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750			
Angular (Corrected) Transformed Detail												
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
29632-000	LC											
29632-003												

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 11-9596-7884		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca)								
Data Transform	Alt Hyp	Comparison Result						PMSD			
Angular (Corrected)	C > T	29632-004 passed proportion survived						19.82%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-004	63.5	n/a	3	14	Exact	0.3229	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.84	2.59	0.0111	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0004435	0.0004435	1	0.00678	0.9355	Non-Significant Effect					
Error	0.915355	0.0653825	14								
Total	0.915799		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.5	8.89	0.2500	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.803	0.841	0.0030	Non-Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	0.813	0.598	1.000		0.200	1.000	0.091	31.51%	0.00%
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	-0.77%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.16	0.909	1.42		0.464	1.46	0.108	26.24%	0.00%
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.90%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.200	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-004											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-6996-7537		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C > T	29632-004 passed proportion survived					10.57%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-004	1.3	1.77	0.151	13	CDF	0.1089	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0457002	0.0457002	1	1.68	0.2178	Non-Significant Effect					
Error	0.354119	0.0272399	13								
Total	0.399819		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.42	10.8	0.3006	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.88	0.833	0.0477	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	0.900	0.835	0.965		0.800	1.000	0.027	7.86%	0.00%
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	9.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	1.26	1.15	1.38		1.11	1.46	0.0469	9.82%	0.00%
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	8.75%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	Outlier	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-004											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-8891-1880		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	07 Dec-17 11:27		Analysis:	Nonparametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-005 passed proportion survived				19.21%					
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-005	83.5	n/a	3	14	Exact	0.9517	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.9	2.59	0.0068	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.138378	0.138378	1	2.22	0.1585	Non-Significant Effect					
Error	0.872959	0.0623542	14								
Total	1.01134	15									
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.98	8.89	0.1727	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.801	0.841	0.0028	Non-Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	0.813	0.598	1.000		0.200	1.000	0.091	31.51%	0.00%
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	-15.38%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.16	0.909	1.42		0.464	1.46	0.108	26.24%	0.00%
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	-15.97%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.200	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-005											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	15-2249-0038		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	07 Dec-17 11:28		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-005 passed proportion survived				9.75%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-005	-1.07	1.77	0.142	13	CDF	0.8483	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0275385	0.0275385	1	1.15	0.3034	Non-Significant Effect					
Error	0.311722	0.0239786	13								
Total	0.33926	14									
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.03	10.8	0.4062	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.884	0.833	0.0546	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	0.900	0.835	0.965	0.800	1.000	0.027	7.86%	0.00%	
29632-005		8	0.938	0.846	1.000	0.700	1.000	0.039	11.67%	-4.17%	
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	1.26	1.15	1.38	1.11	1.46	0.0469	9.82%	0.00%	
29632-005		8	1.35	1.2	1.5	0.991	1.46	0.0626	13.10%	-6.79%	
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	Outlier	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-005											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-8936-9292		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-006 passed proportion survived				20.23%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-006	1.08	1.76	0.229	14	CDF	0.1492	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.79	2.59	0.0149	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0786063		0.0786063	1	1.17	0.2985	Non-Significant Effect				
Error	0.943877		0.0674198	14							
Total	1.02248			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.25	8.89	0.3059	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.896	0.841	0.0692	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	0.813	0.598	1.000		0.200	1.000	0.091	31.51%	0.00%
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	12.31%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.16	0.909	1.42		0.464	1.46	0.108	26.24%	0.00%
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	12.04%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.200	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-006											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-4399-9046		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-007 passed proportion survived				33.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-007	0.949	1.76	0.341	14	CDF	0.1793	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.33	2.59	0.1663	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.134799		0.134799		1	0.901	0.3586	Non-Significant Effect			
Error	2.094		0.149572		14						
Total	2.2288				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.2	8.89	0.3192	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.865	0.841	0.0229	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	0.813	0.598	1.000		0.200	1.000	0.091	31.51%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	17.69%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.16	0.909	1.42		0.464	1.46	0.108	26.24%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	15.77%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.200	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-007											

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 12 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-5249-0713		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29632-008 failed proportion survived					31.29%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-008*	2.54	1.76	0.321	14	CDF	0.0119	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.99	2.59	0.5467	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.85227		0.85227	1	6.43	0.0238	Significant Effect				
Error	1.85538		0.132527	14							
Total	2.70765			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.84	8.89	0.4404	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.959	0.841	0.6514	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	0.813	0.598	1.000		0.200	1.000	0.091	31.51%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	46.92%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.16	0.909	1.42		0.464	1.46	0.108	26.24%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	39.64%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.200	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-008											

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 13 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-8388-9336		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	07 Dec-17 11:28		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-009 passed proportion survived				22.75%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-009	0.944	1.76	0.25	14	CDF	0.1805	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.56	2.59	0.0583	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0718407	0.0718407	1	0.892	0.3610	Non-Significant Effect					
Error	1.12766	0.0805473	14								
Total	1.1995	15									
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.38	8.89	0.6820	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.875	0.841	0.0330	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	0.813	0.598	1.000		0.200	1.000	0.091	31.51%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	12.31%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.16	0.909	1.42		0.464	1.46	0.108	26.24%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	11.51%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.200	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-009											

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Report Date: 08 Dec-17 12:51 (p 14 of 104)
 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	20-5052-0065	Endpoint:	Proportion Survived		CETIS Version:	CETISv1.9.3					
Analyzed:	07 Dec-17 11:28	Analysis:	Parametric-Two Sample		Official Results:	Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-010 passed proportion survived				23.69%					
Equal Variance t Two-Sample Test											
Sample I	vs Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)			
Lab Control Sedime	29632-010	0.912	1.76	0.258	14	CDF	0.1887	Non-Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.48	2.59	0.0854	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0712316	0.0712316	1	0.831	0.3774	Non-Significant Effect					
Error	1.20013	0.0857234	14								
Total	1.27136		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.2	8.89	0.8190	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.858	0.841	0.0181	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	0.813	0.598	1.000		0.200	1.000	0.091	31.51%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	12.31%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.16	0.909	1.42		0.464	1.46	0.108	26.24%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	11.46%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.200	0.800	1.000	0.850	0.950	0.850	0.900	0.950		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC										
29632-010											

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 15 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-5176-5721		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29632-002 passed proportion survived			22.04%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-002	-0.0477	1.76	0.198	14	CDF	0.5187	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.72	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0001148		0.0001148	1	0.00227	0.9627	Non-Significant Effect				
Error	0.707738		0.0505527	14							
Total	0.707853			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	8.89	0.7862	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.915	0.841	0.1388	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	-0.85%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	-0.51%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-002											

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 16 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-9772-5644		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-003 passed proportion survived				21.13%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-003	-1.51	1.76	0.191	14	CDF	0.9232	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.84	2.59	0.8472	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.107295		0.107295	1	2.28	0.1536	Non-Significant Effect				
Error	0.659957		0.0471398	14							
Total	0.767252			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.46	8.89	0.6318	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.924	0.841	0.1978	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	-16.95%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	-15.47%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-003											

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 17 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-5690-4998		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-004 passed proportion survived				21.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-004	-0.882	1.76	0.19	14	CDF	0.8038	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.01	2.59	0.5238	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0363117		0.0363117	1	0.779	0.3925	Non-Significant Effect				
Error	0.652982		0.0466416	14							
Total	0.689294			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.5	8.89	0.6083	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.904	0.841	0.0918	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	-11.02%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	-9.00%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-004											

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 18 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	19-8031-6410		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	07 Dec-17 11:29		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C > T	29632-005 passed proportion survived					20.16%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-005	-2.79	1.76	0.184	14	CDF	0.9928	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.85	2.59	0.8270	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.340597	0.340597	1	7.81	0.0143	Significant Effect					
Error	0.610586	0.0436133	14								
Total	0.951183		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.79	8.89	0.4624	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.892	0.841	0.0606	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	-27.12%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	-27.56%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-005											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	12-5704-2264	Endpoint:	Proportion Survived		CETIS Version:	CETISv1.9.3					
Analyzed:	07 Dec-17 11:29	Analysis:	Parametric-Two Sample		Official Results:	Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-006 passed proportion survived				21.55%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-006	0.312	1.76	0.194	14	CDF	0.3800	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.75	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0047270	0.0047270	1	0.0971	0.7599	Non-Significant Effect					
Error	0.681504	0.0486788	14								
Total	0.686231		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.35	8.89	0.7030	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.959	0.841	0.6446	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	3.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	3.25%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-006											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-6371-0933		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-007 passed proportion survived				38.34%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-007	0.43	1.76	0.319	14	CDF	0.3369	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.49	2.59	0.0819	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0241911		0.0241911	1	0.185	0.6737	Non-Significant Effect				
Error	1.83163		0.130831	14							
Total	1.85582			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.68	8.89	0.1071	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.924	0.841	0.1968	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	9.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	7.35%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-007											

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 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-0950-8216	Endpoint:	Proportion Survived		CETIS Version:	CETISv1.9.3					
Analyzed:	07 Dec-17 11:29	Analysis:	Parametric-Two Sample		Official Results:	Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-008 failed proportion survived				35.44%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-008*	2.11	1.76	0.297	14	CDF	0.0267	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.97	2.59	0.5837	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.506332	0.506332	1	4.45	0.0534	Non-Significant Effect					
Error	1.593	0.113786	14								
Total	2.09933		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	3.07	8.89	0.1620	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.965	0.841	0.7454	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	41.53%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	33.61%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-008											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-3946-0717		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29632-009 passed proportion survived			24.86%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-009	0.227	1.76	0.219	14	CDF	0.4119	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.65	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0031828		0.0031828	1	0.0515	0.8238	Non-Significant Effect				
Error	0.865289		0.0618064	14							
Total	0.868472			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.21	8.89	0.8071	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.907	0.841	0.1055	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	3.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	2.66%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-009											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-2106-0825		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	07 Dec-17 11:29		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-010 passed proportion survived				26.07%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-010	0.214	1.76	0.228	14	CDF	0.4170	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.03	2.59	0.4867	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0030556	0.0030556	1	0.0456	0.8340	Non-Significant Effect					
Error	0.937755	0.0669825	14								
Total	0.940811		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.4	8.89	0.6708	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.925	0.841	0.1998	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	3.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	2.61%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-010											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	12-3746-2555		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:24		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C < T	29632-002 passed proportion survived					22.64%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-002	0.0477	1.76	0.198	14	CDF	0.4813	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.72	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0001148	0.0001148	1	0.00227	0.9627	Non-Significant Effect					
Error	0.707738	0.0505527	14								
Total	0.707853	15									
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.24	8.89	0.7862	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.915	0.841	0.1388	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	-0.85%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	-0.51%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-002											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-4709-3774		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:24		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-003 passed proportion survived				19.61%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-003	-1.55	1.76	0.18	14	CDF	0.9283	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.96	2.59	0.6060	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.10039		0.10039	1	2.4	0.1434	Non-Significant Effect				
Error	0.584976		0.041784	14							
Total	0.685366			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.18	8.89	0.8345	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.942	0.841	0.3729	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	-15.97%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	-14.89%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-003											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-8212-9296		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:24		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-004 passed proportion survived				19.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-004	-0.885	1.76	0.179	14	CDF	0.8045	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.13	2.59	0.3446	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0323423		0.0323423	1	0.783	0.3911	Non-Significant Effect				
Error	0.578002		0.0412858	14							
Total	0.610344			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.21	8.89	0.8085	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.93	0.841	0.2436	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	-10.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	-8.45%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-004											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-7406-0626		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29632-005 passed proportion survived			18.59%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-005	-2.93	1.76	0.172	14	CDF	0.9945	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.59	0.7205	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.328203		0.328203	1	8.58	0.0110	Significant Effect				
Error	0.535605		0.0382575	14							
Total	0.863808			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.44	8.89	0.6405	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.903	0.841	0.0882	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	-26.05%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	-26.92%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-005											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-9504-3341		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29632-006 passed proportion survived					20.04%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-006	0.382	1.76	0.183	14	CDF	0.3542	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.6	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0063155		0.0063155	1	0.146	0.7083	Non-Significant Effect				
Error	0.606523		0.0433231	14							
Total	0.612839			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.09	8.89	0.9120	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.929	0.841	0.2378	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	4.20%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	3.73%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-006											

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 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-6228-3700		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-007 passed proportion survived				37.26%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-007	0.469	1.76	0.312	14	CDF	0.3230	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.54	2.59	0.0635	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0276395		0.0276395		1	0.22	0.6461	Non-Significant Effect			
Error	1.75665		0.125475		14						
Total	1.78429				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.55	8.89	0.0635	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.93	0.841	0.2445	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	10.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	7.81%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-007											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-4407-5286		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-008 failed proportion survived				34.31%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-008*	2.19	1.76	0.29	14	CDF	0.0228	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.02	2.59	0.5021	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.521698		0.521698	1	4.81	0.0457	Significant Effect				
Error	1.51802		0.10843	14							
Total	2.03972			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.8	8.89	0.0993	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.972	0.841	0.8646	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	42.02%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	33.94%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-008											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-6323-0340		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-009 passed proportion survived				23.48%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-009	0.283	1.76	0.209	14	CDF	0.3908	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.73	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0045069		0.0045069	1	0.0798	0.7817	Non-Significant Effect				
Error	0.790309		0.0564506	14							
Total	0.794816			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.5	8.89	0.6071	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.93	0.841	0.2474	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	4.20%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	3.15%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-009											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-7968-6275		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29632-010 passed proportion survived					24.73%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-010	0.266	1.76	0.219	14	CDF	0.3971	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.12	2.59	0.3652	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0043553		0.0043553	1	0.0707	0.7942	Non-Significant Effect				
Error	0.862775		0.0616268	14							
Total	0.86713			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.73	8.89	0.4880	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.941	0.841	0.3632	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	4.20%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	3.10%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-7584-7714	Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:25	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29632-003 passed proportion survived				22.10%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-003	1.51	1.76	0.191	14	CDF	0.0768	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.84	2.59	0.8472	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.107295	0.107295	1	2.28	0.1536	Non-Significant Effect					
Error	0.659957	0.0471398	14								
Total	0.767252		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.46	8.89	0.6318	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.924	0.841	0.1978	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	-16.95%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	-15.47%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-003											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	18-7766-4070		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:26		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29632-003 passed proportion survived				20.60%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-003	1.55	1.76	0.18	14	CDF	0.0717	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.96	2.59	0.6060	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.10039	0.10039	1	2.4	0.1434	Non-Significant Effect					
Error	0.584976	0.041784	14								
Total	0.685366		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.18	8.89	0.8345	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.942	0.841	0.3729	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	-15.97%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	-14.89%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-003											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-4450-0758		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-004 passed proportion survived				12.66%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-004	0.704	1.76	0.171	14	CDF	0.2465	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.23	2.59	0.2452	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.01877		0.01877	1	0.496	0.4930	Non-Significant Effect				
Error	0.530221		0.0378729	14							
Total	0.548991			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.03	8.89	0.9732	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.857	0.841	0.0171	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	5.07%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	5.60%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-004											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-5717-8496		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-005 passed proportion survived				11.97%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-005	82.5	n/a	2	14	Exact	0.9445	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.15	2.59	0.3291	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0655601	0.0655601	1	1.88	0.1917	Non-Significant Effect					
Error	0.487824	0.0348446	14								
Total	0.553384		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.23	8.89	0.7956	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.828	0.841	0.0066	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	-8.70%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	-10.47%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-005											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-3239-9291		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-006 failed proportion survived				13.12%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-006*	1.98	1.76	0.176	14	CDF	0.0336	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2	2.59	0.5262	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.157064		0.157064	1	3.94	0.0672	Non-Significant Effect				
Error	0.558742		0.0399101	14							
Total	0.715806			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.08	8.89	0.9215	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8822	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	17.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	16.21%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-006											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-0431-1040		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29632-007 passed proportion survived					27.20%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-007	1.38	1.76	0.308	14	CDF	0.0942	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.57	2.59	0.0531	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.23338		0.23338	1	1.91	0.1884	Non-Significant Effect				
Error	1.70887		0.122062	14							
Total	1.94225			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.36	8.89	0.0415	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.909	0.841	0.1124	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	22.46%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	19.76%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-007											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	11-5597-6143		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:26		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-008 failed proportion survived				24.72%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-008*	3.21	1.76	0.285	14	CDF	0.0032	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.05	2.59	0.4519	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.07979	1.07979	1	10.3	0.0063	Significant Effect					
Error	1.47024	0.105017	14								
Total	2.55003		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	4.47	8.89	0.0664	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.943	0.841	0.3910	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	50.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	42.50%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-008											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	12-4126-3670		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:26		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C > T	29632-009 passed proportion survived					15.86%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-009	1.67	1.76	0.203	14	CDF	0.0588	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.79	2.59	0.9952	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.147438	0.147438	1	2.78	0.1177	Non-Significant Effect					
Error	0.742527	0.0530377	14								
Total	0.889965		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.76	8.89	0.4713	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.904	0.841	0.0944	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	17.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	15.71%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-8597-9680		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-010 passed proportion survived				16.86%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-010	1.59	1.76	0.212	14	CDF	0.0674	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.18	2.59	0.2944	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.146565		0.146565	1	2.52	0.1349	Non-Significant Effect				
Error	0.814994		0.0582138	14							
Total	0.961558			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.03	8.89	0.3694	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.915	0.841	0.1389	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	17.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	15.66%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 14-0470-9649		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca)							
Data Transform	Alt Hyp		Comparison Result					PMSD			
Angular (Corrected)	C < T		29632-004 passed proportion survived					22.01%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-004	0.882	1.76	0.19	14	CDF	0.1962	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.01	2.59	0.5238	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0363117		0.0363117	1	0.779	0.3925	Non-Significant Effect				
Error	0.652982		0.0466416	14							
Total	0.689294			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.5	8.89	0.6083	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.904	0.841	0.0918	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	-11.02%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	-9.00%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-004											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-0240-4045		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29632-004 passed proportion survived			20.51%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-004	0.885	1.76	0.179	14	CDF	0.1955	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.13	2.59	0.3446	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0323423		0.0323423	1	0.783	0.3911	Non-Significant Effect				
Error	0.578002		0.0412858	14							
Total	0.610344			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.21	8.89	0.8085	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.93	0.841	0.2436	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	-10.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	-8.45%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-004											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-6599-2105		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29632-004 passed proportion survived				12.35%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-004	-0.704	1.76	0.171	14	CDF	0.7535	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.23	2.59	0.2452	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.01877		0.01877	1	0.496	0.4930	Non-Significant Effect				
Error	0.530221		0.0378729	14							
Total	0.548991			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.03	8.89	0.9732	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.857	0.841	0.0171	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	5.07%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	5.60%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-004											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 02-5094-6968		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp		Comparison Result					PMSD			
Angular (Corrected)	C > T		29632-005 passed proportion survived					14.56%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-005	87.5	n/a	1	14	Exact	0.9847	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.34	2.59	0.1579	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.154489	0.154489	1	4.5	0.0523	Non-Significant Effect					
Error	0.48085	0.0343464	14								
Total	0.635339		15								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.19	8.89	0.8215	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.773	0.841	0.0012	Non-Normal Distribution					
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	-14.50%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	-17.03%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-005											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-3174-4329		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Angular (Corrected)	C > T	29632-006 passed proportion survived	15.87%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-006	1.31	1.76	0.175	14	CDF	0.1063	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.18	2.59	0.2884	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0672415	0.0672415	1	1.71	0.2125	Non-Significant Effect					
Error	0.551768	0.039412	14								
Total	0.619009		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.11	8.89	0.8949	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.962	0.841	0.6917	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	12.98%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	11.24%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-006											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-3171-1176		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29632-007 passed proportion survived					31.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-007	0.993	1.76	0.307	14	CDF	0.1689	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.58	2.59	0.0517	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.119779		0.119779	1	0.985	0.3377	Non-Significant Effect				
Error	1.70189		0.121564	14							
Total	1.82167			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.51	8.89	0.0387	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.892	0.841	0.0607	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	18.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	15.00%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-007											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-3007-6047	Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:27	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform		Alt Hyp		Comparison Result		PMSD					
Angular (Corrected)		C > T		29632-008 failed proportion survived		28.75%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-008*	2.79	1.76	0.285	14	CDF	0.0072	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.06	2.59	0.4447	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.813832	0.813832	1	7.79	0.0145	Significant Effect					
Error	1.46327	0.104519	14								
Total	2.2771		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.59	8.89	0.0621	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.932	0.841	0.2661	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	47.33%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	39.09%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-008											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-4017-9244		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29632-009 passed proportion survived					18.95%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-009	1.08	1.76	0.202	14	CDF	0.1497	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.89	2.59	0.7439	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0609956		0.0609956	1	1.16	0.2995	Non-Significant Effect				
Error	0.735553		0.0525395	14							
Total	0.796549			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.81	8.89	0.4513	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.892	0.841	0.0608	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	12.98%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	10.70%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-3711-7331		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-010 passed proportion survived				20.08%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-010	1.02	1.76	0.212	14	CDF	0.1618	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.19	2.59	0.2846	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0604344		0.0604344		1	1.05	0.3235	Non-Significant Effect			
Error	0.808019		0.0577157		14						
Total	0.868454				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.09	8.89	0.3523	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.897	0.841	0.0720	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	12.98%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	10.65%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-0106-4432		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29632-005 failed proportion survived			21.50%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-005*	2.79	1.76	0.184	14	CDF	0.0072	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.85	2.59	0.8270	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.340597		0.340597	1	7.81	0.0143	Significant Effect				
Error	0.610586		0.0436133	14							
Total	0.951183			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.79	8.89	0.4624	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.892	0.841	0.0606	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	-27.12%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	-27.56%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-005											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-0264-8333		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29632-005 failed proportion survived			19.96%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-005*	2.93	1.76	0.172	14	CDF	0.0055	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.59	0.7205	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.328203		0.328203	1	8.58	0.0110	Significant Effect				
Error	0.535605		0.0382575	14							
Total	0.863808			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.44	8.89	0.6405	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.903	0.841	0.0882	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	-26.05%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	-26.92%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-005											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 10-8380-7687		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C < T	29632-005 passed proportion survived					12.06%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-005	53.5	n/a	2	14	Exact	0.0583	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.15	2.59	0.3291	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0655601	0.0655601	1	1.88	0.1917	Non-Significant Effect					
Error	0.487824	0.0348446	14								
Total	0.553384		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.23	8.89	0.7956	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.828	0.841	0.0066	Non-Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	-8.70%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	-10.47%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-005											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 15-0551-8724		Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3					
Analyzed: 08 Dec-17 12:28		Analysis: Nonparametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29632-005 failed proportion survived				14.44%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-005*	48.5	n/a	1	14	Exact	0.0172	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.34	2.59	0.1579	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.154489	0.154489	1	4.5	0.0523	Non-Significant Effect					
Error	0.48085	0.0343464	14								
Total	0.635339		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.19	8.89	0.8215	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.773	0.841	0.0012	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	-14.50%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	-17.03%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-005											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	18-0764-1406		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:28		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-006 failed proportion survived				8.63%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-006*	3.42	1.76	0.168	14	CDF	0.0021	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.95	2.59	0.6240	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.425574	0.425574	1	11.7	0.0041	Significant Effect					
Error	0.509371	0.0363836	14								
Total	0.934945	15									
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.32	8.89	0.7209	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.951	0.841	0.5086	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	0.00%
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	24.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	0.00%
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	24.15%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005											
29632-006											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-8954-0656		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-007 failed proportion survived				20.00%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-007*	2.15	1.76	0.303	14	CDF	0.0249	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.61	2.59	0.0435	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.546331		0.546331	1	4.61	0.0498	Significant Effect				
Error	1.6595		0.118535	14							
Total	2.20583			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			6.57	8.89	0.0238	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.892	0.841	0.0606	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	28.67%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	27.37%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005											
29632-007											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	10-0806-3925		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:28		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C > T	29632-008 failed proportion survived					17.93%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-008*	4.07	1.76	0.281	14	CDF	5.8E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.09	2.59	0.4019	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.67748	1.67748	1	16.5	0.0012	Significant Effect					
Error	1.42087	0.101491	14								
Total	3.09835		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.48	8.89	0.0391	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.922	0.841	0.1810	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	54.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	47.95%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005											
29632-008											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-4736-5380		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Angular (Corrected)		C > T		29632-009 failed proportion survived				10.78%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-009*	2.88	1.76	0.196	14	CDF	0.0061	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.85	2.59	0.8381	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.40963		0.40963	1	8.27	0.0122	Significant Effect				
Error	0.693156		0.0495112	14							
Total	1.10279			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.16	8.89	0.3306	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.881	0.841	0.0397	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	24.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	23.70%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005											
29632-009											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-0906-1508		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Angular (Corrected)	C > T		29632-010 failed proportion survived				11.57%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-010*	2.73	1.76	0.206	14	CDF	0.0081	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.25	2.59	0.2278	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.408174		0.408174	1	7.46	0.0162	Significant Effect				
Error	0.765622		0.0546873	14							
Total	1.1738			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.49	8.89	0.2513	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.898	0.841	0.0747	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	24.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	23.66%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005											
29632-010											

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Report Date: 08 Dec-17 12:51 (p 60 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	16-9716-1128		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:28		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C < T	29632-006 passed proportion survived					22.35%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-006	-0.312	1.76	0.194	14	CDF	0.6200	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.75	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0047270	0.0047270	1	0.0971	0.7599	Non-Significant Effect					
Error	0.681504	0.0486788	14								
Total	0.686231		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.35	8.89	0.7030	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.959	0.841	0.6446	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	3.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	3.25%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-006											

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Report Date: 08 Dec-17 12:51 (p 61 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-5086-0956		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29632-006 passed proportion survived				20.86%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-006	-0.382	1.76	0.183	14	CDF	0.6458	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.6	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0063155		0.0063155		1	0.146	0.7083	Non-Significant Effect			
Error	0.606523		0.0433231		14						
Total	0.612839				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.09	8.89	0.9120	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.929	0.841	0.2378	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	4.20%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	3.73%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-006											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-8187-6096		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29632-006 passed proportion survived				12.53%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-006	-1.98	1.76	0.176	14	CDF	0.9664	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2	2.59	0.5262	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.157064		0.157064		1	3.94	0.0672	Non-Significant Effect			
Error	0.558742		0.0399101		14						
Total	0.715806				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.08	8.89	0.9215	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8822	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	17.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	16.21%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-006											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-1617-6931		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29632-006 passed proportion survived			15.12%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-006	-1.31	1.76	0.175	14	CDF	0.8937	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.18	2.59	0.2884	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0672415		0.0672415		1	1.71	0.2125	Non-Significant Effect			
Error	0.551768		0.039412		14						
Total	0.619009				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.11	8.89	0.8949	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.962	0.841	0.6917	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	12.98%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	11.24%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-006											

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Report Date: 08 Dec-17 12:51 (p 64 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-5908-8332		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29632-006 passed proportion survived			6.37%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-006	-3.42	1.76	0.168	14	CDF	0.9979	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.95	2.59	0.6240	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.425574		0.425574	1	11.7	0.0041	Significant Effect				
Error	0.509371		0.0363836	14							
Total	0.934945			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.32	8.89	0.7209	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.951	0.841	0.5086	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	0.00%
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	24.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	0.00%
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	24.15%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005											
29632-006											

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Report Date: 08 Dec-17 12:51 (p 65 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-7689-2617		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29632-007 passed proportion survived			39.72%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-007	0.247	1.76	0.31	14	CDF	0.4043	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.56	2.59	0.0577	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.007531		0.007531	1	0.0609	0.8086	Non-Significant Effect				
Error	1.73041		0.123601	14							
Total	1.73795			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.96	8.89	0.0508	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.936	0.841	0.3039	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	6.14%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	4.24%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006											
29632-007											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-3045-9381		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29632-008 failed proportion survived			36.64%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-008*	1.97	1.76	0.287	14	CDF	0.0345	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.04	2.59	0.4743	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.413213		0.413213	1	3.88	0.0690	Non-Significant Effect				
Error	1.49179		0.106556	14							
Total	1.905			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.14	8.89	0.0805	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8833	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	39.47%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	31.38%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006											
29632-008											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 21-3340-8998		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-009 passed proportion survived				25.18%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-009	-0.0528	1.76	0.206	14	CDF	0.5207	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.76	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0001522		0.0001522		1	0.00279	0.9586	Non-Significant Effect			
Error	0.764075		0.0545768		14						
Total	0.764227				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.63	8.89	0.5330	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.954	0.841	0.5547	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	-0.60%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-4726-2571		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Angular (Corrected)	C > T		29632-010 passed proportion survived				26.52%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-010	-0.0551	1.76	0.215	14	CDF	0.5216	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.15	2.59	0.3256	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0001816		0.0001816	1	0.00304	0.9568	Non-Significant Effect				
Error	0.836541		0.0597529	14							
Total	0.836722			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.88	8.89	0.4227	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.955	0.841	0.5691	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	-0.66%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006											
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-6465-3227		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform	Alt Hyp		Comparison Result					PMSD			
Angular (Corrected)	C < T		29632-007 passed proportion survived					30.57%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-007	-0.43	1.76	0.319	14	CDF	0.6631	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.49	2.59	0.0819	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0241911		0.0241911	1	0.185	0.6737	Non-Significant Effect				
Error	1.83163		0.130831	14							
Total	1.85582			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.68	8.89	0.1071	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.924	0.841	0.1968	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	9.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	7.35%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-007											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-6991-5429		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C < T			29632-007 passed proportion survived					29.41%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-007	-0.469	1.76	0.312	14	CDF	0.6770	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.54	2.59	0.0635	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0276395		0.0276395	1	0.22	0.6461	Non-Significant Effect				
Error	1.75665		0.125475	14							
Total	1.78429			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.55	8.89	0.0635	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.93	0.841	0.2445	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	10.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	7.81%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-007											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-7894-8344		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29632-007 passed proportion survived				15.75%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-007	-1.38	1.76	0.308	14	CDF	0.9058	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.57	2.59	0.0531	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.23338		0.23338	1	1.91	0.1884	Non-Significant Effect				
Error	1.70887		0.122062	14							
Total	1.94225			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.36	8.89	0.0415	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.909	0.841	0.1124	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	22.46%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	19.76%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-007											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-2663-3018		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29632-007 passed proportion survived			20.67%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-007	-0.993	1.76	0.307	14	CDF	0.8311	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.58	2.59	0.0517	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.119779		0.119779		1	0.985	0.3377	Non-Significant Effect			
Error	1.70189		0.121564		14						
Total	1.82167				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.51	8.89	0.0387	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.892	0.841	0.0607	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	18.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	15.00%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-007											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-4433-6088		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29632-007 passed proportion survived			5.94%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-007	-2.15	1.76	0.303	14	CDF	0.9751	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.61	2.59	0.0435	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.546331		0.546331		1	4.61	0.0498	Significant Effect			
Error	1.6595		0.118535		14						
Total	2.20583				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			6.57	8.89	0.0238	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.892	0.841	0.0606	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	28.67%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	27.37%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005											
29632-007											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-3750-0302		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29632-007 passed proportion survived			32.62%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-007	-0.247	1.76	0.31	14	CDF	0.5957	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.56	2.59	0.0577	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.007531		0.007531	1	0.0609	0.8086	Non-Significant Effect				
Error	1.73041		0.123601	14							
Total	1.73795			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.96	8.89	0.0508	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.936	0.841	0.3039	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	0.00%
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	6.14%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	0.00%
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	4.24%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006											
29632-007											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	19-1804-2918		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:31		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-008 passed proportion survived				52.56%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-008	1.28	1.76	0.383	14	CDF	0.1107	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.07	2.59	0.4257	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.309175	0.309175	1	1.64	0.2214	Non-Significant Effect					
Error	2.64191	0.188708	14								
Total	2.95109		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.2	8.89	0.8172	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.96	0.841	0.6649	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	35.51%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	28.34%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007											
29632-008											

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-0940-8008		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29632-009 passed proportion survived				44.48%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-009	-0.268	1.76	0.326	14	CDF	0.6037	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.43	2.59	0.1052	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0098244		0.0098244		1	0.0719	0.7926	Non-Significant Effect			
Error	1.9142		0.136729		14						
Total	1.92402				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.04	8.89	0.1657	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.921	0.841	0.1722	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	-6.54%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	-5.05%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	19-8672-4863		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:31		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29632-010 passed proportion survived				45.36%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-010	-0.266	1.76	0.332	14	CDF	0.6030	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.39	2.59	0.1282	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0100515	0.0100515	1	0.0708	0.7940	Non-Significant Effect					
Error	1.98667	0.141905	14								
Total	1.99672		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.64	8.89	0.2243	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.912	0.841	0.1242	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	-6.54%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	-5.11%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007											
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-4353-3920		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29632-008 passed proportion survived				29.41%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-008	-2.11	1.76	0.297	14	CDF	0.9733	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.97	2.59	0.5837	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.506332		0.506332	1	4.45	0.0534	Non-Significant Effect				
Error	1.593		0.113786	14							
Total	2.09933			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.07	8.89	0.1620	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.965	0.841	0.7454	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	41.53%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	33.61%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-008											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 16-5875-3837		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C < T			29632-008 passed proportion survived					28.23%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-008	-2.19	1.76	0.29	14	CDF	0.9772	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.02	2.59	0.5021	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.521698		0.521698	1	4.81	0.0457	Significant Effect				
Error	1.51802		0.10843	14							
Total	2.03972			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.8	8.89	0.0993	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.972	0.841	0.8646	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	42.02%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	33.94%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-008											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-4568-8667	Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:31	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Angular (Corrected)	C < T	29632-008 passed proportion survived			15.48%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-008	-3.21	1.76	0.285	14	CDF	0.9968	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.05	2.59	0.4519	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.07979	1.07979	1	10.3	0.0063	Significant Effect					
Error	1.47024	0.105017	14								
Total	2.55003		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	4.47	8.89	0.0664	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.943	0.841	0.3910	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	50.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	42.50%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-008											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	12-6466-6502	Endpoint:	Proportion Survived		CETIS Version:	CETISv1.9.3					
Analyzed:	08 Dec-17 12:31	Analysis:	Parametric-Two Sample		Official Results:	Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29632-008 passed proportion survived				20.02%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-008	-2.79	1.76	0.285	14	CDF	0.9928	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.06	2.59	0.4447	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.813832	0.813832	1	7.79	0.0145	Significant Effect					
Error	1.46327	0.104519	14								
Total	2.2771		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	4.59	8.89	0.0621	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.932	0.841	0.2661	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	47.33%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	39.09%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-008											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-4781-6360		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:32		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29632-008 passed proportion survived				6.28%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-008	-4.07	1.76	0.281	14	CDF	0.9994	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.09	2.59	0.4019	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.67748	1.67748	1	16.5	0.0012	Significant Effect					
Error	1.42087	0.101491	14								
Total	3.09835										
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.48	8.89	0.0391	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.922	0.841	0.1810	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	54.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	47.95%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005											
29632-008											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-9852-0380		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29632-008 passed proportion survived				31.14%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-008	-1.97	1.76	0.287	14	CDF	0.9655	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.04	2.59	0.4743	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.413213		0.413213	1	3.88	0.0690	Non-Significant Effect				
Error	1.49179		0.106556	14							
Total	1.905			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.14	8.89	0.0805	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8833	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	39.47%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	31.38%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006											
29632-008											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	10-7881-9551		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:32		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29632-008 passed proportion survived				43.19%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-008	-1.28	1.76	0.383	14	CDF	0.8893	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.07	2.59	0.4257	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.309175	0.309175	1	1.64	0.2214	Non-Significant Effect					
Error	2.64191	0.188708	14								
Total	2.95109		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.2	8.89	0.8172	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.96	0.841	0.6649	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	0.00%
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	35.51%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	0.00%
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	28.34%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007											
29632-008											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 05-2923-5617		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C > T	29632-009 passed proportion survived					65.14%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-009	-1.89	1.76	0.305	14	CDF	0.9604	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.92	2.59	0.6773	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.429226	0.429226	1	3.59	0.0791	Non-Significant Effect					
Error	1.67557	0.119684	14								
Total	2.1048		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.54	8.89	0.2428	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.954	0.841	0.5640	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	-65.22%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	-46.61%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-4972-3761		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C > T	29632-010 passed proportion survived					66.21%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-010	-1.86	1.76	0.311	14	CDF	0.9578	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.88	2.59	0.7619	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.430719	0.430719	1	3.45	0.0844	Non-Significant Effect					
Error	1.74804	0.12486	14								
Total	2.17876		15								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		2.2	8.89	0.3202	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.954	0.841	0.5640	Normal Distribution					
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	-65.22%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	-46.69%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008											
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-8196-4588		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C < T			29632-009 passed proportion survived					24.26%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-009	-0.227	1.76	0.219	14	CDF	0.5881	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.65	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0031828		0.0031828	1	0.0515	0.8238	Non-Significant Effect				
Error	0.865289		0.0618064	14							
Total	0.868472			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.21	8.89	0.8071	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.907	0.841	0.1055	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	3.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	2.66%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	10-9271-3204		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:32		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29632-009 passed proportion survived				22.89%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-009	-0.283	1.76	0.209	14	CDF	0.6092	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.73	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0045069	0.0045069	1	0.0798	0.7817	Non-Significant Effect					
Error	0.790309	0.0564506	14								
Total	0.794816		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.5	8.89	0.6071	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.93	0.841	0.2474	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	4.20%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	3.15%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-7083-5347	Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:33	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Angular (Corrected)	C < T	29632-009 passed proportion survived			13.50%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-009	-1.67	1.76	0.203	14	CDF	0.9412	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.79	2.59	0.9952	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.147438	0.147438	1	2.78	0.1177	Non-Significant Effect					
Error	0.742527	0.0530377	14								
Total	0.889965		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.76	8.89	0.4713	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.904	0.841	0.0944	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	17.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	15.71%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-5337-4809		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29632-009 passed proportion survived			16.58%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-009	-1.08	1.76	0.202	14	CDF	0.8503	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.89	2.59	0.7439	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0609956		0.0609956	1	1.16	0.2995	Non-Significant Effect				
Error	0.735553		0.0525395	14							
Total	0.796549			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.81	8.89	0.4513	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.892	0.841	0.0608	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	12.98%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	10.70%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-9336-9085		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Angular (Corrected)		C < T		29632-009 passed proportion survived				6.60%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-009	-2.88	1.76	0.196	14	CDF	0.9939	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.85	2.59	0.8381	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.40963		0.40963	1	8.27	0.0122	Significant Effect				
Error	0.693156		0.0495112	14							
Total	1.10279			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.16	8.89	0.3306	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.881	0.841	0.0397	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	24.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	23.70%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-0479-8664		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29632-009 passed proportion survived				24.67%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-009	0.0528	1.76	0.206	14	CDF	0.4793	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.76	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0001522		0.0001522	1	0.00279	0.9586	Non-Significant Effect				
Error	0.764075		0.0545768	14							
Total	0.764227			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.63	8.89	0.5330	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.954	0.841	0.5547	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	-0.60%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-0938-5627		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29632-009 passed proportion survived				39.33%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-009	0.268	1.76	0.326	14	CDF	0.3963	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.43	2.59	0.1052	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0098244		0.0098244	1	0.0719	0.7926	Non-Significant Effect				
Error	1.9142		0.136729	14							
Total	1.92402			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.04	8.89	0.1657	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.921	0.841	0.1722	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	-6.54%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	-5.05%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-9096-0908		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Angular (Corrected)		C < T		29632-009 failed proportion survived				65.77%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-009*	1.89	1.76	0.305	14	CDF	0.0396	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.92	2.59	0.6773	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.429226		0.429226	1	3.59	0.0791	Non-Significant Effect				
Error	1.67557		0.119684	14							
Total	2.1048			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.54	8.89	0.2428	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.954	0.841	0.5640	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	0.00%
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	-65.22%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	0.00%
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	-46.61%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008											
29632-009											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-0035-8203		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Angular (Corrected)	C > T		29632-010 passed proportion survived				28.81%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-009		29632-010	-0.00422	1.76	0.238	14	CDF	0.5017	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.95	2.59	0.6320	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.297E-06	1.297E-06	1	1.78E-05	0.9967	Non-Significant Effect					
Error	1.02033	0.0728804	14								
Total	1.02033		15								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.15	8.89	0.8559	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.91	0.841	0.1176	Normal Distribution					
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	-0.06%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009											
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	04-8406-1604		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:33		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C < T	29632-010 passed proportion survived					24.93%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-010	-0.214	1.76	0.228	14	CDF	0.5830	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.03	2.59	0.4867	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0030556	0.0030556	1	0.0456	0.8340	Non-Significant Effect					
Error	0.937755	0.0669825	14								
Total	0.940811		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.4	8.89	0.6708	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.925	0.841	0.1998	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.737	0.569	0.906		0.400	0.950	0.071	27.30%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	3.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.06	0.861	1.26		0.685	1.35	0.0836	22.34%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	2.61%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.700	0.900	0.850	0.400	0.700	0.900	0.950	0.500		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N										
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-4008-9498		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C < T			29632-010 passed proportion survived					23.59%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-010	-0.266	1.76	0.219	14	CDF	0.6029	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.12	2.59	0.3652	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0043553		0.0043553	1	0.0707	0.7942	Non-Significant Effect				
Error	0.862775		0.0616268	14							
Total	0.86713			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.73	8.89	0.4880	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.941	0.841	0.3632	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.744	0.598	0.889		0.500	0.950	0.062	23.41%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	4.20%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.06	0.886	1.24		0.785	1.35	0.0752	19.98%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	3.10%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		0.950	0.600	0.500	0.850	0.900	0.900	0.600	0.650		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002											
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 17-9837-8096		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Angular (Corrected)		C < T		29632-010 passed proportion survived				13.81%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-010	-1.59	1.76	0.212	14	CDF	0.9326	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.18	2.59	0.2944	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.146565		0.146565	1	2.52	0.1349	Non-Significant Effect				
Error	0.814994		0.0582138	14							
Total	0.961558			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.03	8.89	0.3694	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.915	0.841	0.1389	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	0.862	0.741	0.984		0.550	1.000	0.052	16.90%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	17.39%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.22	1.06	1.39		0.835	1.46	0.0693	16.02%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	15.66%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		0.900	0.900	0.550	0.950	0.950	1.000	0.900	0.750		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003											
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-3472-6492		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C < T			29632-010 passed proportion survived					17.06%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-010	-1.02	1.76	0.212	14	CDF	0.8382	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.19	2.59	0.2846	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0604344		0.0604344	1	1.05	0.3235	Non-Significant Effect				
Error	0.808019		0.0577157	14							
Total	0.868454			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.09	8.89	0.3523	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.897	0.841	0.0720	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.819	0.683	0.955		0.450	0.950	0.057	19.84%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	12.98%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.15	0.992	1.32		0.735	1.35	0.0684	16.75%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	10.65%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		0.900	0.950	0.900	0.750	0.800	0.900	0.450	0.900		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004											
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	19-2306-3696		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:34		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29632-010 passed proportion survived				6.64%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-010	-2.73	1.76	0.206	14	CDF	0.9919	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.25	2.59	0.2278	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.408174	0.408174	1	7.46	0.0162	Significant Effect					
Error	0.765622	0.0546873	14								
Total	1.1738										
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.49	8.89	0.2513	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.898	0.841	0.0747	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	0.938	0.846	1.000		0.700	1.000	0.039	11.67%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	24.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.35	1.2	1.5		0.991	1.46	0.0626	13.10%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	23.66%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.000	0.700	0.950	1.000	0.850	1.000	1.000	1.000		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005											
29632-010											

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-8851-8614		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Angular (Corrected)	C < T	29632-010 passed proportion survived	25.50%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-010	0.0551	1.76	0.215	14	CDF	0.4784	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.15	2.59	0.3256	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0001816	0.0001816	1	0.00304	0.9568	Non-Significant Effect					
Error	0.836541	0.0597529	14								
Total	0.836722		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.88	8.89	0.4227	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.955	0.841	0.5691	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.712	0.572	0.853		0.450	0.950	0.060	23.65%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	1.02	0.854	1.19		0.735	1.35	0.072	19.88%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	-0.66%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.800	0.600	0.600	0.650	0.950	0.750	0.450	0.900		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006											
29632-010											

CETIS Analytical Report

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 21-0029-0772		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29632-010 passed proportion survived			39.78%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-010	0.266	1.76	0.332	14	CDF	0.3970	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.39	2.59	0.1282	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0100515		0.0100515	1	0.0708	0.7940	Non-Significant Effect				
Error	1.98667		0.141905	14							
Total	1.99672			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.64	8.89	0.2243	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.912	0.841	0.1242	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.669	0.368	0.969		0.000	1.000	0.127	53.76%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	-6.54%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.981	0.602	1.36		0.112	1.46	0.16	46.25%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	-5.11%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.000	0.250	1.000	0.650	0.900	0.950	0.850	0.750		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007											
29632-010											

CETIS Analytical Report

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 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	13-0029-6180	Endpoint:	Proportion Survived		CETIS Version:	CETISv1.9.3					
Analyzed:	08 Dec-17 12:34	Analysis:	Parametric-Two Sample		Official Results:	Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29632-010 failed proportion survived				67.13%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-010*	1.86	1.76	0.311	14	CDF	0.0422	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.88	2.59	0.7619	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.430719	0.430719	1	3.45	0.0844	Non-Significant Effect					
Error	1.74804	0.12486	14								
Total	2.17876		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.2	8.89	0.3202	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.954	0.841	0.5640	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.431	0.143	0.719		0.050	0.950	0.122	79.83%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	-65.22%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.703	0.356	1.05		0.226	1.35	0.146	58.95%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	-46.69%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.050	0.950	0.550	0.050	0.400	0.450	0.150	0.850		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008											
29632-010											

CETIS Analytical Report

Report Date: 08 Dec-17 12:51 (p 104 of 104)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	19-9748-2114		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:34		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29632-010 passed proportion survived				27.88%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-009		29632-010	0.00422	1.76	0.238	14	CDF	0.4983	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.95	2.59	0.6320	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.297E-06	1.297E-06	1	1.78E-05	0.9967	Non-Significant Effect					
Error	1.02033	0.0728804	14								
Total	1.02033	15									
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.15	8.89	0.8559	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.91	0.841	0.1176	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	0.712	0.522	0.903		0.350	0.950	0.081	31.99%	0.00%
29632-010		8	0.712	0.508	0.917		0.250	0.950	0.087	34.33%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	1.03	0.813	1.25		0.633	1.35	0.092	25.25%	0.00%
29632-010		8	1.03	0.797	1.26		0.524	1.35	0.0988	27.10%	-0.06%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009		0.350	0.750	0.400	0.650	0.850	0.850	0.950	0.900		
29632-010		0.900	0.700	0.250	0.900	0.950	0.750	0.800	0.450		
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009											
29632-010											

28 day *Leptocheirus plumulosus*
Survival, Growth and Reproduction
Sediment Evaluation

CETIS™ Summary, Ad Hoc Query and
Analytical Reports

Dry Weight Statistical Analysis

CETIS Summary Report

Report Date: 08 Dec-17 12:46 (p 1 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test	EnviroSystems, Inc.
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Batch ID: 00-1863-2192	Test Type: Leptocheirus (28-d)	Analyst: Nancy Roka
Start Date: 24 Oct-17 11:00	Protocol: EPA/600/R-01/020 (2001)	Diluent: Not Applicable
Ending Date: 21 Nov-17 11:00	Species: Leptocheirus plumulosus	Brine: Not Applicable
Duration: 28d 0h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h		
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)	
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)	
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car	
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car	
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca	
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)	
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)	
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)	
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)	
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)	
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
09-0622-0017	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0291	29632-001 failed mean dry weight-mg
05-6759-5248	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0138	29632-002 failed mean dry weight-mg
10-7391-2595	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.3825	29632-002 passed mean dry weight-mg
11-7704-9168	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.6175	29632-002 passed mean dry weight-mg
17-2984-2243	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	3.3E-04	29632-002 failed mean dry weight-mg
02-5371-2909	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.1096	29632-003 passed mean dry weight-mg
07-2078-6118	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0619	29632-003 passed mean dry weight-mg
08-6467-0388	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.8669	29632-003 passed mean dry weight-mg
09-1347-1385	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0044	29632-003 failed mean dry weight-mg
14-5084-9447	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.1331	29632-003 passed mean dry weight-mg
20-2478-5460	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9381	29632-003 passed mean dry weight-mg
05-3807-7121	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.7373	29632-004 passed mean dry weight-mg
05-6021-0099	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.6803	29632-004 passed mean dry weight-mg
05-9565-1156	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0570	29632-004 passed mean dry weight-mg
07-3626-8665	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.2091	29632-004 passed mean dry weight-mg
07-6580-1582	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.7909	29632-004 passed mean dry weight-mg
08-2400-9929	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.3197	29632-004 passed mean dry weight-mg
10-7183-5572	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0034	29632-004 failed mean dry weight-mg
12-5798-0177	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.2627	29632-004 passed mean dry weight-mg
00-5601-2785	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.6850	29632-005 passed mean dry weight-mg
00-8573-7727	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.7210	29632-005 passed mean dry weight-mg
03-3653-6659	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.1770	29632-005 passed mean dry weight-mg
05-2826-4087	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.5515	29632-005 passed mean dry weight-mg

CETIS Summary Report

Report Date: 08 Dec-17 12:46 (p 2 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
05-5175-8220	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.2790	29632-005 passed mean dry weight-mg
07-0209-6686	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0714	29632-005 passed mean dry weight-mg
09-3272-9338	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.8230	29632-005 passed mean dry weight-mg
09-8660-7263	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.3150	29632-005 passed mean dry weight-mg
16-5661-4262	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.4485	29632-005 passed mean dry weight-mg
01-6653-5837	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0015	29632-006 failed mean dry weight-mg
04-0267-0260	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9991	29632-006 passed mean dry weight-mg
05-0852-0693	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.8460	29632-006 passed mean dry weight-mg
09-2860-1405	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9985	29632-006 passed mean dry weight-mg
10-1743-3423	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	8.9E-04	29632-006 failed mean dry weight-mg
17-5278-1111	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	2.8E-07	29632-006 failed mean dry weight-mg
21-3359-5152	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.1540	29632-006 passed mean dry weight-mg
04-3487-4449	Mean Dry Weight-mg	Unequal Variance t Two-Sample Test	0.1148	29632-006 passed mean dry weight-mg
11-1417-7222	Mean Dry Weight-mg	Unequal Variance t Two-Sample Test	0.9692	29632-006 passed mean dry weight-mg
13-1637-7415	Mean Dry Weight-mg	Unequal Variance t Two-Sample Test	0.0308	29632-006 failed mean dry weight-mg
16-0718-3270	Mean Dry Weight-mg	Unequal Variance t Two-Sample Test	0.8852	29632-006 passed mean dry weight-mg
18-0950-5280	Mean Dry Weight-mg	Unequal Variance t Two-Sample Test	0.9626	29632-006 passed mean dry weight-mg
21-0837-6738	Mean Dry Weight-mg	Unequal Variance t Two-Sample Test	0.0374	29632-006 failed mean dry weight-mg
04-2606-6317	Mean Dry Weight-mg	Wilcoxon Rank Sum Two-Sample Test	0.0052	29632-006 failed mean dry weight-mg
01-0597-9156	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9691	29632-007 passed mean dry weight-mg
02-3594-8639	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	9.2E-04	29632-007 failed mean dry weight-mg
02-6099-9188	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0387	29632-007 failed mean dry weight-mg
02-7864-9239	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0685	29632-007 passed mean dry weight-mg
03-4057-7774	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9986	29632-007 passed mean dry weight-mg
04-3622-5630	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9613	29632-007 passed mean dry weight-mg
04-4627-6698	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	1.3E-05	29632-007 failed mean dry weight-mg
06-8424-1430	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0106	29632-007 failed mean dry weight-mg
07-3418-6074	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9894	29632-007 passed mean dry weight-mg
09-5590-5524	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9315	29632-007 passed mean dry weight-mg
12-8707-2264	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9911	29632-007 passed mean dry weight-mg
13-5551-5766	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0309	29632-007 failed mean dry weight-mg
14-6229-2270	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0089	29632-007 failed mean dry weight-mg
17-3613-9521	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0014	29632-007 failed mean dry weight-mg
00-3232-8319	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9889	29632-008 passed mean dry weight-mg
03-0185-6370	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.3053	29632-008 passed mean dry weight-mg
03-9783-0557	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9997	29632-008 passed mean dry weight-mg
06-1782-9260	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9973	29632-008 passed mean dry weight-mg
06-4166-8847	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	2.7E-04	29632-008 failed mean dry weight-mg
08-2477-7113	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	2.1E-04	29632-008 failed mean dry weight-mg
09-9131-5801	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	2.2E-06	29632-008 failed mean dry weight-mg
11-8025-0776	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0093	29632-008 failed mean dry weight-mg
13-9321-7206	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.6947	29632-008 passed mean dry weight-mg
15-3290-5760	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0027	29632-008 failed mean dry weight-mg
16-1029-5804	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0023	29632-008 failed mean dry weight-mg
17-1320-2183	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0111	29632-008 failed mean dry weight-mg
17-5682-3023	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0159	29632-008 failed mean dry weight-mg
17-6157-5721	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9907	29632-008 passed mean dry weight-mg
17-6872-8595	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9841	29632-008 passed mean dry weight-mg
19-6149-8315	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9977	29632-008 passed mean dry weight-mg
00-1323-6556	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0442	29632-009 failed mean dry weight-mg
00-6548-0388	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0950	29632-009 passed mean dry weight-mg
00-7586-9999	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0034	29632-009 failed mean dry weight-mg
02-2531-5006	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.7883	29632-009 passed mean dry weight-mg

CETIS Summary Report

Report Date: 08 Dec-17 12:46 (p 3 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test **EnviroSystems, Inc.**

Single Comparison Summary					
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	
02-7381-4327	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.8755	29632-009 passed mean dry weight-mg	
02-8848-3677	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9468	29632-009 passed mean dry weight-mg	
07-0245-8662	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9050	29632-009 passed mean dry weight-mg	
07-5847-6639	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0758	29632-009 passed mean dry weight-mg	
11-0231-2291	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9242	29632-009 passed mean dry weight-mg	
11-8669-3329	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.1245	29632-009 passed mean dry weight-mg	
11-9338-6873	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9886	29632-009 passed mean dry weight-mg	
12-4722-7244	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0114	29632-009 failed mean dry weight-mg	
12-5709-8330	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.8298	29632-009 passed mean dry weight-mg	
12-6579-2371	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.1702	29632-009 passed mean dry weight-mg	
14-7511-5853	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0532	29632-009 passed mean dry weight-mg	
18-0978-9809	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9558	29632-009 passed mean dry weight-mg	
18-6685-2262	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.2117	29632-009 passed mean dry weight-mg	
11-0316-0055	Mean Dry Weight-mg	Unequal Variance t Two-Sample Test	0.3792	29632-009 passed mean dry weight-mg	
11-2134-4395	Mean Dry Weight-mg	Unequal Variance t Two-Sample Test	0.6208	29632-009 passed mean dry weight-mg	
00-0310-7559	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9966	29632-010 passed mean dry weight-mg	
01-8793-6425	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0593	29632-010 passed mean dry weight-mg	
03-6818-6867	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.5290	29632-010 passed mean dry weight-mg	
04-6369-4696	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.7043	29632-010 passed mean dry weight-mg	
05-6931-5885	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9555	29632-010 passed mean dry weight-mg	
07-3715-1308	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.4710	29632-010 passed mean dry weight-mg	
07-9788-4196	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.2499	29632-010 passed mean dry weight-mg	
09-3404-5463	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0145	29632-010 failed mean dry weight-mg	
13-0602-1744	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0013	29632-010 failed mean dry weight-mg	
13-2747-1040	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0445	29632-010 failed mean dry weight-mg	
14-7818-0780	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.2957	29632-010 passed mean dry weight-mg	
15-2429-9168	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9407	29632-010 passed mean dry weight-mg	
16-0824-0286	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9855	29632-010 passed mean dry weight-mg	
16-5238-7504	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.9826	29632-010 passed mean dry weight-mg	
18-3596-8437	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0174	29632-010 failed mean dry weight-mg	
19-0212-8115	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.0034	29632-010 failed mean dry weight-mg	
20-4953-8576	Mean Dry Weight-mg	Equal Variance t Two-Sample Test	0.7501	29632-010 passed mean dry weight-mg	
02-0898-7171	Mean Dry Weight-mg	Unequal Variance t Two-Sample Test	0.8658	29632-010 passed mean dry weight-mg	
04-7760-4430	Mean Dry Weight-mg	Unequal Variance t Two-Sample Test	0.1342	29632-010 passed mean dry weight-mg	

Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29632-000	LC	8	1.44	1.07	1.81	0.45	1.83	0.156	0.442	30.59%	0.00%
29632-001	N	8	1.02	0.718	1.33	0.516	1.46	0.13	0.367	35.83%	29.01%
29632-002		8	0.973	0.711	1.23	0.552	1.5	0.111	0.313	32.22%	32.62%
29632-003		8	1.21	0.99	1.43	0.742	1.53	0.0931	0.263	21.76%	16.20%
29632-004		8	1.11	0.822	1.4	0.442	1.64	0.122	0.344	31.00%	23.11%
29632-005		8	1.13	0.837	1.43	0.566	1.55	0.125	0.354	31.23%	21.52%
29632-006		8	0.848	0.756	0.94	0.719	1.02	0.0389	0.11	12.97%	41.22%
29632-007		7	0.66	0.368	0.952	0.248	1.11	0.119	0.316	47.81%	54.25%
29632-008		8	0.577	0.324	0.83	0.19	1.11	0.107	0.302	52.38%	60.02%
29632-009		8	0.806	0.505	1.11	0.28	1.51	0.127	0.36	44.67%	44.16%
29632-010		8	0.674	0.341	1.01	0.238	1.4	0.141	0.399	59.18%	53.28%

CETIS Summary Report

Report Date: 08 Dec-17 12:46 (p 4 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.
Mean Dry Weight-mg Detail										
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	
29632-000	LC	0.45	1.54	1.83	1.36	1.41	1.43	1.81	1.72	
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516	
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74	
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2	
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926	
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14	
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894	
29632-007			0.248	1.11	0.376	0.463	0.914	0.854	0.653	
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765	
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51	
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413	

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

Endpoint: Mean Dry Weight-mg

Analysis ID	Station	Method	Sample Code	Code 1	Tails	Sample Code	Code 2	Statistic	Critical	P Level	Alpha	Reject Null	MSD	DF	Ties	P-Type
737151308	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-007		C < T	29632-010		0.07416724	1.770933	0.4710032	0.05	FALSE	0.3327031	13		C
301856370	A/B/3% (Lp Biochar 3%)	Equal Variance t Two-Sample Test	29632-007		C > T	29632-008		0.5217246	1.770933	0.3053181	0.05	FALSE	0.2828082	13		C
225315006	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-007		C > T	29632-009		-0.8266658	1.770933	0.7883298	0.05	FALSE	0.3119239	13		C
368186867	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-007		C > T	29632-010		-0.07416724	1.770933	0.5289968	0.05	FALSE	0.3327031	13		C
65480388	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-008		C < T	29632-009		1.377241	1.76131	0.09502982	0.05	FALSE	0.2927605	14		C
1478180780	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-008		C < T	29632-010		0.5494293	1.76131	0.2956839	0.05	FALSE	0.3117558	14		C
702458662	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-008		C > T	29632-009		-1.377241	1.76131	0.9049702	0.05	FALSE	0.2927605	14		C
463694696	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-008		C > T	29632-010		-0.5494293	1.76131	0.7043161	0.05	FALSE	0.3117558	14		C
2049538576	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-009		C < T	29632-010		-0.6928636	1.76131	0.7501359	0.05	FALSE	0.3347182	14		C
797884196	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-009		C > T	29632-010		0.6928636	1.76131	0.2498641	0.05	FALSE	0.3347182	14		C

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 1 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-0622-0017		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-001 failed mean dry weight-mg				24.77%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Negative Control*	2.06	1.76	0.358	14	CDF	0.0291	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.53	2.59	0.0656	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.701339		0.701339	1	4.25	0.0582	Non-Significant Effect				
Error	2.30842		0.164887	14							
Total	3.00976			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.45	8.89	0.6383	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.9	0.841	0.0794	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.44	1.07	1.81		0.45	1.83	0.156	30.59%	0.00%
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	29.01%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.45	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 2 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-6759-5248		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-002 failed mean dry weight-mg	23.36%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-002*	2.46	1.76	0.337	14	CDF	0.0138	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.69	2.59	0.0289	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.886496	0.886496	1	6.05	0.0276	Significant Effect					
Error	2.05242	0.146602	14								
Total	2.93892		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.99	8.89	0.3857	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.922	0.841	0.1818	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.44	1.07	1.81		0.45	1.83	0.156	30.59%	0.00%
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	32.62%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.45	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 3 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-5371-2909		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-003 passed mean dry weight-mg				22.18%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-003	1.29	1.76	0.32	14	CDF	0.1096	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.83	2.59	0.0118	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.218616		0.218616	1	1.65	0.2192	Non-Significant Effect				
Error	1.85008		0.132149	14							
Total	2.0687			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.81	8.89	0.1957	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.864	0.841	0.0222	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.44	1.07	1.81		0.45	1.83	0.156	30.59%	0.00%
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	16.20%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.45	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 4 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-1347-1385		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-003 failed mean dry weight-mg				13.63%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-003*	3.08	1.77	0.216	13	CDF	0.0044	Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.526953	0.526953	1	9.48	0.0088	Significant Effect					
Error	0.722253	0.0555579	13								
Total	1.24921		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.75	10.8	0.5107	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.937	0.833	0.3434	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	1.59	1.4	1.77		1.36	1.83	0.0751	12.54%	0.00%
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	23.70%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	Outlier	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 5 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-9565-1156		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-004 passed mean dry weight-mg					24.15%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-004	1.69	1.76	0.349	14	CDF	0.0570	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.6	2.59	0.0469	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.445006		0.445006	1	2.84	0.1141	Non-Significant Effect				
Error	2.19358		0.156685	14							
Total	2.63859			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.65	8.89	0.5261	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.883	0.841	0.0426	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.44	1.07	1.81		0.45	1.83	0.156	30.59%	0.00%
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	23.11%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.45	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		

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Report Date: 08 Dec-17 12:45 (p 6 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-0209-6686		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-005 passed mean dry weight-mg				24.41%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-005	1.55	1.76	0.352	14	CDF	0.0714	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.57	2.59	0.0542		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.385798		0.385798	1	2.41	0.1429		Non-Significant Effect			
Error	2.2413		0.160093	14							
Total	2.6271			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.56	8.89	0.5732		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.895	0.841	0.0680		Normal Distribution			
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.44	1.07	1.81		0.45	1.83	0.156	30.59%	0.00%
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	21.52%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.45	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		

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Report Date: 08 Dec-17 12:45 (p 7 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-2606-6317		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-006 failed mean dry weight-mg	19.63%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-006*	44	n/a	0	14	Exact	0.0052	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.2	2.59	4.4E-04	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.41614	1.41614	1	13.7	0.0024	Significant Effect					
Error	1.44963	0.103545	14								
Total	2.86577		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	16.1	8.89	0.0016	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.771	0.841	0.0012	Non-Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.44	1.07	1.81		0.45	1.83	0.156	30.59%	0.00%
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	41.22%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.45	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		

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Report Date: 08 Dec-17 12:45 (p 8 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-3594-8639		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-007 failed mean dry weight-mg				24.68%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-007*	3.89	1.77	0.356	13	CDF	9.2E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.65	2.55	0.0276	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	2.28876		2.28876	1	15.2	0.0018	Significant Effect				
Error	1.96303		0.151002	13							
Total	4.25179			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.96	10.8	0.4317	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.903	0.833	0.1068	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.44	1.07	1.81		0.45	1.83	0.156	30.59%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	54.25%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.45	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

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Report Date: 08 Dec-17 12:45 (p 9 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-4627-6698		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C > T			29632-007 failed mean dry weight-mg			15.85%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-007*	6.56	1.78	0.251	12	CDF	1.3E-05	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	2.99402		2.99402		1	43	2.7E-05	Significant Effect			
Error	0.835199		0.0695999		12						
Total	3.82922				13						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				2.52	11.1	0.2848	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.956	0.824	0.6577	Normal Distribution			
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	1.59	1.4	1.77		1.36	1.83	0.0751	12.54%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	58.34%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	Outlier	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

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Report Date: 08 Dec-17 12:45 (p 10 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-2477-7113		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 failed mean dry weight-mg	23.09%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-008*	4.58	1.76	0.333	14	CDF	2.1E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.72	2.59	0.0239	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	3.00189	3.00189	1	21	4.3E-04	Significant Effect					
Error	2.00453	0.143181	14								
Total	5.00642		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.13	8.89	0.3386	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.92	0.841	0.1691	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.44	1.07	1.81		0.45	1.83	0.156	30.59%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	60.02%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.45	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

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Report Date: 08 Dec-17 12:45 (p 11 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-7586-9999		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-009 failed mean dry weight-mg				24.58%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-009*	3.16	1.76	0.355	14	CDF	0.0034	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.55	2.59	0.0594	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.625		1.625	1	10	0.0069	Significant Effect				
Error	2.2725		0.162321	14							
Total	3.89749			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.5	8.89	0.6036	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.933	0.841	0.2717	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.44	1.07	1.81		0.45	1.83	0.156	30.59%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	44.16%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.45	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Report Date: 08 Dec-17 12:45 (p 12 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-0602-1744		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 failed mean dry weight-mg	25.68%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-010*	3.65	1.76	0.371	14	CDF	0.0013	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.44	2.59	0.1000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.36574	2.36574	1	13.4	0.0026	Significant Effect					
Error	2.47978	0.177127	14								
Total	4.84552		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.22	8.89	0.7963	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.963	0.841	0.7128	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.44	1.07	1.81		0.45	1.83	0.156	30.59%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	53.28%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.45	1.54	1.83	1.36	1.41	1.43	1.81	1.72		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 13 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-7391-2595		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-002 passed mean dry weight-mg	29.33%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-002	0.305	1.76	0.301	14	CDF	0.3825	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.61	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0108325	0.0108325	1	0.093	0.7649	Non-Significant Effect					
Error	1.631	0.1165	14								
Total	1.64183		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.37	8.89	0.6867	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.943	0.841	0.3817	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	5.08%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		

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Report Date: 08 Dec-17 12:45 (p 14 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-6467-0388		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-003 passed mean dry weight-mg	27.45%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-003	-1.16	1.76	0.281	14	CDF	0.8669	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.65	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.136823	0.136823	1	1.34	0.2663	Non-Significant Effect					
Error	1.42866	0.102047	14								
Total	1.56548		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.94	8.89	0.3999	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.948	0.841	0.4633	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	-18.05%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		

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Report Date: 08 Dec-17 12:45 (p 15 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-6021-0099		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-004 passed mean dry weight-mg	30.58%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-004	-0.479	1.76	0.313	14	CDF	0.6803	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.94	2.59	0.6377	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0290268	0.0290268	1	0.229	0.6394	Non-Significant Effect					
Error	1.77216	0.126583	14								
Total	1.80119		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.14	8.89	0.8685	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.971	0.841	0.8529	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	-8.31%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		

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Report Date: 08 Dec-17 12:45 (p 16 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-8573-7727		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-005 passed mean dry weight-mg				30.99%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-005	-0.6	1.76	0.318	14	CDF	0.7210	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.63	2.59	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.0468001		0.0468001	1	0.36	0.5581		Non-Significant Effect			
Error	1.81988		0.129992	14							
Total	1.86668			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.08	8.89	0.9250		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.917	0.841	0.1509		Normal Distribution			
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	-10.56%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		

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Report Date: 08 Dec-17 12:45 (p 17 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-3487-4449		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-006 passed mean dry weight-mg	24.59%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-006	1.3	1.86	0.252	8	CDF	0.1148	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.94	2.59	0.6368	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.124296	0.124296	1	1.69	0.2143	Non-Significant Effect					
Error	1.0282	0.0734431	14								
Total	1.1525		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	11.1	8.89	0.0051	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.963	0.841	0.7253	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	17.20%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		

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Report Date: 08 Dec-17 12:45 (p 18 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-5551-5766		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 failed mean dry weight-mg	30.80%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-007*	2.04	1.77	0.316	13	CDF	0.0309	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.53	2.55	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.495336	0.495336	1	4.18	0.0618	Non-Significant Effect					
Error	1.5416	0.118585	13								
Total	2.03694		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.35	10.8	0.7291	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.926	0.833	0.2381	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	35.55%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

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Report Date: 08 Dec-17 12:45 (p 19 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-8025-0776		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 failed mean dry weight-mg	28.90%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-008*	2.66	1.76	0.296	14	CDF	0.0093	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.63	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.80127	0.80127	1	7.09	0.0186	Significant Effect					
Error	1.5831	0.113079	14								
Total	2.38437		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.48	8.89	0.6208	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.953	0.841	0.5311	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	43.68%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

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Report Date: 08 Dec-17 12:45 (p 20 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-8669-3329		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 passed mean dry weight-mg	31.25%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-009	1.2	1.76	0.32	14	CDF	0.1245	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2	2.59	0.5301	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.191226	0.191226	1	1.45	0.2491	Non-Significant Effect					
Error	1.85107	0.13222	14								
Total	2.0423		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.04	8.89	0.9605	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.969	0.841	0.8236	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	21.34%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Report Date: 08 Dec-17 12:45 (p 21 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-2747-1040		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-010 failed mean dry weight-mg				32.95%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-010*	1.83	1.76	0.338	14	CDF	0.0445	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.97	2.59	0.5929	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.490891		0.490891	1	3.34	0.0891	Non-Significant Effect				
Error	2.05836		0.147026	14							
Total	2.54925			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.18	8.89	0.8314	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.933	0.841	0.2740	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	34.19%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 22 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-7704-9168		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:24		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-002 passed mean dry weight-mg	29.33%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-002	-0.305	1.76	0.301	14	CDF	0.6175	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.61	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0108325	0.0108325	1	0.093	0.7649	Non-Significant Effect					
Error	1.631	0.1165	14								
Total	1.64183		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.37	8.89	0.6867	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.943	0.841	0.3817	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	5.08%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 23 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-2478-5460		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:24		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-003 passed mean dry weight-mg				26.20%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-003	-1.64	1.76	0.255	14	CDF	0.9381	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.59	0.7314	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.224652		0.224652	1	2.68	0.1238	Non-Significant Effect				
Error	1.17266		0.0837617	14							
Total	1.39732			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.42	8.89	0.6571	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.969	0.841	0.8173	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	-24.37%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		

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Report Date: 08 Dec-17 12:45 (p 24 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-6580-1582		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:24		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-004 passed mean dry weight-mg					29.80%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-004	-0.834	1.76	0.29	14	CDF	0.7909	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.1	2.59	0.3852	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0753238		0.0753238	1	0.696	0.4183	Non-Significant Effect				
Error	1.51617		0.108298	14							
Total	1.59149			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.21	8.89	0.8117	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8814	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	-14.11%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		

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Report Date: 08 Dec-17 12:45 (p 25 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-3272-9338		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-005 passed mean dry weight-mg	30.26%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-005	-0.959	1.76	0.294	14	CDF	0.8230	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.76	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.102664	0.102664	1	0.919	0.3540	Non-Significant Effect					
Error	1.56389	0.111706	14								
Total	1.66655		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.27	8.89	0.7569	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.972	0.841	0.8730	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	-16.47%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		

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Report Date: 08 Dec-17 12:45 (p 26 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 21-3359-5152		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-006 passed mean dry weight-mg				21.26%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-006	1.06	1.76	0.207	14	CDF	0.1540	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.34	2.59	0.1588	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.061741		0.061741	1	1.12	0.3080	Non-Significant Effect				
Error	0.772208		0.0551577	14							
Total	0.833949			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			8.12	8.89	0.0130	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8854	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	12.77%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 27 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-6099-9188		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-007 failed mean dry weight-mg				29.63%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-007*	1.92	1.77	0.288	13	CDF	0.0387	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.75	2.55	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.363912		0.363912	1	3.68	0.0773	Non-Significant Effect				
Error	1.28561		0.098893	13							
Total	1.64952			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.01	9.16	0.9691	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.941	0.833	0.4014	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	32.10%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

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Report Date: 08 Dec-17 12:45 (p 28 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-1320-2183		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-008 failed mean dry weight-mg					27.88%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-008*	2.57	1.76	0.271	14	CDF	0.0111	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.78	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.625772		0.625772	1	6.6	0.0223	Significant Effect				
Error	1.32711		0.0947935	14							
Total	1.95288			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.07	8.89	0.9266	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.944	0.841	0.4052	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	40.67%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 29 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-6579-2371		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-009 passed mean dry weight-mg					30.56%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-009	0.987	1.76	0.297	14	CDF	0.1702	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.16	2.59	0.3159	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.111032		0.111032	1	0.975	0.3403	Non-Significant Effect				
Error	1.59508		0.113934	14							
Total	1.70611			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.32	8.89	0.7234	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.972	0.841	0.8646	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	17.13%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-8793-6425		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-010 passed mean dry weight-mg					32.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-010	1.66	1.76	0.316	14	CDF	0.0593	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.1	2.59	0.3834	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.35588		0.35588	1	2.76	0.1186	Non-Significant Effect				
Error	1.80237		0.12874	14							
Total	2.15825			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.62	8.89	0.5390	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.935	0.841	0.2872	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	30.67%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

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Report Date: 08 Dec-17 12:45 (p 31 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-5084-9447		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C < T			29632-003 passed mean dry weight-mg					27.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-003	1.16	1.76	0.281	14	CDF	0.1331	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.65	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.136823	0.136823	1	1.34	0.2663	Non-Significant Effect					
Error	1.42866	0.102047	14								
Total	1.56548		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.94	8.89	0.3999	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.948	0.841	0.4633	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	-18.05%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-2078-6118		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-003 passed mean dry weight-mg				26.20%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-003	1.64	1.76	0.255	14	CDF	0.0619	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.9	2.59	0.7314		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.224652		0.224652	1	2.68	0.1238		Non-Significant Effect			
Error	1.17266		0.0837617	14							
Total	1.39732			15							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		1.42	8.89	0.6571		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.969	0.841	0.8173		Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	-24.37%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-5798-0177		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-004 passed mean dry weight-mg	22.30%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-004	0.651	1.76	0.27	14	CDF	0.2627	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.26	2.59	0.2191	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0398095	0.0398095	1	0.424	0.5254	Non-Significant Effect					
Error	1.31382	0.0938445	14								
Total	1.35363		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.71	8.89	0.4968	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.956	0.841	0.5876	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	8.25%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-8660-7263		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-005 passed mean dry weight-mg				22.70%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-005	0.492	1.76	0.275	14	CDF	0.3150	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.88	2.59	0.7610	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0235814		0.0235814	1	0.242	0.6301	Non-Significant Effect				
Error	1.36154		0.0972531	14							
Total	1.38512			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.81	8.89	0.4534	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.954	0.841	0.5495	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	6.35%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	01-6653-5837	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:26	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C > T	29632-006 failed mean dry weight-mg			14.69%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-006*	3.58	1.76	0.178	14	CDF	0.0015	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.4	2.59	0.1212	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.521937	0.521937	1	12.8	0.0030	Significant Effect					
Error	0.569865	0.0407046	14								
Total	1.0918		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.73	8.89	0.0348	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.965	0.841	0.7540	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	29.86%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-3613-9521		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 failed mean dry weight-mg	21.87%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-007*	3.68	1.77	0.265	13	CDF	0.0014	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.68	2.55	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.12605	1.12605	1	13.5	0.0028	Significant Effect					
Error	1.08327	0.0833281	13								
Total	2.20931		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.44	9.16	0.6413	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.959	0.833	0.6712	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	45.40%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 06-4166-8847		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 failed mean dry weight-mg	20.64%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-008*	4.46	1.76	0.25	14	CDF	2.7E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.94	2.59	0.6492	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.60031	1.60031	1	19.9	5.4E-04	Significant Effect					
Error	1.12477	0.0803404	14								
Total	2.72507		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.32	8.89	0.7246	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.972	0.841	0.8703	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	52.29%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 38 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	12-4722-7244	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:26	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-009 failed mean dry weight-mg				22.96%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-009*	2.56	1.76	0.278	14	CDF	0.0114	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.31	2.59	0.1781	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.651554	0.651554	1	6.55	0.0227	Significant Effect					
Error	1.39274	0.0994811	14								
Total	2.04429		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.87	8.89	0.4276	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.968	0.841	0.8116	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	33.37%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Report Date: 08 Dec-17 12:45 (p 39 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-0212-8115		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 failed mean dry weight-mg	24.61%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-010*	3.17	1.76	0.298	14	CDF	0.0034	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.23	2.59	0.2415	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.14604	1.14604	1	10	0.0069	Significant Effect					
Error	1.60002	0.114287	14								
Total	2.74606		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.3	8.89	0.2947	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.969	0.841	0.8300	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	44.25%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

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Report Date: 08 Dec-17 12:45 (p 40 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-2400-9929		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-004 passed mean dry weight-mg				30.58%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-004	0.479	1.76	0.313	14	CDF	0.3197	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.94	2.59	0.6377		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.0290268		0.0290268	1	0.229	0.6394		Non-Significant Effect			
Error	1.77216		0.126583	14							
Total	1.80119			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.14	8.89	0.8685		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.971	0.841	0.8529		Normal Distribution			
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	-8.31%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		

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Report Date: 08 Dec-17 12:45 (p 41 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-3626-8665		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C < T			29632-004 passed mean dry weight-mg					29.80%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-004	0.834	1.76	0.29	14	CDF	0.2091	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.1	2.59	0.3852	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0753238	0.0753238	1	0.696	0.4183	Non-Significant Effect					
Error	1.51617	0.108298	14								
Total	1.59149		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.21	8.89	0.8117	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8814	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	-14.11%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		

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Report Date: 08 Dec-17 12:45 (p 42 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-3807-7121		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-004 passed mean dry weight-mg	22.30%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-004	-0.651	1.76	0.27	14	CDF	0.7373	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.26	2.59	0.2191	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0398095	0.0398095	1	0.424	0.5254	Non-Significant Effect					
Error	1.31382	0.0938445	14								
Total	1.35363		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.71	8.89	0.4968	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.956	0.841	0.5876	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	8.25%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 43 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-2826-4087	Endpoint: Mean Dry Weight-mg		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:27	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp		Comparison Result			PMSD					
Untransformed	C > T		29632-005 passed mean dry weight-mg			27.69%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-005	-0.132	1.76	0.307	14	CDF	0.5515	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.98	2.59	0.5681	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0021124	0.0021124	1	0.0173	0.8971	Non-Significant Effect					
Error	1.70505	0.121789	14								
Total	1.70716		15								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.06	8.89	0.9430	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.956	0.841	0.5852	Normal Distribution					
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	-2.07%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		

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Report Date: 08 Dec-17 12:45 (p 44 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 21-0837-6738		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-006 failed mean dry weight-mg	21.40%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-006*	2.05	1.86	0.237	8	CDF	0.0374	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.71	2.59	0.0257	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.273455	0.273455	1	4.19	0.0599	Non-Significant Effect					
Error	0.913368	0.0652405	14								
Total	1.18682		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	9.78	8.89	0.0075	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.887	0.841	0.0494	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	23.56%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		

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Report Date: 08 Dec-17 12:45 (p 45 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 06-8424-1430		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 failed mean dry weight-mg	27.36%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-007*	2.62	1.77	0.304	13	CDF	0.0106	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.09	2.55	0.3578	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.754113	0.754113	1	6.87	0.0211	Significant Effect					
Error	1.42677	0.109751	13								
Total	2.18088		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.19	10.8	0.8500	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.981	0.833	0.9731	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	40.50%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

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Report Date: 08 Dec-17 12:45 (p 46 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-3290-5760		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 failed mean dry weight-mg	25.70%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-008*	3.29	1.76	0.285	14	CDF	0.0027	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.13	2.59	0.3427	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.13531	1.13531	1	10.8	0.0054	Significant Effect					
Error	1.46827	0.104876	14								
Total	2.60358		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.3	8.89	0.7413	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.959	0.841	0.6487	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	48.00%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 47 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-7511-5853		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-009 passed mean dry weight-mg				27.94%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-009	1.73	1.76	0.31	14	CDF	0.0532	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.07	2.59	0.4295	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.369258	0.369258	1	2.98	0.1064	Non-Significant Effect					
Error	1.73624	0.124017	14								
Total	2.1055		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.1	8.89	0.9076	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.951	0.841	0.5029	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	27.38%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Report Date: 08 Dec-17 12:45 (p 48 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	18-3596-8437	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:27	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C > T	29632-010 failed mean dry weight-mg			29.56%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-010*	2.34	1.76	0.328	14	CDF	0.0174	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.02	2.59	0.4955	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.758656	0.758656	1	5.46	0.0348	Significant Effect					
Error	1.94352	0.138823	14								
Total	2.70218		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.35	8.89	0.7054	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.982	0.841	0.9748	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	39.24%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 49 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-5175-8220		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-005 passed mean dry weight-mg				30.99%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-005	0.6	1.76	0.318	14	CDF	0.2790	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.63	2.59	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.0468001		0.0468001	1	0.36	0.5581		Non-Significant Effect			
Error	1.81988		0.129992	14							
Total	1.86668			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.08	8.89	0.9250		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.917	0.841	0.1509		Normal Distribution			
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	-10.56%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 50 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-3653-6659		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-005 passed mean dry weight-mg				30.26%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-005	0.959	1.76	0.294	14	CDF	0.1770	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.76	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.102664		0.102664	1	0.919	0.3540	Non-Significant Effect				
Error	1.56389		0.111706	14							
Total	1.66655			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.27	8.89	0.7569	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.972	0.841	0.8730	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	-16.47%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		

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Report Date: 08 Dec-17 12:45 (p 51 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-5601-2785		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C < T			29632-005 passed mean dry weight-mg					22.70%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-005	-0.492	1.76	0.275	14	CDF	0.6850	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.88	2.59	0.7610	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0235814	0.0235814	1	0.242	0.6301	Non-Significant Effect					
Error	1.36154	0.0972531	14								
Total	1.38512		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.81	8.89	0.4534	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.954	0.841	0.5495	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	6.35%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		

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Report Date: 08 Dec-17 12:45 (p 52 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-5661-4262		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-005 passed mean dry weight-mg				27.69%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-005	0.132	1.76	0.307	14	CDF	0.4485	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.98	2.59	0.5681	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0021124		0.0021124	1	0.0173	0.8971	Non-Significant Effect				
Error	1.70505		0.121789	14							
Total	1.70716			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.06	8.89	0.9430	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.956	0.841	0.5852	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	-2.07%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 53 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-1637-7415		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-006 failed mean dry weight-mg				21.50%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-006*	2.17	1.86	0.244	8	CDF	0.0308	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.24	2.59	0.2324	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.323636		0.323636	1	4.71	0.0476	Significant Effect				
Error	0.961088		0.0686492	14							
Total	1.28472			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			10.3	8.89	0.0063	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.964	0.841	0.7322	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	0.00%
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	25.11%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 54 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-6229-2270		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-007 failed mean dry weight-mg				27.25%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-007*	2.71	1.77	0.309	13	CDF	0.0089	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.75	2.55	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.833203		0.833203	1	7.35	0.0178	Significant Effect				
Error	1.47449		0.113422	13							
Total	2.30769			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.26	10.8	0.7971	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.951	0.833	0.5481	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	41.70%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 55 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-1029-5804		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-008 failed mean dry weight-mg				25.58%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-008*	3.38	1.76	0.29	14	CDF	0.0023	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.78	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.23537	1.23537	1	11.4	0.0045	Significant Effect					
Error	1.51599	0.108285	14								
Total	2.75135		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.37	8.89	0.6882	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.965	0.841	0.7537	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	49.06%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 56 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-1323-6556		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 failed mean dry weight-mg	27.75%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-009*	1.83	1.76	0.314	14	CDF	0.0442	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.04	2.59	0.4705	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.427228	0.427228	1	3.35	0.0885	Non-Significant Effect					
Error	1.78396	0.127426	14								
Total	2.21119		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.04	8.89	0.9644	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.973	0.841	0.8914	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	28.85%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Report Date: 08 Dec-17 12:45 (p 57 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-3404-5463		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-010 failed mean dry weight-mg					29.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-010*	2.43	1.76	0.332	14	CDF	0.0145	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2	2.59	0.5354	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.840833		0.840833	1	5.91	0.0291	Significant Effect				
Error	1.99125		0.142232	14							
Total	2.83208			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.27	8.89	0.7589	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.966	0.841	0.7677	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	40.47%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 58 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-0718-3270		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-006 passed mean dry weight-mg	24.59%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-006	-1.3	1.86	0.252	8	CDF	0.8852	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.94	2.59	0.6368	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.124296	0.124296	1	1.69	0.2143	Non-Significant Effect					
Error	1.0282	0.0734431	14								
Total	1.1525		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	11.1	8.89	0.0051	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.963	0.841	0.7253	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	17.20%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 59 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-0852-0693		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-006 passed mean dry weight-mg				21.26%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-006	-1.06	1.76	0.207	14	CDF	0.8460	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.34	2.59	0.1588	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.061741		0.061741	1	1.12	0.3080	Non-Significant Effect				
Error	0.772208		0.0551577	14							
Total	0.833949			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			8.12	8.89	0.0130	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8854	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	12.77%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 60 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-2860-1405		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-006 passed mean dry weight-mg				14.69%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-006	-3.58	1.76	0.178	14	CDF	0.9985	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.4	2.59	0.1212	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.521937		0.521937	1	12.8	0.0030	Significant Effect				
Error	0.569865		0.0407046	14							
Total	1.0918			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.73	8.89	0.0348	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.965	0.841	0.7540	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	29.86%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 61 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	18-0950-5280	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:29	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-006 passed mean dry weight-mg			21.40%						
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-006	-2.05	1.86	0.237	8	CDF	0.9626	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.71	2.59	0.0257	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.273455	0.273455	1	4.19	0.0599	Non-Significant Effect					
Error	0.913368	0.0652405	14								
Total	1.18682		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	9.78	8.89	0.0075	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.887	0.841	0.0494	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	23.56%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 62 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-1417-7222		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-006 passed mean dry weight-mg	21.50%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-006	-2.17	1.86	0.244	8	CDF	0.9692	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.24	2.59	0.2324	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.323636	0.323636	1	4.71	0.0476	Significant Effect					
Error	0.961088	0.0686492	14								
Total	1.28472		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	10.3	8.89	0.0063	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.964	0.841	0.7322	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	0.00%
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	25.11%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-7864-9239		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-007 passed mean dry weight-mg				24.76%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-007	1.58	1.77	0.21	13	CDF	0.0685	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.06	2.55	0.4007	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.131914		0.131914	1	2.51	0.1370	Non-Significant Effect				
Error	0.682811		0.0525239	13							
Total	0.814725			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			8.24	9.16	0.0136	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.993	0.833	1.0000	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	22.16%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-5682-3023		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-008 failed mean dry weight-mg				23.61%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-008*	2.39	1.76	0.2	14	CDF	0.0159	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.41	2.59	0.1145		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.294393		0.294393	1	5.69	0.0317		Significant Effect			
Error	0.724311		0.0517365	14							
Total	1.0187			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			7.55	8.89	0.0161		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.96	0.841	0.6533		Normal Distribution			
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	31.98%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-0316-0055		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-009 passed mean dry weight-mg				29.18%				
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-009	0.318	1.86	0.248	8	CDF	0.3792	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		2.73	2.59	0.0215		Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.0071803		0.0071803	1	0.101	0.7550		Non-Significant Effect			
Error	0.99228		0.0708772	14							
Total	0.999461			15							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		10.7	8.89	0.0057		Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.89	0.841	0.0556		Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	4.99%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-7760-4430		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 passed mean dry weight-mg	32.08%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-010	1.19	1.86	0.272	8	CDF	0.1342	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.58	2.59	0.0526	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.121159	0.121159	1	1.41	0.2542	Non-Significant Effect					
Error	1.19957	0.0856834	14								
Total	1.32073		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	13.2	8.89	0.0030	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.919	0.841	0.1648	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	20.51%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-0597-9156		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed mean dry weight-mg	30.80%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-007	-2.04	1.77	0.316	13	CDF	0.9691	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.53	2.55	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.495336	0.495336	1	4.18	0.0618	Non-Significant Effect					
Error	1.5416	0.118585	13								
Total	2.03694		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.35	10.8	0.7291	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.926	0.833	0.2381	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	35.55%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-3622-5630		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed mean dry weight-mg	29.63%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-007	-1.92	1.77	0.288	13	CDF	0.9613	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.75	2.55	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.363912	0.363912	1	3.68	0.0773	Non-Significant Effect					
Error	1.28561	0.098893	13								
Total	1.64952		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.01	9.16	0.9691	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.941	0.833	0.4014	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	32.10%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

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Report Date: 08 Dec-17 12:45 (p 69 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-4057-7774		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed mean dry weight-mg	21.87%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-007	-3.68	1.77	0.265	13	CDF	0.9986	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.68	2.55	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.12605	1.12605	1	13.5	0.0028	Significant Effect					
Error	1.08327	0.0833281	13								
Total	2.20931		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.44	9.16	0.6413	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.959	0.833	0.6712	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	45.40%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

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Report Date: 08 Dec-17 12:45 (p 70 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-3418-6074		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-007 passed mean dry weight-mg				27.36%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-007	-2.62	1.77	0.304	13	CDF	0.9894	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.09	2.55	0.3578	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.754113		0.754113	1	6.87	0.0211	Significant Effect				
Error	1.42677		0.109751	13							
Total	2.18088			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.19	10.8	0.8500	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.981	0.833	0.9731	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	40.50%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 71 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-8707-2264		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-007 passed mean dry weight-mg				27.25%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-007	-2.71	1.77	0.309	13	CDF	0.9911	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.75	2.55	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.833203		0.833203	1	7.35	0.0178	Significant Effect				
Error	1.47449		0.113422	13							
Total	2.30769			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.26	10.8	0.7971	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.951	0.833	0.5481	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	41.70%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 72 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-5590-5524		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29632-007 passed mean dry weight-mg			24.76%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-007	-1.58	1.77	0.21	13	CDF	0.9315	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.06	2.55	0.4007	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.131914		0.131914	1	2.51	0.1370	Non-Significant Effect				
Error	0.682811		0.0525239	13							
Total	0.814725			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			8.24	9.16	0.0136	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.993	0.833	1.0000	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	0.00%
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	22.16%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 73 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-0185-6370		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 passed mean dry weight-mg	42.82%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-008	0.522	1.77	0.283	13	CDF	0.3053	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.78	2.55	0.9247	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0259154	0.0259154	1	0.272	0.6106	Non-Significant Effect					
Error	1.23771	0.0952086	13								
Total	1.26363		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.09	9.16	0.8988	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.945	0.833	0.4492	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	12.62%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

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Report Date: 08 Dec-17 12:45 (p 74 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-2531-5006		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 passed mean dry weight-mg	47.23%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-009	-0.827	1.77	0.312	13	CDF	0.7883	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.14	2.55	0.2957	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0791498	0.0791498	1	0.683	0.4233	Non-Significant Effect					
Error	1.50568	0.115822	13								
Total	1.58483		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.3	10.8	0.7646	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.98	0.833	0.9686	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	-22.05%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Report Date: 08 Dec-17 12:45 (p 75 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-6818-6867		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-010 passed mean dry weight-mg				50.38%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-010	-0.0742	1.77	0.333	13	CDF	0.5290	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.08	2.55	0.3690	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0007248		0.0007248	1	0.0055	0.9420	Non-Significant Effect				
Error	1.71297		0.131767	13							
Total	1.71369			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.6	10.8	0.5845	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.94	0.833	0.3818	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	-2.11%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

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Report Date: 08 Dec-17 12:45 (p 76 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-6157-5721		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed mean dry weight-mg	28.90%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-008	-2.66	1.76	0.296	14	CDF	0.9907	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.63	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.80127	0.80127	1	7.09	0.0186	Significant Effect					
Error	1.5831	0.113079	14								
Total	2.38437		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.48	8.89	0.6208	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.953	0.841	0.5311	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	43.68%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

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Report Date: 08 Dec-17 12:45 (p 77 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	00-3232-8319	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:31	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-008 passed mean dry weight-mg				27.88%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-008	-2.57	1.76	0.271	14	CDF	0.9889	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.78	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.625772	0.625772	1	6.6	0.0223	Significant Effect					
Error	1.32711	0.0947935	14								
Total	1.95288		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.07	8.89	0.9266	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.944	0.841	0.4052	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	40.67%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

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Report Date: 08 Dec-17 12:45 (p 78 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-9783-0557		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed mean dry weight-mg	20.64%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-008	-4.46	1.76	0.25	14	CDF	0.9997	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.94	2.59	0.6492	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.60031	1.60031	1	19.9	5.4E-04	Significant Effect					
Error	1.12477	0.0803404	14								
Total	2.72507		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.32	8.89	0.7246	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.972	0.841	0.8703	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	52.29%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 79 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 06-1782-9260	Endpoint: Mean Dry Weight-mg		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:31	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp		Comparison Result			PMSD					
Untransformed	C < T		29632-008 passed mean dry weight-mg			25.70%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-008	-3.29	1.76	0.285	14	CDF	0.9973	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.13	2.59	0.3427	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.13531	1.13531	1	10.8	0.0054	Significant Effect					
Error	1.46827	0.104876	14								
Total	2.60358		15								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.3	8.89	0.7413	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.959	0.841	0.6487	Normal Distribution					
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	48.00%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

CETIS Analytical Report

Report Date: 08 Dec-17 12:45 (p 80 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-6149-8315		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed mean dry weight-mg	25.58%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-008	-3.38	1.76	0.29	14	CDF	0.9977	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.78	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.23537	1.23537	1	11.4	0.0045	Significant Effect					
Error	1.51599	0.108285	14								
Total	2.75135		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.37	8.89	0.6882	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.965	0.841	0.7537	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	49.06%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

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Report Date: 08 Dec-17 12:45 (p 81 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-6872-8595		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-008 passed mean dry weight-mg				23.61%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-008	-2.39	1.76	0.2	14	CDF	0.9841	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.41	2.59	0.1145	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.294393	0.294393	1	5.69	0.0317	Significant Effect					
Error	0.724311	0.0517365	14								
Total	1.0187		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			7.55	8.89	0.0161	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.96	0.841	0.6533	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	31.98%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

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Report Date: 08 Dec-17 12:45 (p 82 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-9321-7206		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed mean dry weight-mg	42.82%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-008	-0.522	1.77	0.283	13	CDF	0.6947	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.78	2.55	0.9247	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0259154	0.0259154	1	0.272	0.6106	Non-Significant Effect					
Error	1.23771	0.0952086	13								
Total	1.26363		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.09	9.16	0.8988	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.945	0.833	0.4492	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	0.00%
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	12.62%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		

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Report Date: 08 Dec-17 12:45 (p 83 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	07-0245-8662	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:32	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C > T	29632-009 passed mean dry weight-mg			50.73%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-009	-1.38	1.76	0.293	14	CDF	0.9050	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.19	2.59	0.2803	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.20962	0.20962	1	1.9	0.1901	Non-Significant Effect					
Error	1.54718	0.110513	14								
Total	1.7568		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.42	8.89	0.6559	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.956	0.841	0.5982	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	-39.67%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Report Date: 08 Dec-17 12:45 (p 84 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-6369-4696		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-010 passed mean dry weight-mg				54.02%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-010	-0.549	1.76	0.312	14	CDF	0.7043	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.13	2.59	0.3476	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0378304	0.0378304	1	0.302	0.5914	Non-Significant Effect					
Error	1.75447	0.125319	14								
Total	1.7923		15								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.74	8.89	0.4808	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.934	0.841	0.2810	Normal Distribution					
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	-16.85%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

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Report Date: 08 Dec-17 12:45 (p 85 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-7381-4327		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-009 passed mean dry weight-mg				31.25%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-009	-1.2	1.76	0.32	14	CDF	0.8755	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2	2.59	0.5301		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.191226		0.191226	1	1.45	0.2491		Non-Significant Effect			
Error	1.85107		0.13222	14							
Total	2.0423			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.04	8.89	0.9605		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.969	0.841	0.8236		Normal Distribution			
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	21.34%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 86 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	12-5709-8330	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:32	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-009 passed mean dry weight-mg			30.56%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-009	-0.987	1.76	0.297	14	CDF	0.8298	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.16	2.59	0.3159	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.111032	0.111032	1	0.975	0.3403	Non-Significant Effect					
Error	1.59508	0.113934	14								
Total	1.70611		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.32	8.89	0.7234	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.972	0.841	0.8646	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	17.13%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 87 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-9338-6873		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-009 passed mean dry weight-mg				22.96%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-009	-2.56	1.76	0.278	14	CDF	0.9886	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.31	2.59	0.1781	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.651554		0.651554	1	6.55	0.0227	Significant Effect				
Error	1.39274		0.0994811	14							
Total	2.04429			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.87	8.89	0.4276	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.968	0.841	0.8116	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	33.37%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 88 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-8848-3677		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-009 passed mean dry weight-mg	27.94%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-009	-1.73	1.76	0.31	14	CDF	0.9468	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.07	2.59	0.4295	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.369258	0.369258	1	2.98	0.1064	Non-Significant Effect					
Error	1.73624	0.124017	14								
Total	2.1055		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.1	8.89	0.9076	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.951	0.841	0.5029	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	27.38%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Report Date: 08 Dec-17 12:46 (p 89 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-0978-9809		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-009 passed mean dry weight-mg				27.75%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-009	-1.83	1.76	0.314	14	CDF	0.9558	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.04	2.59	0.4705	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.427228		0.427228	1	3.35	0.0885	Non-Significant Effect				
Error	1.78396		0.127426	14							
Total	2.21119			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.04	8.89	0.9644	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8914	Normal Distribution				
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	28.85%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 90 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	11-2134-4395	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:33	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-009 passed mean dry weight-mg			29.18%						
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-009	-0.318	1.86	0.248	8	CDF	0.6208	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.73	2.59	0.0215	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0071803	0.0071803	1	0.101	0.7550	Non-Significant Effect					
Error	0.99228	0.0708772	14								
Total	0.999461		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	10.7	8.89	0.0057	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.89	0.841	0.0556	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	4.99%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Report Date: 08 Dec-17 12:46 (p 91 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-6685-2262		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-009 passed mean dry weight-mg				47.23%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-009	0.827	1.77	0.312	13	CDF	0.2117	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.14	2.55	0.2957		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.0791498		0.0791498	1	0.683	0.4233		Non-Significant Effect			
Error	1.50568		0.115822	13							
Total	1.58483			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.3	10.8	0.7646		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.98	0.833	0.9686		Normal Distribution			
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	-22.05%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817 1.51			

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 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	00-6548-0388	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:33	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-009 passed mean dry weight-mg			50.73%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-009	1.38	1.76	0.293	14	CDF	0.0950	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.19	2.59	0.2803	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.20962	0.20962	1	1.9	0.1901	Non-Significant Effect					
Error	1.54718	0.110513	14								
Total	1.7568		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.42	8.89	0.6559	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.956	0.841	0.5982	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	0.00%
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	-39.67%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		

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Report Date: 08 Dec-17 12:46 (p 93 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-9788-4196	Endpoint: Mean Dry Weight-mg		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:33	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C > T	29632-010 passed mean dry weight-mg			41.53%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-009		29632-010	0.693	1.76	0.335	14	CDF	0.2499	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.98	2.59	0.5619	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0693494	0.0693494	1	0.48	0.4997	Non-Significant Effect					
Error	2.02244	0.14446	14								
Total	2.09179		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.23	8.89	0.7930	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.927	0.841	0.2213	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	16.34%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

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Report Date: 08 Dec-17 12:46 (p 94 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-6931-5885		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry weight-mg	32.95%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-010	-1.83	1.76	0.338	14	CDF	0.9555	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.97	2.59	0.5929	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.490891	0.490891	1	3.34	0.0891	Non-Significant Effect					
Error	2.05836	0.147026	14								
Total	2.54925		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.18	8.89	0.8314	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.933	0.841	0.2740	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	1.02	0.718	1.33		0.516	1.46	0.13	35.83%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	34.19%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.665	1.04	1.46	1.4	0.791	0.902	1.42	0.516		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 95 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-2429-9168		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry weight-mg	32.49%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-010	-1.66	1.76	0.316	14	CDF	0.9407	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.1	2.59	0.3834	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.35588	0.35588	1	2.76	0.1186	Non-Significant Effect					
Error	1.80237	0.12874	14								
Total	2.15825		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.62	8.89	0.5390	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.935	0.841	0.2872	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.973	0.711	1.23		0.552	1.5	0.111	32.22%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	30.67%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.22	0.846	0.552	1.2	1.5	0.964	0.757	0.74		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 96 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-0310-7559		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry weight-mg	24.61%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-010	-3.17	1.76	0.298	14	CDF	0.9966	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.23	2.59	0.2415	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.14604	1.14604	1	10	0.0069	Significant Effect					
Error	1.60002	0.114287	14								
Total	2.74606		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.3	8.89	0.2947	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.969	0.841	0.8300	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.21	0.99	1.43		0.742	1.53	0.0931	21.76%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	44.25%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.53	1.34	0.742	1	1.05	1.4	1.41	1.2		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 97 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-5238-7504		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry weight-mg	29.56%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-010	-2.34	1.76	0.328	14	CDF	0.9826	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.02	2.59	0.4955	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.758656	0.758656	1	5.46	0.0348	Significant Effect					
Error	1.94352	0.138823	14								
Total	2.70218		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.35	8.89	0.7054	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.982	0.841	0.9748	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	1.11	0.822	1.4		0.442	1.64	0.122	31.00%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	39.24%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.64	1.24	0.991	1.15	1.23	1.26	0.442	0.926		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 98 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-0824-0286		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry weight-mg	29.32%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-010	-2.43	1.76	0.332	14	CDF	0.9855	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2	2.59	0.5354	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.840833	0.840833	1	5.91	0.0291	Significant Effect					
Error	1.99125	0.142232	14								
Total	2.83208		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.27	8.89	0.7589	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.966	0.841	0.7677	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.13	0.837	1.43		0.566	1.55	0.125	31.23%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	40.47%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.566	0.788	1.3	0.921	1.55	1.25	1.14		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 99 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-0898-7171		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry weight-mg	32.08%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-010	-1.19	1.86	0.272	8	CDF	0.8658	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.58	2.59	0.0526	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.121159	0.121159	1	1.41	0.2542	Non-Significant Effect					
Error	1.19957	0.0856834	14								
Total	1.32073		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	13.2	8.89	0.0030	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.919	0.841	0.1648	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.848	0.756	0.94		0.719	1.02	0.0389	12.97%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	20.51%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.02	0.748	0.933	0.719	0.729	0.829	0.914	0.894		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 100 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-3715-1308	Endpoint: Mean Dry Weight-mg		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:34	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-010 passed mean dry weight-mg			50.38%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-010	0.0742	1.77	0.333	13	CDF	0.4710	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.08	2.55	0.3690	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0007248	0.0007248	1	0.0055	0.9420	Non-Significant Effect					
Error	1.71297	0.131767	13								
Total	1.71369		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.6	10.8	0.5845	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.94	0.833	0.3818	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.66	0.368	0.952		0.248	1.11	0.119	47.81%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	-2.11%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.248	1.11	0.376	0.463	0.914	0.854	0.653			
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 101 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-7818-0780	Endpoint:	Mean Dry Weight-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:34	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-010 passed mean dry weight-mg			54.02%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-010	0.549	1.76	0.312	14	CDF	0.2957	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.13	2.59	0.3476	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0378304	0.0378304	1	0.302	0.5914	Non-Significant Effect					
Error	1.75447	0.125319	14								
Total	1.7923		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.74	8.89	0.4808	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.934	0.841	0.2810	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.577	0.324	0.83		0.19	1.11	0.107	52.38%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	-16.85%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.32	1.11	0.73	0.19	0.578	0.633	0.293	0.765		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

CETIS Analytical Report

Report Date: 08 Dec-17 12:46 (p 102 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-4953-8576		Endpoint: Mean Dry Weight-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry weight-mg	41.53%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-009		29632-010	-0.693	1.76	0.335	14	CDF	0.7501	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.98	2.59	0.5619	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0693494	0.0693494	1	0.48	0.4997	Non-Significant Effect					
Error	2.02244	0.14446	14								
Total	2.09179		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.23	8.89	0.7930	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.927	0.841	0.2213	Normal Distribution						
Mean Dry Weight-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	0.806	0.505	1.11		0.28	1.51	0.127	44.67%	0.00%
29632-010		8	0.674	0.341	1.01		0.238	1.4	0.141	59.18%	16.34%
Mean Dry Weight-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009		0.503	0.775	0.28	0.936	0.699	0.928	0.817	1.51		
29632-010		1.4	0.334	0.238	0.719	1.11	0.531	0.651	0.413		

28 day *Leptocheirus plumulosus*
Survival, Growth and Reproduction
Sediment Evaluation

CETIS™ Summary, Ad Hoc Query and
Analytical Reports

Dry Biomass Statistical Analysis

CETIS Summary Report

Report Date: 08 Dec-17 12:43 (p 1 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test	EnviroSystems, Inc.
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Batch ID: 00-1863-2192	Test Type: Leptocheirus (28-d)	Analyst: Nancy Roka
Start Date: 24 Oct-17 11:00	Protocol: EPA/600/R-01/020 (2001)	Diluent: Not Applicable
Ending Date: 21 Nov-17 11:00	Species: Leptocheirus plumulosus	Brine: Not Applicable
Duration: 28d 0h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h		
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)	
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)	
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car	
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car	
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca	
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)	
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)	
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%	
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)	
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)	
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
16-3268-7967	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0010	29632-001 failed mean dry biomass-mg
21-1618-3861	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0261	29632-001 failed mean dry biomass-mg
03-6215-4614	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0249	29632-002 failed mean dry biomass-mg
05-0355-2690	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0010	29632-002 failed mean dry biomass-mg
15-8948-3059	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.5158	29632-002 passed mean dry biomass-mg
20-8988-0872	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.4842	29632-002 passed mean dry biomass-mg
01-5946-4568	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9376	29632-003 passed mean dry biomass-mg
06-5625-0280	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.1890	29632-003 passed mean dry biomass-mg
09-1121-8359	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0589	29632-003 passed mean dry biomass-mg
12-0632-9621	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0624	29632-003 passed mean dry biomass-mg
12-3639-6107	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0164	29632-003 failed mean dry biomass-mg
20-4477-7977	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9411	29632-003 passed mean dry biomass-mg
01-4923-2321	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0060	29632-004 failed mean dry biomass-mg
07-8949-9740	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.1879	29632-004 passed mean dry biomass-mg
09-1180-1201	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.8121	29632-004 passed mean dry biomass-mg
09-5326-8000	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.1789	29632-004 passed mean dry biomass-mg
14-8650-6068	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.8211	29632-004 passed mean dry biomass-mg
15-8026-8405	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.7476	29632-004 passed mean dry biomass-mg
18-5458-0113	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0917	29632-004 passed mean dry biomass-mg
19-3063-4990	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.2524	29632-004 passed mean dry biomass-mg
00-3203-6706	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.2361	29632-005 passed mean dry biomass-mg
03-3344-2820	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.5531	29632-005 passed mean dry biomass-mg
04-7605-9565	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0637	29632-005 passed mean dry biomass-mg

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test **EnviroSystems, Inc.**

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
05-5050-0464	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.2358	29632-005 passed mean dry biomass-mg
10-7812-7930	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9363	29632-005 passed mean dry biomass-mg
15-0429-2924	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9329	29632-005 passed mean dry biomass-mg
19-6083-6547	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.7642	29632-005 passed mean dry biomass-mg
20-3107-9509	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0671	29632-005 passed mean dry biomass-mg
20-7666-4852	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.4469	29632-005 passed mean dry biomass-mg
00-4189-4723	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.8659	29632-006 passed mean dry biomass-mg
00-5208-4422	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	2.7E-05	29632-006 failed mean dry biomass-mg
01-0429-0206	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	3.2E-04	29632-006 failed mean dry biomass-mg
01-4283-5298	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	2.0E-06	29632-006 failed mean dry biomass-mg
01-7853-4149	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9849	29632-006 passed mean dry biomass-mg
02-9460-9203	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0151	29632-006 failed mean dry biomass-mg
06-1495-0366	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.1341	29632-006 passed mean dry biomass-mg
07-7679-1326	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.8529	29632-006 passed mean dry biomass-mg
08-4661-6711	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0038	29632-006 failed mean dry biomass-mg
08-7278-7989	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	1.0000	29632-006 passed mean dry biomass-mg
10-9779-1089	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9997	29632-006 passed mean dry biomass-mg
12-9136-1790	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.1471	29632-006 passed mean dry biomass-mg
13-3107-8293	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9962	29632-006 passed mean dry biomass-mg
17-0108-8169	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0015	29632-006 failed mean dry biomass-mg
20-4828-6524	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9985	29632-006 passed mean dry biomass-mg
16-7504-2753	Mean Dry Biomass-mg	Wilcoxon Rank Sum Two-Sample Test	0.0052	29632-006 failed mean dry biomass-mg
01-1310-1741	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	6.1E-05	29632-007 failed mean dry biomass-mg
01-2308-8286	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9842	29632-007 passed mean dry biomass-mg
03-1037-1498	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0026	29632-007 failed mean dry biomass-mg
04-4802-8526	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9950	29632-007 passed mean dry biomass-mg
04-7116-7173	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9966	29632-007 passed mean dry biomass-mg
05-2169-6736	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0912	29632-007 passed mean dry biomass-mg
05-5975-8832	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9088	29632-007 passed mean dry biomass-mg
10-0814-6144	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0034	29632-007 failed mean dry biomass-mg
11-7086-6169	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0844	29632-007 passed mean dry biomass-mg
12-3285-5159	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.7672	29632-007 passed mean dry biomass-mg
14-7074-0869	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0050	29632-007 failed mean dry biomass-mg
17-2600-9893	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9156	29632-007 passed mean dry biomass-mg
17-4142-4518	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0158	29632-007 failed mean dry biomass-mg
19-7009-8645	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.2328	29632-007 passed mean dry biomass-mg
00-3895-3002	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	5.7E-04	29632-008 failed mean dry biomass-mg
00-7390-1226	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.2132	29632-008 passed mean dry biomass-mg
01-0762-8504	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0025	29632-008 failed mean dry biomass-mg
02-6179-9872	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9996	29632-008 passed mean dry biomass-mg
03-1328-8206	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9992	29632-008 passed mean dry biomass-mg
04-6092-8027	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0389	29632-008 failed mean dry biomass-mg
07-1249-8197	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0176	29632-008 failed mean dry biomass-mg
12-6596-5104	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9975	29632-008 passed mean dry biomass-mg
13-2758-2264	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9805	29632-008 passed mean dry biomass-mg
13-5550-3926	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	8.3E-06	29632-008 failed mean dry biomass-mg
13-7364-9523	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9824	29632-008 passed mean dry biomass-mg
13-7572-8941	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9983	29632-008 passed mean dry biomass-mg
13-9083-5828	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	4.4E-04	29632-008 failed mean dry biomass-mg
14-3014-6892	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0195	29632-008 failed mean dry biomass-mg
17-8561-8191	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0017	29632-008 failed mean dry biomass-mg
18-9631-1281	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.7868	29632-008 passed mean dry biomass-mg
20-0810-7153	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9611	29632-008 passed mean dry biomass-mg

CETIS Summary Report

Report Date: 08 Dec-17 12:44 (p 3 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test **EnviroSystems, Inc.**

Single Comparison Summary					
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	
20-8437-3921	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	8.4E-04	29632-008 failed mean dry biomass-mg	
00-6895-0533	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0737	29632-009 passed mean dry biomass-mg	
00-7750-6922	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	2.2E-04	29632-009 failed mean dry biomass-mg	
01-9983-4123	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9263	29632-009 passed mean dry biomass-mg	
02-1833-3709	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9859	29632-009 passed mean dry biomass-mg	
02-3509-4917	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.2283	29632-009 passed mean dry biomass-mg	
03-1949-4621	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.2522	29632-009 passed mean dry biomass-mg	
03-9175-1684	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0141	29632-009 failed mean dry biomass-mg	
05-1981-7684	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.4431	29632-009 passed mean dry biomass-mg	
05-6465-1352	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9821	29632-009 passed mean dry biomass-mg	
07-3147-3154	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0179	29632-009 failed mean dry biomass-mg	
11-0793-5276	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0564	29632-009 passed mean dry biomass-mg	
11-4750-0735	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0078	29632-009 failed mean dry biomass-mg	
11-8807-6242	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.5569	29632-009 passed mean dry biomass-mg	
12-8994-4358	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.7478	29632-009 passed mean dry biomass-mg	
12-9752-7478	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9436	29632-009 passed mean dry biomass-mg	
13-7116-4281	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.7588	29632-009 passed mean dry biomass-mg	
19-1194-9202	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.7717	29632-009 passed mean dry biomass-mg	
19-8810-1612	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.2412	29632-009 passed mean dry biomass-mg	
02-9510-2056	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.1401	29632-010 passed mean dry biomass-mg	
05-8836-8603	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.8599	29632-010 passed mean dry biomass-mg	
06-4008-5080	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9920	29632-010 passed mean dry biomass-mg	
06-8976-7169	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9680	29632-010 passed mean dry biomass-mg	
08-1176-3163	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.1546	29632-010 passed mean dry biomass-mg	
09-5125-0056	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.3614	29632-010 passed mean dry biomass-mg	
10-2399-8248	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.6022	29632-010 passed mean dry biomass-mg	
11-0659-7436	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.3978	29632-010 passed mean dry biomass-mg	
11-3636-4150	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0080	29632-010 failed mean dry biomass-mg	
13-7421-9064	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.1493	29632-010 passed mean dry biomass-mg	
14-0848-8569	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0105	29632-010 failed mean dry biomass-mg	
14-9776-1934	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.9895	29632-010 passed mean dry biomass-mg	
16-6370-5053	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.8454	29632-010 passed mean dry biomass-mg	
16-6884-8151	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0049	29632-010 failed mean dry biomass-mg	
17-6402-6615	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.8507	29632-010 passed mean dry biomass-mg	
17-8494-0693	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.0320	29632-010 failed mean dry biomass-mg	
18-4382-7191	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.6386	29632-010 passed mean dry biomass-mg	
18-4895-8772	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.6493	29632-010 passed mean dry biomass-mg	
21-1604-7901	Mean Dry Biomass-mg	Equal Variance t Two-Sample Test	0.3507	29632-010 passed mean dry biomass-mg	

Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29632-000	LC	8	1.27	0.82	1.71	0.09	1.83	0.188	0.533	42.11%	0.00%
29632-001	N	8	0.773	0.451	1.09	0.258	1.35	0.136	0.385	49.81%	38.95%
29632-002		8	0.765	0.44	1.09	0.276	1.35	0.137	0.389	50.86%	39.57%
29632-003		8	1.06	0.79	1.34	0.408	1.4	0.116	0.327	30.76%	15.90%
29632-004		8	0.945	0.637	1.25	0.199	1.47	0.13	0.369	39.00%	25.33%
29632-005		8	1.09	0.745	1.43	0.396	1.55	0.146	0.412	37.83%	13.90%
29632-006		8	0.603	0.471	0.735	0.411	0.817	0.056	0.158	26.25%	52.36%
29632-007		8	0.491	0.164	0.818	0.005	1.11	0.138	0.392	79.77%	61.21%
29632-008		8	0.336	0.0325	0.64	0.0095	1.05	0.128	0.363	108.06%	73.43%
29632-009		8	0.624	0.3	0.949	0.112	1.36	0.137	0.388	62.18%	50.65%
29632-010		8	0.545	0.189	0.9	0.0595	1.26	0.15	0.425	78.03%	56.94%

CETIS Summary Report

Report Date: 08 Dec-17 12:44 (p 4 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test									EnviroSystems, Inc.
Mean Dry Biomass-mg Detail									
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
29632-000	LC	0.09	1.23	1.83	1.15	1.34	1.22	1.63	1.63
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: L. plumulosus 28 Day Survival, Growth and Reproduction Evaluation
Endpoint: Mean Dry Biomass-mg

Analysis ID	Station	Method	Sample Code	Code 1	Tails	Sample Code	Code 2	Statistic	Critical	P Level	Alpha	Reject Null	MSD	DF	Ties	P-Type
1843827191	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-006		C < T	29632-010		-0.3620453	1.76131	0.6386377	0.05	FALSE	0.2824683	14		C
1970098645	A/S/10% (Lp SediMite 10%)	Equal Variance t Two-Sample Test	29632-006		C > T	29632-007		0.7500726	1.76131	0.2328152	0.05	FALSE	0.262997	14		C
460928027	A/B/3% (Lp Biochar 3%)	Equal Variance t Two-Sample Test	29632-006		C > T	29632-008		1.903587	1.76131	0.03886331	0.05	TRUE	0.2467547	14		C
1785618191	A/B/3% (Lp Biochar 3%)	Equal Variance t Two-Sample Test	29632-006		C > T	29632-008		3.586705	1.770933	0.001657556	0.05	TRUE	0.1821669	13		C
1188076242	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-006		C > T	29632-009		-0.1458576	1.76131	0.5569435	0.05	FALSE	0.261133	14		C
951250056	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-006		C > T	29632-010		0.3620453	1.76131	0.3613623	0.05	FALSE	0.2824683	14		C
1896311281	A/B/3% (Lp Biochar 3%)	Equal Variance t Two-Sample Test	29632-007		C < T	29632-008		-0.8191519	1.76131	0.7867875	0.05	FALSE	0.3326027	14		C
319494621	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-007		C < T	29632-009		0.6853569	1.76131	0.2521547	0.05	FALSE	0.3434052	14		C
1106597436	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-007		C < T	29632-010		0.2639667	1.76131	0.3978257	0.05	FALSE	0.3598959	14		C
73901226	A/B/3% (Lp Biochar 3%)	Equal Variance t Two-Sample Test	29632-007		C > T	29632-008		0.8191519	1.76131	0.2132125	0.05	FALSE	0.3326027	14		C
1289944358	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-007		C > T	29632-009		-0.6853569	1.76131	0.7478453	0.05	FALSE	0.3434052	14		C
1023998248	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-007		C > T	29632-010		-0.2639667	1.76131	0.6021743	0.05	FALSE	0.3598959	14		C
68950533	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-008		C < T	29632-009		1.533555	1.76131	0.0737114	0.05	FALSE	0.3311307	14		C
811763163	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-008		C < T	29632-010		1.055282	1.76131	0.154584	0.05	FALSE	0.3482032	14		C
199834123	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-008		C > T	29632-009		-1.533555	1.76131	0.9262886	0.05	FALSE	0.3311307	14		C
1663705053	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-008		C > T	29632-010		-1.055282	1.76131	0.8454161	0.05	FALSE	0.3482032	14		C
1848958772	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-009		C < T	29632-010		-0.3914658	1.76131	0.6493267	0.05	FALSE	0.3585359	14		C
2116047901	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-009		C > T	29632-010		0.3914658	1.76131	0.3506732	0.05	FALSE	0.3585359	14		C

CETIS Analytical Report

Report Date: 08 Dec-17 12:41 (p 1 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-3268-7967		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-001 failed mean dry biomass-mg				21.32%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Negative Control*	3.83	1.77	0.306	13	CDF	0.0010	Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.63011	1.63011	1	14.7	0.0021	Significant Effect					
Error	1.44496	0.11115	13								
Total	3.07507		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.18	10.8	0.3628	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.941	0.833	0.3959	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	1.43	1.19	1.67	1.34	1.15	1.83	0.0986	18.20%	0.00%
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	46.10%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	Outlier	1.23	1.83	1.15	1.34	1.22	1.63	1.63		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-6215-4614		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-002 failed mean dry biomass-mg	32.46%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-002*	2.15	1.76	0.411	14	CDF	0.0249	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.61	2.59	0.0444	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.00275	1.00275	1	4.61	0.0498	Significant Effect					
Error	3.04603	0.217573	14								
Total	4.04878		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.88	8.89	0.4251	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.926	0.841	0.2090	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.27	0.82	1.71	1.28	0.09	1.83	0.188	42.11%	0.00%
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	39.57%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.09	1.23	1.83	1.15	1.34	1.22	1.63	1.63		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 06-5625-0280		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-003 passed mean dry biomass-mg	30.77%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-003	0.91	1.76	0.389	14	CDF	0.1890	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.75	2.59	0.0195	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.162006	0.162006	1	0.829	0.3781	Non-Significant Effect					
Error	2.73729	0.195521	14								
Total	2.89929		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.65	8.89	0.2219	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.865	0.841	0.0230	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.27	0.82	1.71	1.28	0.09	1.83	0.188	42.11%	0.00%
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	15.90%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.09	1.23	1.83	1.15	1.34	1.22	1.63	1.63		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test											EnviroSystems, Inc.	
Analysis ID: 12-3639-6107		Endpoint: Mean Dry Biomass-mg				CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample				Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project						
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm						
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h								
Sample Code	Material Type	Sample Source	Station Location	Lat/Long								
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)									
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car)									
Data Transform	Alt Hyp	Comparison Result							PMSD			
Untransformed	C > T	29632-003 failed mean dry biomass-mg							19.09%			
Equal Variance t Two-Sample Test												
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)			
Lab Control Sedime		29632-003*	2.39	1.77	0.274	13	CDF	0.0164	Significant Effect			
ANOVA Table												
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)						
Between	0.508777	0.508777	1	5.71	0.0327	Significant Effect						
Error	1.15842	0.0891095	13									
Total	1.6672		14									
Distributional Tests												
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)							
Variances	Variance Ratio F Test	1.57	10.8	0.5969	Equal Variances							
Distribution	Shapiro-Wilk W Normality Test	0.934	0.833	0.3119	Normal Distribution							
Mean Dry Biomass-mg Summary												
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
29632-000	LC	7	1.43	1.19	1.67	1.34	1.15	1.83	0.0986	18.20%	0.00%	
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	25.76%	
Mean Dry Biomass-mg Detail												
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
29632-000	LC	Outlier	1.23	1.83	1.15	1.34	1.22	1.63	1.63			
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-5458-0113		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-004 passed mean dry biomass-mg				31.88%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-004	1.4	1.76	0.403	14	CDF	0.0917	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.66	2.59	0.0342	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.411041	0.411041	1	1.96	0.1834	Non-Significant Effect					
Error	2.93792	0.209851	14								
Total	3.34896		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.09	8.89	0.3516	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.861	0.841	0.0198	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.27	0.82	1.71	1.28	0.09	1.83	0.188	42.11%	0.00%
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	25.33%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.09	1.23	1.83	1.15	1.34	1.22	1.63	1.63		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-3203-6706		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-005 passed mean dry biomass-mg	33.15%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-005	0.739	1.76	0.419	14	CDF	0.2361	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.55	2.59	0.0588	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.123816	0.123816	1	0.546	0.4723	Non-Significant Effect					
Error	3.17632	0.22688	14								
Total	3.30014		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.67	8.89	0.5142	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.908	0.841	0.1079	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.27	0.82	1.71	1.28	0.09	1.83	0.188	42.11%	0.00%
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	13.90%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.09	1.23	1.83	1.15	1.34	1.22	1.63	1.63		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-7504-2753		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-006 failed mean dry biomass-mg				27.35%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-006*	44	n/a	0	14	Exact	0.0052	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			3.1	2.59	0.0013	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.75563	1.75563	1	11.4	0.0046	Significant Effect					
Error	2.16269	0.154478	14								
Total	3.91832		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			11.3	8.89	0.0048	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.815	0.841	0.0044	Non-Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.27	0.82	1.71	1.28	0.09	1.83	0.188	42.11%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	52.36%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.09	1.23	1.83	1.15	1.34	1.22	1.63	1.63		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

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Report Date: 08 Dec-17 12:41 (p 8 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	01-4283-5298		Endpoint:	Mean Dry Biomass-mg			CETIS Version:	CETISv1.9.3			
Analyzed:	07 Dec-17 11:28		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-006 failed mean dry biomass-mg				13.55%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-006*	7.57	1.77	0.194	13	CDF	2.0E-06	Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.57444	2.57444	1	57.3	4.1E-06	Significant Effect					
Error	0.583827	0.0449098	13								
Total	3.15827	14									
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.72	9.16	0.2170	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.926	0.833	0.2342	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	1.43	1.19	1.67	1.34	1.15	1.83	0.0986	18.20%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	57.94%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	Outlier	1.23	1.83	1.15	1.34	1.22	1.63	1.63		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

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Report Date: 08 Dec-17 12:41 (p 9 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-1037-1498		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-007 failed mean dry biomass-mg				32.54%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-007*	3.31	1.76	0.412	14	CDF	0.0026	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.6	2.59	0.0459	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	2.3994		2.3994	1	11	0.0051	Significant Effect				
Error	3.06052		0.218609	14							
Total	5.45992			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.85	8.89	0.4350	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.927	0.841	0.2214	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.27	0.82	1.71	1.28	0.09	1.83	0.188	42.11%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	61.21%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.09	1.23	1.83	1.15	1.34	1.22	1.63	1.63		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

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Report Date: 08 Dec-17 12:41 (p 10 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-3895-3002		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 failed mean dry biomass-mg	31.74%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-008*	4.08	1.76	0.402	14	CDF	5.7E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.67	2.59	0.0319	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	3.45356	3.45356	1	16.6	0.0011	Significant Effect					
Error	2.91106	0.207933	14								
Total	6.36462		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.15	8.89	0.3336	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.92	0.841	0.1673	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.27	0.82	1.71	1.28	0.09	1.83	0.188	42.11%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	73.43%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.09	1.23	1.83	1.15	1.34	1.22	1.63	1.63		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Report Date: 08 Dec-17 12:41 (p 11 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	00-7750-6922		Endpoint:	Mean Dry Biomass-mg		CETIS Version:	CETISv1.9.3				
Analyzed:	07 Dec-17 11:28		Analysis:	Parametric-Two Sample		Official Results:	Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result			PMSD					
Untransformed	C > T		29632-009 failed mean dry biomass-mg			21.46%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-009*	4.66	1.77	0.308	13	CDF	2.2E-04	Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.4421	2.4421	1	21.7	4.5E-04	Significant Effect					
Error	1.46402	0.112617	13								
Total	3.90612		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.22	10.8	0.3517	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.968	0.833	0.8228	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	1.43	1.19	1.67	1.34	1.15	1.83	0.0986	18.20%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	56.43%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	Outlier	1.23	1.83	1.15	1.34	1.22	1.63	1.63		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

CETIS Analytical Report

Report Date: 08 Dec-17 12:41 (p 12 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-6884-8151		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-010 failed mean dry biomass-mg				33.54%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-010*	2.99	1.76	0.424	14	CDF	0.0049	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.52	2.59	0.0682	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.07684	2.07684	1	8.94	0.0097	Significant Effect					
Error	3.25224	0.232303	14								
Total	5.32909		15								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.57	8.89	0.5657	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.946	0.841	0.4314	Normal Distribution					
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	1.27	0.82	1.71	1.28	0.09	1.83	0.188	42.11%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	56.94%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.09	1.23	1.83	1.15	1.34	1.22	1.63	1.63		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Report Date: 08 Dec-17 12:41 (p 13 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-8988-0872		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-002 passed mean dry biomass-mg	44.10%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-002	0.0404	1.76	0.341	14	CDF	0.4842	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.57	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0002441	0.0002441	1	0.00163	0.9684	Non-Significant Effect					
Error	2.09522	0.149659	14								
Total	2.09547		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.02	8.89	0.9784	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.917	0.841	0.1482	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	1.01%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		

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Report Date: 08 Dec-17 12:41 (p 14 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-5946-4568		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-003 passed mean dry biomass-mg				40.72%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-003	-1.63	1.76	0.315	14	CDF	0.9376	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.9	2.59	0.7205		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.340181		0.340181	1	2.67	0.1248		Non-Significant Effect			
Error	1.78648		0.127606	14							
Total	2.12666			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.38	8.89	0.6802		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.983	0.841	0.9811		Normal Distribution			
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	-37.75%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		

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Report Date: 08 Dec-17 12:41 (p 15 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-1180-1201	Endpoint: Mean Dry Biomass-mg		CETIS Version: CETISv1.9.3								
Analyzed: 07 Dec-17 11:29	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca)							
Data Transform		Alt Hyp		Comparison Result		PMSD					
Untransformed		C > T		29632-004 passed mean dry biomass-mg		42.95%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-004	-0.915	1.76	0.332	14	CDF	0.8121	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.05	2.59	0.4563	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.118766	0.118766	1	0.837	0.3758	Non-Significant Effect					
Error	1.98711	0.141937	14								
Total	2.10588		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.09	8.89	0.9121	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.975	0.841	0.9131	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	-22.31%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		

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Report Date: 08 Dec-17 12:41 (p 16 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-0429-2924		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-005 passed mean dry biomass-mg				45.45%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-005	-1.59	1.76	0.351	14	CDF	0.9329	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.8	2.59	0.9574		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.401797		0.401797		1	2.53	0.1342	Non-Significant Effect			
Error	2.22552		0.158966		14						
Total	2.62732				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.15	8.89	0.8609		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.95	0.841	0.4875		Normal Distribution			
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	-41.03%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		

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Report Date: 08 Dec-17 12:41 (p 17 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 06-1495-0366		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-006 passed mean dry biomass-mg	33.54%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-006	1.15	1.76	0.259	14	CDF	0.1341	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.04	2.59	0.4746	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.115091	0.115091	1	1.33	0.2682	Non-Significant Effect					
Error	1.21189	0.0865633	14								
Total	1.32698		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.91	8.89	0.0319	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.973	0.841	0.8784	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	21.96%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

CETIS Analytical Report

Report Date: 08 Dec-17 12:41 (p 18 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-7086-6169		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 passed mean dry biomass-mg	44.25%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-007	1.45	1.76	0.342	14	CDF	0.0844	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.66	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.317251	0.317251	1	2.11	0.1688	Non-Significant Effect					
Error	2.10971	0.150694	14								
Total	2.42697		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.04	8.89	0.9646	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.942	0.841	0.3747	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	36.46%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

CETIS Analytical Report

Report Date: 08 Dec-17 12:41 (p 19 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-1249-8197		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-008 failed mean dry biomass-mg				42.66%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-008*	2.33	1.76	0.33	14	CDF	0.0176	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.98	2.59	0.5683	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.761474		0.761474	1	5.44	0.0351	Significant Effect				
Error	1.96026		0.140018	14							
Total	2.72173			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.12	8.89	0.8831	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.93	0.841	0.2459	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	56.48%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

CETIS Analytical Report

Report Date: 08 Dec-17 12:41 (p 20 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-3509-4917		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 passed mean dry biomass-mg	44.07%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-009	0.766	1.76	0.34	14	CDF	0.2283	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.97	2.59	0.5946	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0876162	0.0876162	1	0.586	0.4566	Non-Significant Effect					
Error	2.09208	0.149434	14								
Total	2.17969		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.02	8.89	0.9814	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.951	0.841	0.5111	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	19.16%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

CETIS Analytical Report

Report Date: 08 Dec-17 12:41 (p 21 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-9510-2056		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 passed mean dry biomass-mg	46.22%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-010	1.12	1.76	0.357	14	CDF	0.1401	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.83	2.59	0.8769	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.207367	0.207367	1	1.26	0.2803	Non-Significant Effect					
Error	2.30144	0.164389	14								
Total	2.50881		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.22	8.89	0.7995	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.927	0.841	0.2194	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	29.47%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

CETIS Analytical Report

Report Date: 08 Dec-17 12:41 (p 22 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-8948-3059		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:24		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-002 passed mean dry biomass-mg	44.10%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-002	-0.0404	1.76	0.341	14	CDF	0.5158	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.57	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0002441	0.0002441	1	0.00163	0.9684	Non-Significant Effect					
Error	2.09522	0.149659	14								
Total	2.09547		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.02	8.89	0.9784	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.917	0.841	0.1482	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	1.01%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		

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Report Date: 08 Dec-17 12:41 (p 23 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-4477-7977		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:24		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-003 passed mean dry biomass-mg					41.39%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-003	-1.67	1.76	0.317	14	CDF	0.9411	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.89	2.59	0.7455	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.358652		0.358652	1	2.78	0.1179	Non-Significant Effect				
Error	1.80869		0.129192	14							
Total	2.16734			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.41	8.89	0.6606	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.976	0.841	0.9247	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	-39.16%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		

CETIS Analytical Report

Report Date: 08 Dec-17 12:41 (p 24 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-8650-6068	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:24	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C > T	29632-004 passed mean dry biomass-mg			43.63%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-004	-0.951	1.76	0.334	14	CDF	0.8211	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.04	2.59	0.4735	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.12978	0.12978	1	0.904	0.3578	Non-Significant Effect					
Error	2.00932	0.143523	14								
Total	2.1391		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.11	8.89	0.8907	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.983	0.841	0.9839	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	-23.56%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		

CETIS Analytical Report

Report Date: 08 Dec-17 12:41 (p 25 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-7812-7930		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-005 passed mean dry biomass-mg				46.15%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-005	-1.62	1.76	0.353	14	CDF	0.9363	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.79	2.59	0.9808	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.42185		0.42185	1	2.63	0.1273	Non-Significant Effect				
Error	2.24773		0.160552	14							
Total	2.66958			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.12	8.89	0.8822	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.944	0.841	0.3947	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	-42.47%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		

CETIS Analytical Report

Report Date: 08 Dec-17 12:41 (p 26 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-9136-1790		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-006 passed mean dry biomass-mg				34.19%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-006	1.09	1.76	0.261	14	CDF	0.1471	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.05	2.59	0.4560	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.104733		0.104733	1	1.19	0.2941	Non-Significant Effect				
Error	1.23409		0.0881495	14							
Total	1.33883			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			6.04	8.89	0.0301	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.982	0.841	0.9760	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	21.16%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-2169-6736		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 passed mean dry biomass-mg	44.94%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-007	1.4	1.76	0.344	14	CDF	0.0912	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.66	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.299893	0.299893	1	1.97	0.1823	Non-Significant Effect					
Error	2.13192	0.15228	14								
Total	2.43181		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.01	8.89	0.9862	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.928	0.841	0.2260	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	35.81%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-3014-6892		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 failed mean dry biomass-mg	43.34%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-008*	2.28	1.76	0.331	14	CDF	0.0195	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.97	2.59	0.5881	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.734448	0.734448	1	5.19	0.0390	Significant Effect					
Error	1.98246	0.141604	14								
Total	2.71691		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.15	8.89	0.8618	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.919	0.841	0.1608	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	56.04%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	19-8810-1612	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:25	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C > T	29632-009 passed mean dry biomass-mg			44.75%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-009	0.721	1.76	0.342	14	CDF	0.2412	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.96	2.59	0.6137	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0786102	0.0786102	1	0.521	0.4825	Non-Significant Effect					
Error	2.11428	0.15102	14								
Total	2.19289		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1	8.89	0.9970	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.956	0.841	0.5845	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	18.33%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-7421-9064		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 passed mean dry biomass-mg	46.92%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-010	1.08	1.76	0.359	14	CDF	0.1493	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.82	2.59	0.8985	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.19338	0.19338	1	1.17	0.2987	Non-Significant Effect					
Error	2.32365	0.165975	14								
Total	2.51703		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.19	8.89	0.8204	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.92	0.841	0.1712	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	28.75%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-0632-9621		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-003 passed mean dry biomass-mg	40.72%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-003	1.63	1.76	0.315	14	CDF	0.0624	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.9	2.59	0.7205	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.340181	0.340181	1	2.67	0.1248	Non-Significant Effect					
Error	1.78648	0.127606	14								
Total	2.12666		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.38	8.89	0.6802	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.983	0.841	0.9811	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	-37.75%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		

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Report Date: 08 Dec-17 12:41 (p 32 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	09-1121-8359	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:26	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-003 passed mean dry biomass-mg			41.39%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-003	1.67	1.76	0.317	14	CDF	0.0589	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.89	2.59	0.7455	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.358652	0.358652	1	2.78	0.1179	Non-Significant Effect					
Error	1.80869	0.129192	14								
Total	2.16734		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.41	8.89	0.6606	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.976	0.841	0.9247	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	-39.16%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		

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Report Date: 08 Dec-17 12:41 (p 33 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-3063-4990		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-004 passed mean dry biomass-mg				28.84%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-004	0.685	1.76	0.307	14	CDF	0.2524	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.22	2.59	0.2558	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.056942		0.056942	1	0.469	0.5047	Non-Significant Effect				
Error	1.70058		0.12147	14							
Total	1.75752			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.27	8.89	0.7624	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.915	0.841	0.1380	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	11.21%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		

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Report Date: 08 Dec-17 12:41 (p 34 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-3344-2820		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-005 passed mean dry biomass-mg				30.80%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-005	-0.136	1.76	0.328	14	CDF	0.5531	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.93	2.59	0.6644	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0025628		0.0025628	1	0.0185	0.8937	Non-Significant Effect				
Error	1.93899		0.138499	14							
Total	1.94155			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.59	8.89	0.5580	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.933	0.841	0.2708	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	-2.38%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-5208-4422		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-006 failed mean dry biomass-mg				14.45%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-006*	5.87	1.77	0.167	13	CDF	2.7E-05	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.14989		1.14989	1	34.5	5.5E-05	Significant Effect				
Error	0.433353		0.0333348	13							
Total	1.58324			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.72	9.16	0.4954	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.912	0.833	0.1472	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		7	1.16	0.966	1.35	1.21	0.897	1.4	0.0784	17.91%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	47.93%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	Outlier	0.95	1	1.4	1.27	0.897		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-0814-6144		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 failed mean dry biomass-mg	29.87%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-007*	3.18	1.76	0.318	14	CDF	0.0034	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.88	2.59	0.7618	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.31446	1.31446	1	10.1	0.0067	Significant Effect					
Error	1.82318	0.130227	14								
Total	3.13764		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.43	8.89	0.6482	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.981	0.841	0.9690	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	53.87%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-9083-5828		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 failed mean dry biomass-mg	28.61%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-008*	4.21	1.76	0.304	14	CDF	4.4E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.14	2.59	0.3321	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.11957	2.11957	1	17.7	8.7E-04	Significant Effect					
Error	1.67372	0.119552	14								
Total	3.79329		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.23	8.89	0.7904	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.978	0.841	0.9442	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	68.41%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-9175-1684	Endpoint: Mean Dry Biomass-mg		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:26	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result			PMSD					
Untransformed	C > T		29632-009 failed mean dry biomass-mg			29.72%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-009*	2.45	1.76	0.316	14	CDF	0.0141	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.12	2.59	0.3652	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.773082		0.773082	1	5.99	0.0281	Significant Effect				
Error	1.80554		0.128967	14							
Total	2.57863			15							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.41	8.89	0.6633	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.965	0.841	0.7444	Normal Distribution					
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	41.31%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-3636-4150		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-010 failed mean dry biomass-mg				31.40%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-010*	2.74	1.76	0.334	14	CDF	0.0080	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.96	2.59	0.6079	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.07874		1.07874	1	7.5	0.0160	Significant Effect				
Error	2.01491		0.143922	14							
Total	3.09365			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.69	8.89	0.5069	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.992	0.841	0.9999	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	48.80%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-8949-9740		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-004 passed mean dry biomass-mg				42.95%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-004	0.915	1.76	0.332	14	CDF	0.1879	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.05	2.59	0.4563	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.118766		0.118766	1	0.837	0.3758	Non-Significant Effect				
Error	1.98711		0.141937	14							
Total	2.10588			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.09	8.89	0.9121	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.975	0.841	0.9131	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	-22.31%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-5326-8000		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-004 passed mean dry biomass-mg	43.63%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-004	0.951	1.76	0.334	14	CDF	0.1789	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.04	2.59	0.4735	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.12978	0.12978	1	0.904	0.3578	Non-Significant Effect					
Error	2.00932	0.143523	14								
Total	2.1391		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.11	8.89	0.8907	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.983	0.841	0.9839	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	-23.56%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-8026-8405		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-004 passed mean dry biomass-mg	28.84%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-004	-0.685	1.76	0.307	14	CDF	0.7476	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.22	2.59	0.2558	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.056942	0.056942	1	0.469	0.5047	Non-Significant Effect					
Error	1.70058	0.12147	14								
Total	1.75752		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.27	8.89	0.7624	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.915	0.841	0.1380	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	11.21%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		

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Report Date: 08 Dec-17 12:42 (p 43 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-6083-6547		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-005 passed mean dry biomass-mg	36.44%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-005	-0.74	1.76	0.344	14	CDF	0.7642	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.97	2.59	0.5778	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0836654	0.0836654	1	0.547	0.4716	Non-Significant Effect					
Error	2.13961	0.15283	14								
Total	2.22328		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.25	8.89	0.7753	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.94	0.841	0.3500	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	0.00%
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	-15.31%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		

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Report Date: 08 Dec-17 12:42 (p 44 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-9460-9203		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-006 failed mean dry biomass-mg				26.43%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-006*	2.41	1.76	0.25	14	CDF	0.0151	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.72	2.59	0.0233	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.467685		0.467685	1	5.82	0.0302	Significant Effect				
Error	1.12598		0.0804273	14							
Total	1.59367			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.42	8.89	0.0403	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.906	0.841	0.1004	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	36.19%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-4142-4518		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 failed mean dry biomass-mg	35.44%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-007*	2.39	1.76	0.335	14	CDF	0.0158	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.03	2.59	0.4848	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.824237	0.824237	1	5.7	0.0316	Significant Effect					
Error	2.02381	0.144558	14								
Total	2.84805		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.13	8.89	0.8770	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.98	0.841	0.9641	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	48.05%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

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Report Date: 08 Dec-17 12:42 (p 46 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-0762-8504		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C > T			29632-008 failed mean dry biomass-mg				34.11%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-008*	3.33	1.76	0.322	14	CDF	0.0025	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.11	2.59	0.3725	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.4817		1.4817	1	11.1	0.0050	Significant Effect				
Error	1.87435		0.133882	14							
Total	3.35605			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.03	8.89	0.9708	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8888	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	64.42%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	11-0793-5276	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:27	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C > T	29632-009 passed mean dry biomass-mg			35.28%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-009	1.69	1.76	0.333	14	CDF	0.0564	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.04	2.59	0.4710	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.410401	0.410401	1	2.86	0.1127	Non-Significant Effect					
Error	2.00617	0.143298	14								
Total	2.41657		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.11	8.89	0.8937	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.954	0.841	0.5509	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	33.90%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Report Date: 08 Dec-17 12:42 (p 48 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-8494-0693		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 failed mean dry biomass-mg	37.08%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-010*	2.01	1.76	0.35	14	CDF	0.0320	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.94	2.59	0.6411	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.640001	0.640001	1	4.04	0.0640	Non-Significant Effect					
Error	2.21553	0.158252	14								
Total	2.85554		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.33	8.89	0.7158	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.983	0.841	0.9807	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	42.34%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Report Date: 08 Dec-17 12:42 (p 49 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-3107-9509		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29632-005 passed mean dry biomass-mg			45.45%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-005	1.59	1.76	0.351	14	CDF	0.0671	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.8	2.59	0.9574	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.401797		0.401797	1	2.53	0.1342	Non-Significant Effect				
Error	2.22552		0.158966	14							
Total	2.62732			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.15	8.89	0.8609	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.95	0.841	0.4875	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	-41.03%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		

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Report Date: 08 Dec-17 12:42 (p 50 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-7605-9565		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-005 passed mean dry biomass-mg				46.15%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-005	1.62	1.76	0.353	14	CDF	0.0637	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.79	2.59	0.9808	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.42185		0.42185	1	2.63	0.1273	Non-Significant Effect				
Error	2.24773		0.160552	14							
Total	2.66958			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.12	8.89	0.8822	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.944	0.841	0.3947	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	-42.47%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 51 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-7666-4852		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-005 passed mean dry biomass-mg	30.80%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-005	0.136	1.76	0.328	14	CDF	0.4469	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.93	2.59	0.6644	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0025628	0.0025628	1	0.0185	0.8937	Non-Significant Effect					
Error	1.93899	0.138499	14								
Total	1.94155		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.59	8.89	0.5580	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.933	0.841	0.2708	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	-2.38%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		

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Report Date: 08 Dec-17 12:42 (p 52 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-5050-0464		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C < T			29632-005 passed mean dry biomass-mg					36.44%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-005	0.74	1.76	0.344	14	CDF	0.2358	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.97	2.59	0.5778	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0836654		0.0836654	1	0.547	0.4716	Non-Significant Effect				
Error	2.13961		0.15283	14							
Total	2.22328			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.25	8.89	0.7753	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.94	0.841	0.3500	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	0.00%
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	-15.31%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		

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Report Date: 08 Dec-17 12:42 (p 53 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-4661-6711		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-006 failed mean dry biomass-mg	25.24%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-006*	3.12	1.76	0.275	14	CDF	0.0038	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.3	2.59	0.1848	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.946972	0.946972	1	9.72	0.0076	Significant Effect					
Error	1.36439	0.0974564	14								
Total	2.31136		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.78	8.89	0.0218	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.964	0.841	0.7384	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	44.66%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 54 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-7074-0869		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-007 failed mean dry biomass-mg				32.49%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-007*	2.98	1.76	0.354	14	CDF	0.0050	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.79	2.59	0.9960	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.43311		1.43311	1	8.87	0.0100	Significant Effect				
Error	2.26222		0.161587	14							
Total	3.69533			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.11	8.89	0.8959	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.969	0.841	0.8262	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	54.94%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

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Report Date: 08 Dec-17 12:42 (p 55 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-8437-3921		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-008 failed mean dry biomass-mg				31.40%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-008*	3.88	1.76	0.342	14	CDF	8.4E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		1.91	2.59	0.7078		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	2.26954		2.26954	1	15	0.0017		Significant Effect			
Error	2.11276		0.150911	14							
Total	4.3823			15							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		1.29	8.89	0.7476		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.969	0.841	0.8160		Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	69.14%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Report Date: 08 Dec-17 12:42 (p 56 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-3147-3154		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 failed mean dry biomass-mg	32.37%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-009*	2.32	1.76	0.353	14	CDF	0.0179	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.9	2.59	0.7284	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.864668	0.864668	1	5.39	0.0358	Significant Effect					
Error	2.24458	0.160327	14								
Total	3.10925		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.13	8.89	0.8792	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.975	0.841	0.9055	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	42.68%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Report Date: 08 Dec-17 12:42 (p 57 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-0848-8569		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-010 failed mean dry biomass-mg				33.84%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-010*	2.6	1.76	0.369	14	CDF	0.0105	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.77	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.18647		1.18647	1	6.77	0.0209	Significant Effect				
Error	2.45394		0.175282	14							
Total	3.64041			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.06	8.89	0.9370	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.967	0.841	0.7929	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	49.99%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Report Date: 08 Dec-17 12:42 (p 58 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-4189-4723		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-006 passed mean dry biomass-mg				33.54%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-006	-1.15	1.76	0.259	14	CDF	0.8659	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.04	2.59	0.4746	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.115091		0.115091	1	1.33	0.2682	Non-Significant Effect				
Error	1.21189		0.0865633	14							
Total	1.32698			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.91	8.89	0.0319	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8784	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	21.96%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-7679-1326		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C < T			29632-006 passed mean dry biomass-mg					34.19%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-006	-1.09	1.76	0.261	14	CDF	0.8529	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.05	2.59	0.4560	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.104733	0.104733	1	1.19	0.2941	Non-Significant Effect					
Error	1.23409	0.0881495	14								
Total	1.33883		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			6.04	8.89	0.0301	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.982	0.841	0.9760	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	21.16%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-4828-6524		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-006 passed mean dry biomass-mg				21.28%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-006	-3.59	1.76	0.226	14	CDF	0.9985	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.64	2.59	0.0370	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.851007		0.851007	1	12.9	0.0030	Significant Effect				
Error	0.925353		0.0660966	14							
Total	1.77636			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.28	8.89	0.0743	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.912	0.841	0.1256	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	43.35%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	10-9779-1089		Endpoint:	Mean Dry Biomass-mg		CETIS Version:	CETISv1.9.3				
Analyzed:	08 Dec-17 12:29		Analysis:	Parametric-Two Sample		Official Results:	Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform		Alt Hyp		Comparison Result			PMSD				
Untransformed		C < T		29632-006 passed mean dry biomass-mg			16.93%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-006	-4.46	1.77	0.178	13	CDF	0.9997	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.750909		0.750909		1	19.9	6.4E-04	Significant Effect			
Error	0.490283		0.0377141		13						
Total	1.24119				14						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		2.09	9.16	0.3557	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.919	0.833	0.1858	Normal Distribution					
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		7	1.05	0.839	1.26	0.986	0.833	1.47	0.0866	21.79%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	42.66%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	Outlier	0.833		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-3107-8293		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-006 passed mean dry biomass-mg	25.24%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-006	-3.12	1.76	0.275	14	CDF	0.9962	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.3	2.59	0.1848	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.946972	0.946972	1	9.72	0.0076	Significant Effect					
Error	1.36439	0.0974564	14								
Total	2.31136		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.78	8.89	0.0218	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.964	0.841	0.7384	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	0.00%
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	44.66%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-7009-8645		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 passed mean dry biomass-mg	43.62%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-007	0.75	1.76	0.263	14	CDF	0.2328	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.16	2.59	0.3090	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0501761	0.0501761	1	0.563	0.4656	Non-Significant Effect					
Error	1.24858	0.0891846	14								
Total	1.29876		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.12	8.89	0.0290	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.981	0.841	0.9731	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	18.58%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-6092-8027		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 failed mean dry biomass-mg	40.93%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-008*	1.9	1.76	0.247	14	CDF	0.0389	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.64	2.59	0.0365	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.284488	0.284488	1	3.62	0.0777	Non-Significant Effect					
Error	1.09913	0.078509	14								
Total	1.38361		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.27	8.89	0.0435	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.915	0.841	0.1380	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	44.24%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-8807-6242		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 passed mean dry biomass-mg	43.31%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-009	-0.146	1.76	0.261	14	CDF	0.5569	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.56	2.59	0.0564	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0018706	0.0018706	1	0.0213	0.8861	Non-Significant Effect					
Error	1.23095	0.0879249	14								
Total	1.23282		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.02	8.89	0.0304	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.926	0.841	0.2134	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	-3.59%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-5125-0056		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 passed mean dry biomass-mg	46.85%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-010	0.362	1.76	0.282	14	CDF	0.3614	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.32	2.59	0.1727	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0134851	0.0134851	1	0.131	0.7227	Non-Significant Effect					
Error	1.44031	0.102879	14								
Total	1.45379		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	7.21	8.89	0.0183	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.953	0.841	0.5463	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	9.63%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 67 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-2600-9893		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed mean dry biomass-mg	44.25%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-007	-1.45	1.76	0.342	14	CDF	0.9156	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.66	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.317251	0.317251	1	2.11	0.1688	Non-Significant Effect					
Error	2.10971	0.150694	14								
Total	2.42697		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.04	8.89	0.9646	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.942	0.841	0.3747	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	36.46%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 68 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-5975-8832		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed mean dry biomass-mg	44.94%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-007	-1.4	1.76	0.344	14	CDF	0.9088	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.66	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.299893	0.299893	1	1.97	0.1823	Non-Significant Effect					
Error	2.13192	0.15228	14								
Total	2.43181		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.01	8.89	0.9862	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.928	0.841	0.2260	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	35.81%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 69 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-7116-7173		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-007 passed mean dry biomass-mg				29.87%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-007	-3.18	1.76	0.318	14	CDF	0.9966	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.88	2.59	0.7618	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.31446		1.31446	1	10.1	0.0067	Significant Effect				
Error	1.82318		0.130227	14							
Total	3.13764			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.43	8.89	0.6482	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.981	0.841	0.9690	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	53.87%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

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Report Date: 08 Dec-17 12:42 (p 70 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-2308-8286		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed mean dry biomass-mg	35.44%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-007	-2.39	1.76	0.335	14	CDF	0.9842	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.03	2.59	0.4848	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.824237	0.824237	1	5.7	0.0316	Significant Effect					
Error	2.02381	0.144558	14								
Total	2.84805		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.13	8.89	0.8770	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.98	0.841	0.9641	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	48.05%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 71 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-4802-8526		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29632-007 passed mean dry biomass-mg				32.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-007	-2.98	1.76	0.354	14	CDF	0.9950	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.79	2.59	0.9960	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.43311		1.43311	1	8.87	0.0100	Significant Effect				
Error	2.26222		0.161587	14							
Total	3.69533			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.11	8.89	0.8959	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.969	0.841	0.8262	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	54.94%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

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Report Date: 08 Dec-17 12:42 (p 72 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-3285-5159		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed mean dry biomass-mg	43.62%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-007	-0.75	1.76	0.263	14	CDF	0.7672	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.16	2.59	0.3090	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0501761	0.0501761	1	0.563	0.4656	Non-Significant Effect					
Error	1.24858	0.0891846	14								
Total	1.29876		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.12	8.89	0.0290	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.981	0.841	0.9731	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	0.00%
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	18.58%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 73 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-7390-1226		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-008 passed mean dry biomass-mg				67.76%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-008	0.819	1.76	0.333	14	CDF	0.2132	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.96	2.59	0.6012	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0957125		0.0957125	1	0.671	0.4264	Non-Significant Effect				
Error	1.99695		0.14264	14							
Total	2.09267			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.16	8.89	0.8482	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.938	0.841	0.3284	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	31.51%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 74 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-8994-4358		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-009 passed mean dry biomass-mg				69.96%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-009	-0.685	1.76	0.343	14	CDF	0.7478	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.95	2.59	0.6262	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0714226		0.0714226	1	0.47	0.5043	Non-Significant Effect				
Error	2.12878		0.152055	14							
Total	2.2002			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.02	8.89	0.9831	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.943	0.841	0.3932	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	-27.22%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 75 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-2399-8248		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 passed mean dry biomass-mg	73.32%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-010	-0.264	1.76	0.36	14	CDF	0.6022	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.82	2.59	0.9126	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.011637	0.011637	1	0.0697	0.7957	Non-Significant Effect					
Error	2.33814	0.16701	14								
Total	2.34977		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.18	8.89	0.8339	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.931	0.841	0.2556	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	-10.99%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-7364-9523		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed mean dry biomass-mg	42.66%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-008	-2.33	1.76	0.33	14	CDF	0.9824	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.98	2.59	0.5683	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.761474	0.761474	1	5.44	0.0351	Significant Effect					
Error	1.96026	0.140018	14								
Total	2.72173		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.12	8.89	0.8831	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.93	0.841	0.2459	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	56.48%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Report Date: 08 Dec-17 12:42 (p 77 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-2758-2264		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed mean dry biomass-mg	43.34%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-008	-2.28	1.76	0.331	14	CDF	0.9805	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.97	2.59	0.5881	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.734448	0.734448	1	5.19	0.0390	Significant Effect					
Error	1.98246	0.141604	14								
Total	2.71691		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.15	8.89	0.8618	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.919	0.841	0.1608	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	56.04%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-6179-9872		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed mean dry biomass-mg	28.61%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-008	-4.21	1.76	0.304	14	CDF	0.9996	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.14	2.59	0.3321	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.11957	2.11957	1	17.7	8.7E-04	Significant Effect					
Error	1.67372	0.119552	14								
Total	3.79329		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.23	8.89	0.7904	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.978	0.841	0.9442	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	68.41%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Report Date: 08 Dec-17 12:42 (p 79 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	12-6596-5104	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:31	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-008 passed mean dry biomass-mg			34.11%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-008	-3.33	1.76	0.322	14	CDF	0.9975	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.11	2.59	0.3725	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.4817	1.4817	1	11.1	0.0050	Significant Effect					
Error	1.87435	0.133882	14								
Total	3.35605		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.03	8.89	0.9708	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.973	0.841	0.8888	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	64.42%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-1328-8206		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed mean dry biomass-mg	31.40%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-008	-3.88	1.76	0.342	14	CDF	0.9992	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.91	2.59	0.7078	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.26954	2.26954	1	15	0.0017	Significant Effect					
Error	2.11276	0.150911	14								
Total	4.3823		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.29	8.89	0.7476	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.969	0.841	0.8160	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	69.14%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Report Date: 08 Dec-17 12:42 (p 81 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-0810-7153		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-008 passed mean dry biomass-mg				40.93%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-008	-1.9	1.76	0.247	14	CDF	0.9611	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.64	2.59	0.0365	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.284488		0.284488	1	3.62	0.0777	Non-Significant Effect				
Error	1.09913		0.078509	14							
Total	1.38361			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.27	8.89	0.0435	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.915	0.841	0.1380	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	44.24%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Report Date: 08 Dec-17 12:42 (p 82 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-9631-1281		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed mean dry biomass-mg	67.76%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-008	-0.819	1.76	0.333	14	CDF	0.7868	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.96	2.59	0.6012	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0957125	0.0957125	1	0.671	0.4264	Non-Significant Effect					
Error	1.99695	0.14264	14								
Total	2.09267		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.16	8.89	0.8482	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.938	0.841	0.3284	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	0.00%
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	31.51%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		

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Report Date: 08 Dec-17 12:42 (p 83 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-9983-4123		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 passed mean dry biomass-mg	98.50%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-009	-1.53	1.76	0.331	14	CDF	0.9263	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.02	2.59	0.5003	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.332496	0.332496	1	2.35	0.1474	Non-Significant Effect					
Error	1.97932	0.14138	14								
Total	2.31181		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.14	8.89	0.8648	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.924	0.841	0.1989	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	-85.76%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Report Date: 08 Dec-17 12:42 (p 84 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-6370-5053		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 passed mean dry biomass-mg	103.57%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-010	-1.06	1.76	0.348	14	CDF	0.8454	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.88	2.59	0.7688	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.174097	0.174097	1	1.11	0.3092	Non-Significant Effect					
Error	2.18868	0.156334	14								
Total	2.36278		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.37	8.89	0.6888	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.894	0.841	0.0647	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	-62.06%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Report Date: 08 Dec-17 12:42 (p 85 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-1194-9202		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-009 passed mean dry biomass-mg				44.07%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-009	-0.766	1.76	0.34	14	CDF	0.7717	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.97	2.59	0.5946		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0876162		0.0876162		1	0.586	0.4566	Non-Significant Effect			
Error	2.09208		0.149434		14						
Total	2.17969				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.02	8.89	0.9814		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.951	0.841	0.5111		Normal Distribution			
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	19.16%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-7116-4281		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-009 passed mean dry biomass-mg	44.75%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-009	-0.721	1.76	0.342	14	CDF	0.7588	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.96	2.59	0.6137	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0786102	0.0786102	1	0.521	0.4825	Non-Significant Effect					
Error	2.11428	0.15102	14								
Total	2.19289		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1	8.89	0.9970	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.956	0.841	0.5845	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	18.33%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-1833-3709	Endpoint: Mean Dry Biomass-mg		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:33	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-009 passed mean dry biomass-mg			29.72%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-009	-2.45	1.76	0.316	14	CDF	0.9859	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.12	2.59	0.3652	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.773082	0.773082	1	5.99	0.0281	Significant Effect					
Error	1.80554	0.128967	14								
Total	2.57863		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.41	8.89	0.6633	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.965	0.841	0.7444	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	41.31%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	12-9752-7478	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:33	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-009 passed mean dry biomass-mg			35.28%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-009	-1.69	1.76	0.333	14	CDF	0.9436	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.04	2.59	0.4710	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.410401	0.410401	1	2.86	0.1127	Non-Significant Effect					
Error	2.00617	0.143298	14								
Total	2.41657		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.11	8.89	0.8937	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.954	0.841	0.5509	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	33.90%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-6465-1352		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-009 passed mean dry biomass-mg	32.37%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-009	-2.32	1.76	0.353	14	CDF	0.9821	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.9	2.59	0.7284	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.864668	0.864668	1	5.39	0.0358	Significant Effect					
Error	2.24458	0.160327	14								
Total	3.10925		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.13	8.89	0.8792	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.975	0.841	0.9055	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	42.68%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Report Date: 08 Dec-17 12:42 (p 90 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-1981-7684		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-009 passed mean dry biomass-mg				43.31%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-009	0.146	1.76	0.261	14	CDF	0.4431	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.56	2.59	0.0564	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0018706		0.0018706	1	0.0213	0.8861	Non-Significant Effect				
Error	1.23095		0.0879249	14							
Total	1.23282			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			6.02	8.89	0.0304	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.926	0.841	0.2134	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	-3.59%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Report Date: 08 Dec-17 12:42 (p 91 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-1949-4621	Endpoint: Mean Dry Biomass-mg		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:33	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-009 passed mean dry biomass-mg			69.96%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-009	0.685	1.76	0.343	14	CDF	0.2522	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.95	2.59	0.6262	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0714226	0.0714226	1	0.47	0.5043	Non-Significant Effect					
Error	2.12878	0.152055	14								
Total	2.2002		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.02	8.89	0.9831	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.943	0.841	0.3932	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	-27.22%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-6895-0533		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-009 passed mean dry biomass-mg				98.50%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-009	1.53	1.76	0.331	14	CDF	0.0737	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.02	2.59	0.5003	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.332496		0.332496	1	2.35	0.1474	Non-Significant Effect				
Error	1.97932		0.14138	14							
Total	2.31181			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.14	8.89	0.8648	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.924	0.841	0.1989	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	0.00%
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	-85.76%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 21-1604-7901		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 passed mean dry biomass-mg	57.41%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-009		29632-010	0.391	1.76	0.359	14	CDF	0.3507	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.87	2.59	0.7971	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0254004	0.0254004	1	0.153	0.7013	Non-Significant Effect					
Error	2.3205	0.16575	14								
Total	2.3459		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.2	8.89	0.8174	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.921	0.841	0.1742	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	12.76%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-8836-8603		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry biomass-mg	46.22%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-010	-1.12	1.76	0.357	14	CDF	0.8599	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.83	2.59	0.8769	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.207367	0.207367	1	1.26	0.2803	Non-Significant Effect					
Error	2.30144	0.164389	14								
Total	2.50881		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.22	8.89	0.7995	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.927	0.841	0.2194	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.773	0.451	1.09	0.685	0.258	1.35	0.136	49.81%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	29.47%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0.465	0.94	1.24	0.558	0.554	0.811	1.35	0.258		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-6402-6615		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-010 passed mean dry biomass-mg				46.92%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-010	-1.08	1.76	0.359	14	CDF	0.8507	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.82	2.59	0.8985	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.19338		0.19338	1	1.17	0.2987	Non-Significant Effect				
Error	2.32365		0.165975	14							
Total	2.51703			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.19	8.89	0.8204	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.92	0.841	0.1712	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	0.765	0.44	1.09	0.688	0.276	1.35	0.137	50.86%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	28.75%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.16	0.507	0.276	1.02	1.35	0.868	0.454	0.481		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 06-4008-5080		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry biomass-mg	31.40%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-010	-2.74	1.76	0.334	14	CDF	0.9920	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.96	2.59	0.6079	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.07874	1.07874	1	7.5	0.0160	Significant Effect					
Error	2.01491	0.143922	14								
Total	3.09365		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.69	8.89	0.5069	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.992	0.841	0.9999	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	1.06	0.79	1.34	1.1	0.408	1.4	0.116	30.76%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	48.80%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		1.38	1.21	0.408	0.95	1	1.4	1.27	0.897		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 06-8976-7169		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry biomass-mg	37.08%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-010	-2.01	1.76	0.35	14	CDF	0.9680	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.94	2.59	0.6411	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.640001	0.640001	1	4.04	0.0640	Non-Significant Effect					
Error	2.21553	0.158252	14								
Total	2.85554		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.33	8.89	0.7158	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.983	0.841	0.9807	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	0.945	0.637	1.25	0.939	0.199	1.47	0.13	39.00%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	42.34%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		1.47	1.18	0.892	0.861	0.986	1.14	0.199	0.833		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Report Date: 08 Dec-17 12:42 (p 98 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-9776-1934		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29632-010 passed mean dry biomass-mg			33.84%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-010	-2.6	1.76	0.369	14	CDF	0.9895	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.77	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.18647		1.18647	1	6.77	0.0209	Significant Effect				
Error	2.45394		0.175282	14							
Total	3.64041			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.06	8.89	0.9370	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.967	0.841	0.7929	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	1.09	0.745	1.43	1.19	0.396	1.55	0.146	37.83%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	49.99%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		1.55	0.396	0.749	1.3	0.782	1.55	1.25	1.14		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-4382-7191		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-010 passed mean dry biomass-mg				46.85%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-010	-0.362	1.76	0.282	14	CDF	0.6386	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.32	2.59	0.1727	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0134851		0.0134851	1	0.131	0.7227	Non-Significant Effect				
Error	1.44031		0.102879	14							
Total	1.45379			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			7.21	8.89	0.0183	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.953	0.841	0.5463	Normal Distribution				
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.603	0.471	0.735	0.591	0.411	0.817	0.056	26.25%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	9.63%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.817	0.449	0.56	0.467	0.693	0.621	0.411	0.804		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 100 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-0659-7436		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry biomass-mg	73.32%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-010	0.264	1.76	0.36	14	CDF	0.3978	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.82	2.59	0.9126	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.011637	0.011637	1	0.0697	0.7957	Non-Significant Effect					
Error	2.33814	0.16701	14								
Total	2.34977		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.18	8.89	0.8339	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.931	0.841	0.2556	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		8	0.491	0.164	0.818	0.453	0.005	1.11	0.138	79.77%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	-10.99%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0.005	0.062	1.11	0.244	0.417	0.868	0.726	0.489		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 101 of 102)
 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-1176-3163	Endpoint: Mean Dry Biomass-mg		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:34	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-010 passed mean dry biomass-mg				103.57%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-010	1.06	1.76	0.348	14	CDF	0.1546	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.88	2.59	0.7688	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.174097	0.174097	1	1.11	0.3092	Non-Significant Effect					
Error	2.18868	0.156334	14								
Total	2.36278		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.37	8.89	0.6888	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.894	0.841	0.0647	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.336	0.0325	0.64	0.258	0.0095	1.05	0.128	108.06%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	-62.06%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0.016	1.05	0.401	0.0095	0.231	0.285	0.044	0.65		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

CETIS Analytical Report

Report Date: 08 Dec-17 12:42 (p 102 of 102)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-4895-8772		Endpoint: Mean Dry Biomass-mg			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed mean dry biomass-mg	57.41%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-009		29632-010	-0.391	1.76	0.359	14	CDF	0.6493	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.87	2.59	0.7971	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0254004	0.0254004	1	0.153	0.7013	Non-Significant Effect					
Error	2.3205	0.16575	14								
Total	2.3459		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.2	8.89	0.8174	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.921	0.841	0.1742	Normal Distribution						
Mean Dry Biomass-mg Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	0.624	0.3	0.949	0.602	0.112	1.36	0.137	62.18%	0.00%
29632-010		8	0.545	0.189	0.9	0.459	0.0595	1.26	0.15	78.03%	12.76%
Mean Dry Biomass-mg Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009		0.176	0.581	0.112	0.609	0.594	0.788	0.776	1.36		
29632-010		1.26	0.233	0.0595	0.647	1.05	0.399	0.52	0.186		

28 day *Leptocheirus plumulosus*
Survival, Growth and Reproduction
Sediment Evaluation

CETIS™ Summary, Ad Hoc Query and
Analytical Reports

Reproduction Statistical Analysis

CETIS Summary Report

Report Date: 08 Dec-17 12:57 (p 1 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test	EnviroSystems, Inc.
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Batch ID: 00-1863-2192	Test Type: Leptocheirus (28-d)	Analyst: Nancy Roka
Start Date: 24 Oct-17 11:00	Protocol: EPA/600/R-01/020 (2001)	Diluent: Not Applicable
Ending Date: 21 Nov-17 11:00	Species: Leptocheirus plumulosus	Brine: Not Applicable
Duration: 28d 0h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h		
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)	
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)	
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car	
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car	
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca	
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)	
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)	
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)	
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)	
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)	
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
19-0724-6849	Reproduction	Unequal Variance t Two-Sample Test	0.0072	29632-001 failed reproduction
10-8795-9897	Reproduction	Equal Variance t Two-Sample Test	0.2207	29632-002 passed reproduction
16-8051-5159	Reproduction	Equal Variance t Two-Sample Test	0.7793	29632-002 passed reproduction
11-6176-0990	Reproduction	Unequal Variance t Two-Sample Test	0.0109	29632-002 failed reproduction
03-0940-6989	Reproduction	Equal Variance t Two-Sample Test	0.9442	29632-003 passed reproduction
10-4834-2580	Reproduction	Equal Variance t Two-Sample Test	0.0558	29632-003 passed reproduction
10-5834-8587	Reproduction	Equal Variance t Two-Sample Test	0.0120	29632-003 failed reproduction
14-3396-4436	Reproduction	Equal Variance t Two-Sample Test	0.9880	29632-003 passed reproduction
04-2098-1553	Reproduction	Unequal Variance t Two-Sample Test	0.0293	29632-003 failed reproduction
01-2321-9238	Reproduction	Equal Variance t Two-Sample Test	0.0064	29632-004 failed reproduction
07-3364-3336	Reproduction	Equal Variance t Two-Sample Test	0.0339	29632-004 failed reproduction
10-0822-7779	Reproduction	Equal Variance t Two-Sample Test	0.9661	29632-004 passed reproduction
13-1659-5338	Reproduction	Equal Variance t Two-Sample Test	0.9936	29632-004 passed reproduction
15-9909-8381	Reproduction	Equal Variance t Two-Sample Test	0.4070	29632-004 passed reproduction
17-8427-3782	Reproduction	Equal Variance t Two-Sample Test	0.5930	29632-004 passed reproduction
12-1287-1762	Reproduction	Unequal Variance t Two-Sample Test	0.0344	29632-004 failed reproduction
00-0069-2372	Reproduction	Equal Variance t Two-Sample Test	1.9E-04	29632-005 failed reproduction
00-1032-2945	Reproduction	Equal Variance t Two-Sample Test	1.0000	29632-005 passed reproduction
00-6895-6432	Reproduction	Equal Variance t Two-Sample Test	0.9718	29632-005 passed reproduction
10-3999-7405	Reproduction	Equal Variance t Two-Sample Test	0.9998	29632-005 passed reproduction
10-7613-1411	Reproduction	Equal Variance t Two-Sample Test	0.0282	29632-005 failed reproduction
11-8597-8957	Reproduction	Equal Variance t Two-Sample Test	0.9823	29632-005 passed reproduction
14-9224-3465	Reproduction	Equal Variance t Two-Sample Test	1.5E-05	29632-005 failed reproduction

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test **EnviroSystems, Inc.**

Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
16-2979-8688	Reproduction	Equal Variance t Two-Sample Test	0.0177	29632-005 failed reproduction
10-7503-9636	Reproduction	Unequal Variance t Two-Sample Test	0.1148	29632-005 passed reproduction
10-7334-8131	Reproduction	Equal Variance t Two-Sample Test	1.0000	29632-006 passed reproduction
18-5393-9344	Reproduction	Equal Variance t Two-Sample Test	<1.0E-37	29632-006 failed reproduction
01-2038-7605	Reproduction	Unequal Variance t Two-Sample Test	0.0037	29632-006 failed reproduction
04-6047-6093	Reproduction	Unequal Variance t Two-Sample Test	0.0378	29632-006 failed reproduction
04-6486-1732	Reproduction	Unequal Variance t Two-Sample Test	0.0012	29632-006 failed reproduction
09-2787-8758	Reproduction	Unequal Variance t Two-Sample Test	0.9622	29632-006 passed reproduction
09-2880-9172	Reproduction	Unequal Variance t Two-Sample Test	0.0020	29632-006 failed reproduction
09-9004-9034	Reproduction	Unequal Variance t Two-Sample Test	1.0000	29632-006 passed reproduction
10-5882-2306	Reproduction	Unequal Variance t Two-Sample Test	0.0253	29632-006 failed reproduction
11-8447-0280	Reproduction	Unequal Variance t Two-Sample Test	0.0186	29632-006 failed reproduction
14-1890-0427	Reproduction	Unequal Variance t Two-Sample Test	0.9980	29632-006 passed reproduction
14-4013-3240	Reproduction	Unequal Variance t Two-Sample Test	1.8E-05	29632-006 failed reproduction
15-3636-2629	Reproduction	Unequal Variance t Two-Sample Test	0.9988	29632-006 passed reproduction
18-3184-7142	Reproduction	Unequal Variance t Two-Sample Test	0.9747	29632-006 passed reproduction
19-6080-5649	Reproduction	Unequal Variance t Two-Sample Test	0.9814	29632-006 passed reproduction
03-7039-2789	Reproduction	Equal Variance t Two-Sample Test	0.8766	29632-007 passed reproduction
04-5518-0534	Reproduction	Equal Variance t Two-Sample Test	0.9897	29632-007 passed reproduction
05-3854-2725	Reproduction	Equal Variance t Two-Sample Test	0.8489	29632-007 passed reproduction
05-8627-7735	Reproduction	Equal Variance t Two-Sample Test	0.7306	29632-007 passed reproduction
06-3557-5889	Reproduction	Equal Variance t Two-Sample Test	0.9999	29632-007 passed reproduction
08-4453-9953	Reproduction	Equal Variance t Two-Sample Test	0.2694	29632-007 passed reproduction
11-9814-4941	Reproduction	Equal Variance t Two-Sample Test	0.9939	29632-007 passed reproduction
12-9240-5182	Reproduction	Equal Variance t Two-Sample Test	0.1511	29632-007 passed reproduction
13-2828-0278	Reproduction	Equal Variance t Two-Sample Test	0.1234	29632-007 passed reproduction
14-8694-4625	Reproduction	Equal Variance t Two-Sample Test	5.2E-05	29632-007 failed reproduction
16-4406-7283	Reproduction	Equal Variance t Two-Sample Test	0.9751	29632-007 passed reproduction
17-6040-6616	Reproduction	Equal Variance t Two-Sample Test	0.0103	29632-007 failed reproduction
18-0072-4940	Reproduction	Equal Variance t Two-Sample Test	0.0061	29632-007 failed reproduction
20-0661-9205	Reproduction	Equal Variance t Two-Sample Test	0.0249	29632-007 failed reproduction
20-2165-0984	Reproduction	Unequal Variance t Two-Sample Test	0.0049	29632-007 failed reproduction
01-6738-9265	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.7368	29632-007 passed reproduction
21-1874-9534	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.2828	29632-007 passed reproduction
04-0586-3047	Reproduction	Equal Variance t Two-Sample Test	0.9996	29632-008 passed reproduction
04-3398-7159	Reproduction	Equal Variance t Two-Sample Test	1.0000	29632-008 passed reproduction
05-3291-5190	Reproduction	Equal Variance t Two-Sample Test	1.8E-04	29632-008 failed reproduction
06-6095-8561	Reproduction	Equal Variance t Two-Sample Test	2.1E-07	29632-008 failed reproduction
07-4828-9198	Reproduction	Equal Variance t Two-Sample Test	0.0059	29632-008 failed reproduction
14-9750-8898	Reproduction	Equal Variance t Two-Sample Test	0.9941	29632-008 passed reproduction
15-0319-1145	Reproduction	Equal Variance t Two-Sample Test	0.9793	29632-008 passed reproduction
15-7079-0916	Reproduction	Equal Variance t Two-Sample Test	0.0081	29632-008 failed reproduction
16-9787-5883	Reproduction	Equal Variance t Two-Sample Test	3.8E-04	29632-008 failed reproduction
20-2776-2261	Reproduction	Equal Variance t Two-Sample Test	0.0207	29632-008 failed reproduction
20-6866-5556	Reproduction	Equal Variance t Two-Sample Test	0.9919	29632-008 passed reproduction
21-2406-3778	Reproduction	Equal Variance t Two-Sample Test	0.9998	29632-008 passed reproduction
07-5740-6104	Reproduction	Unequal Variance t Two-Sample Test	0.0033	29632-008 failed reproduction
06-4963-5798	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.9683	29632-008 passed reproduction
08-6492-5528	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.0333	29632-008 failed reproduction
13-9791-9805	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.8867	29632-008 passed reproduction
14-8301-8901	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.2378	29632-008 passed reproduction
17-1739-6558	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.1231	29632-008 passed reproduction
20-4524-3647	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.7692	29632-008 passed reproduction

CETIS Summary Report

Report Date: 08 Dec-17 12:57 (p 3 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
00-4428-0277	Reproduction	Equal Variance t Two-Sample Test	0.3890	29632-009 passed reproduction
00-6674-6772	Reproduction	Equal Variance t Two-Sample Test	0.0470	29632-009 failed reproduction
03-7300-7889	Reproduction	Equal Variance t Two-Sample Test	3.3E-04	29632-009 failed reproduction
06-6469-1930	Reproduction	Equal Variance t Two-Sample Test	0.9997	29632-009 passed reproduction
08-3565-5185	Reproduction	Equal Variance t Two-Sample Test	0.9620	29632-009 passed reproduction
13-6691-1656	Reproduction	Equal Variance t Two-Sample Test	0.3599	29632-009 passed reproduction
14-4937-1729	Reproduction	Equal Variance t Two-Sample Test	0.0380	29632-009 failed reproduction
16-8139-4916	Reproduction	Equal Variance t Two-Sample Test	0.6401	29632-009 passed reproduction
17-6659-3731	Reproduction	Equal Variance t Two-Sample Test	0.9702	29632-009 passed reproduction
18-3554-8380	Reproduction	Equal Variance t Two-Sample Test	0.6110	29632-009 passed reproduction
18-5871-1986	Reproduction	Equal Variance t Two-Sample Test	0.9530	29632-009 passed reproduction
19-6201-2685	Reproduction	Equal Variance t Two-Sample Test	0.0298	29632-009 failed reproduction
05-5878-8686	Reproduction	Unequal Variance t Two-Sample Test	0.8811	29632-009 passed reproduction
07-2652-1440	Reproduction	Unequal Variance t Two-Sample Test	0.0661	29632-009 passed reproduction
07-8973-6520	Reproduction	Unequal Variance t Two-Sample Test	0.9339	29632-009 passed reproduction
11-5248-8262	Reproduction	Unequal Variance t Two-Sample Test	0.1189	29632-009 passed reproduction
12-2695-8538	Reproduction	Unequal Variance t Two-Sample Test	0.0085	29632-009 failed reproduction
01-5831-2586	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.8443	29632-009 passed reproduction
09-7549-3702	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.0154	29632-009 failed reproduction
14-2195-1432	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.1722	29632-009 passed reproduction
18-5443-5353	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.9857	29632-009 passed reproduction
01-1194-6303	Reproduction	Equal Variance t Two-Sample Test	0.1698	29632-010 passed reproduction
05-3717-0878	Reproduction	Equal Variance t Two-Sample Test	0.9966	29632-010 passed reproduction
06-2525-6453	Reproduction	Equal Variance t Two-Sample Test	0.0018	29632-010 failed reproduction
07-4139-8126	Reproduction	Equal Variance t Two-Sample Test	0.9982	29632-010 passed reproduction
08-1069-6740	Reproduction	Equal Variance t Two-Sample Test	1.0000	29632-010 passed reproduction
08-2642-5224	Reproduction	Equal Variance t Two-Sample Test	0.2060	29632-010 passed reproduction
08-8044-8579	Reproduction	Equal Variance t Two-Sample Test	0.5695	29632-010 passed reproduction
09-0111-3575	Reproduction	Equal Variance t Two-Sample Test	0.0746	29632-010 passed reproduction
12-1101-4051	Reproduction	Equal Variance t Two-Sample Test	0.8821	29632-010 passed reproduction
14-7675-8248	Reproduction	Equal Variance t Two-Sample Test	3.8E-06	29632-010 failed reproduction
16-6649-2612	Reproduction	Equal Variance t Two-Sample Test	0.7940	29632-010 passed reproduction
18-4673-5621	Reproduction	Equal Variance t Two-Sample Test	0.4305	29632-010 passed reproduction
19-3121-4591	Reproduction	Equal Variance t Two-Sample Test	0.1179	29632-010 passed reproduction
19-3319-0938	Reproduction	Equal Variance t Two-Sample Test	0.8302	29632-010 passed reproduction
19-5617-3831	Reproduction	Equal Variance t Two-Sample Test	0.0034	29632-010 failed reproduction
19-7434-3897	Reproduction	Equal Variance t Two-Sample Test	0.9254	29632-010 passed reproduction
20-3451-1765	Reproduction	Unequal Variance t Two-Sample Test	0.0052	29632-010 failed reproduction
02-3748-7327	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.9754	29632-010 passed reproduction
06-3853-9731	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.4547	29632-010 passed reproduction
07-7339-4958	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.5734	29632-010 passed reproduction
08-3699-4220	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.0290	29632-010 failed reproduction
09-9567-7544	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.2730	29632-010 passed reproduction
18-7995-5917	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.0545	29632-010 passed reproduction
19-6724-0760	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.9520	29632-010 passed reproduction
20-5627-0707	Reproduction	Wilcoxon Rank Sum Two-Sample Test	0.7448	29632-010 passed reproduction

CETIS Summary Report

Report Date: 08 Dec-17 12:57 (p 4 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test											EnviroSystems, Inc.
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29632-000	LC	8	4.96	2.03	7.89	0.05	10.8	1.24	3.5	70.71%	0.00%
29632-001	N	8	0.869	0.278	1.46	0	2.05	0.25	0.706	81.27%	82.47%
29632-002		8	1.19	0.424	1.96	0.25	2.9	0.325	0.921	77.12%	75.91%
29632-003		8	2.08	1.11	3.05	0.8	3.7	0.409	1.16	55.57%	58.01%
29632-004		8	2.22	1.27	3.17	0.4	4.1	0.403	1.14	51.32%	55.23%
29632-005		8	3.28	2.54	4.01	1.6	4.45	0.31	0.876	26.76%	33.92%
29632-006		8	0.338	0.162	0.513	0	0.55	0.0743	0.21	62.23%	93.19%
29632-007		7	0.586	-0.359	1.53	0	2.85	0.386	1.02	174.44%	88.18%
29632-008		8	0.206	-0.165	0.578	0	1.25	0.157	0.444	215.45%	95.84%
29632-009		8	1.04	0.0792	2.01	0	3.35	0.408	1.15	110.53%	78.94%
29632-010		8	0.575	0.0036	1.15	0	2.05	0.242	0.683	118.87%	88.40%

Reproduction Detail										
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	
29632-000	LC	0.05	6.4	10.8	1.7	4.35	8.35	4.55	3.4	
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0	
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15	
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8	
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8	
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45	
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55	
29632-007			0	2.85	0	0.3	0.5	0.45	0	
29632-008		0	1.25	0	0	0	0	0	0.4	
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95	
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0	

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

Endpoint: Reproduction per Surviving Amphipod

Analysis ID	Station	Method	Sample Code	Code 1	Tails	Sample Code	Code 2	Statistic	Critical	P Level	Alpha	Reject Null	MSD	DF	Ties	P-Type
773394958	A/B/10% (Lp Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29632-006		C > T	29632-010		69.5		0.5734265	0.05	FALSE		14	5	E
880448579	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-006		C > T	29632-010		-0.1785451	1.770933	0.5694764	0.05	FALSE	0.2656791	13		C
1397919805	A/B/3% (Lp Biochar 3%)	Wilcoxon Rank Sum Two-Sample Test	29632-007		C < T	29632-008		73		0.8867133	0.05	FALSE		13	1	E
2045243647	A/B/3% (Lp Biochar 3%)	Wilcoxon Rank Sum Two-Sample Test	29632-007		C < T	29632-008		65		0.7692308	0.05	FALSE		12	1	E
1421951432	A/B/5% (Lp Biochar 5%)	Wilcoxon Rank Sum Two-Sample Test	29632-007		C < T	29632-009		55.5		0.1721834	0.05	FALSE		13	2	E
995677544	A/B/10% (Lp Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29632-007		C < T	29632-010		58.5		0.2730381	0.05	FALSE		13	1	E
1931214591	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-007		C < T	29632-010		1.247892	1.782288	0.1179361	0.05	FALSE	0.5236874	12		C
1483018901	A/B/3% (Lp Biochar 3%)	Wilcoxon Rank Sum Two-Sample Test	29632-007		C > T	29632-008		55		0.2377622	0.05	FALSE		12	1	E
1717396558	A/B/3% (Lp Biochar 3%)	Wilcoxon Rank Sum Two-Sample Test	29632-007		C > T	29632-008		55		0.1230769	0.05	FALSE		13	1	E
158312586	A/B/5% (Lp Biochar 5%)	Wilcoxon Rank Sum Two-Sample Test	29632-007		C > T	29632-009		72.5		0.8442891	0.05	FALSE		13	2	E
1211014051	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-007		C > T	29632-010		-1.247892	1.782288	0.8820639	0.05	FALSE	0.5236874	12		C
2056270707	A/B/10% (Lp Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29632-007		C > T	29632-010		69.5		0.7448329	0.05	FALSE		13	1	E
975493702	A/B/5% (Lp Biochar 5%)	Wilcoxon Rank Sum Two-Sample Test	29632-008		C < T	29632-009		38.5		0.01538462	0.05	TRUE		13	2	E
1449371729	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-008		C < T	29632-009		1.916018	1.76131	0.03800518	0.05	TRUE	0.7698764	14		C
836994220	A/B/10% (Lp Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29632-008		C < T	29632-010		50.5		0.02898213	0.05	TRUE		14	2	E
1879955917	A/B/10% (Lp Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29632-008		C < T	29632-010		42.5		0.05454545	0.05	FALSE		13	2	E
835655185	A/B/5% (Lp Biochar 5%)	Equal Variance t Two-Sample Test	29632-008		C > T	29632-009		-1.916018	1.76131	0.9619948	0.05	FALSE	0.7698764	14		C
1854435353	A/B/5% (Lp Biochar 5%)	Wilcoxon Rank Sum Two-Sample Test	29632-008		C > T	29632-009		73.5		0.9857032	0.05	FALSE		13	2	E
237487327	A/B/10% (Lp Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29632-008		C > T	29632-010		85.5		0.9753691	0.05	FALSE		14	2	E
1967240760	A/B/10% (Lp Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29632-008		C > T	29632-010		69.5		0.9519814	0.05	FALSE		13	2	E
1933190938	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-009		C < T	29632-010		-0.9887146	1.76131	0.8302081	0.05	FALSE	0.8350379	14		C
111946303	A/B/10% (Lp Biochar 10%)	Equal Variance t Two-Sample Test	29632-009		C > T	29632-010		0.9887146	1.76131	0.1697919	0.05	FALSE	0.8350379	14		C

CETIS Analytical Report

Report Date: 12 Dec-17 15:21 (p 1 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-0724-6849		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-001 failed reproduction				48.31%					
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Negative Control*	3.23	1.89	2.39	7	CDF	0.0072	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.41	2.59	0.1143	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	66.8306	66.8306	1	10.5	0.0060	Significant Effect					
Error	89.4569	6.38978	14								
Total	156.288		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			24.6	8.89	4.0E-04	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.934	0.841	0.2800	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	4.96	2.03	7.89		0.05	10.9	1.24	70.71%	0.00%
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	82.47%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.05	6.4	10.9	1.7	4.35	8.35	4.55	3.4		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		

CETIS Analytical Report

Report Date: 12 Dec-17 15:21 (p 2 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-6176-0990		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-002 failed reproduction				48.97%					
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-002*	2.94	1.89	2.43	7	CDF	0.0109	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.38	2.59	0.1316	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	56.6256	56.6256	1	8.63	0.0108	Significant Effect					
Error	91.8994	6.56424	14								
Total	148.525		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			14.5	8.89	0.0022	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.946	0.841	0.4342	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	4.96	2.03	7.89		0.05	10.9	1.24	70.71%	0.00%
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	75.91%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.05	6.4	10.9	1.7	4.35	8.35	4.55	3.4		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		

CETIS Analytical Report

Report Date: 12 Dec-17 15:21 (p 3 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-2098-1553		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-003 failed reproduction				48.95%					
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-003*	2.2	1.86	2.43	8	CDF	0.0293	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.34	2.59	0.1579	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	33.0625	33.0625	1	4.86	0.0448	Significant Effect					
Error	95.3319	6.80942	14								
Total	128.394		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			9.18	8.89	0.0091	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.954	0.841	0.5546	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	4.96	2.03	7.89		0.05	10.9	1.24	70.71%	0.00%
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	58.01%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.05	6.4	10.9	1.7	4.35	8.35	4.55	3.4		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		

CETIS Analytical Report

Report Date: 12 Dec-17 15:21 (p 4 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-1287-1762		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-004 failed reproduction				48.88%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-004*	2.1	1.86	2.42	8	CDF	0.0344	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.34	2.59	0.1556	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	29.9756		29.9756	1	4.42	0.0542	Non-Significant Effect				
Error	95.0419		6.78871	14							
Total	125.018			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			9.47	8.89	0.0083	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.964	0.841	0.7366	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	4.96	2.03	7.89		0.05	10.9	1.24	70.71%	0.00%
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	55.23%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.05	6.4	10.9	1.7	4.35	8.35	4.55	3.4		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		

CETIS Analytical Report

Report Date: 12 Dec-17 15:21 (p 5 of 103)
 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-7503-9636		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-005 passed reproduction				48.82%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-005	1.32	1.89	2.42	7	CDF	0.1148	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.39	2.59	0.1276		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	11.3064		11.3064		1	1.73	0.2092	Non-Significant Effect			
Error	91.3422		6.52444		14						
Total	102.649				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			16	8.89	0.0016		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.945	0.841	0.4218		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	4.96	2.03	7.89		0.05	10.9	1.24	70.71%	0.00%
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	33.92%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.05	6.4	10.9	1.7	4.35	8.35	4.55	3.4		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-2038-7605		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-006 failed reproduction				47.45%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-006*	3.72	1.89	2.35	7	CDF	0.0037	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.46	2.59	0.0937	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	85.3314		85.3314	1	13.8	0.0023	Significant Effect				
Error	86.2759		6.16257	14							
Total	171.607			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			278	8.89	<1.0E-37	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.882	0.841	0.0419	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	4.96	2.03	7.89		0.05	10.9	1.24	70.71%	0.00%
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	93.19%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.05	6.4	10.9	1.7	4.35	8.35	4.55	3.4		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-2165-0984		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-007 failed reproduction				48.69%					
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-007*	3.37	1.86	2.41	8	CDF	0.0049	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.3	2.55	0.1641	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	71.3126	71.3126	1	10.1	0.0074	Significant Effect					
Error	92.2308	7.09467	13								
Total	163.543		14								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			11.8	10.8	0.0079	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.921	0.833	0.2030	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	4.96	2.03	7.89		0.05	10.9	1.24	70.71%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	88.18%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.05	6.4	10.9	1.7	4.35	8.35	4.55	3.4		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-5740-6104		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-008 failed reproduction				47.74%					
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-008*	3.8	1.89	2.37	7	CDF	0.0033	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.44	2.59	0.1004	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	90.25	90.25	1	14.5	0.0019	Significant Effect					
Error	87.3494	6.23924	14								
Total	177.599		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	62.2	8.89	1.8E-05	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.889	0.841	0.0538	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	4.96	2.03	7.89		0.05	10.9	1.24	70.71%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	95.84%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.05	6.4	10.9	1.7	4.35	8.35	4.55	3.4		
29632-008		0	1.25	0	0	0	0	0	0.4		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-2695-8538		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-009 failed reproduction				48.94%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-009*	3	1.86	2.43	8	CDF	0.0085	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.34	2.59	0.1576	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	61.2306		61.2306	1	9	0.0096	Significant Effect				
Error	95.2844		6.80603	14							
Total	156.515			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			9.23	8.89	0.0089	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.944	0.841	0.4056	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	4.96	2.03	7.89		0.05	10.9	1.24	70.71%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	78.94%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.05	6.4	10.9	1.7	4.35	8.35	4.55	3.4		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-3451-1765		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-010 failed reproduction				48.25%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-010*	3.47	1.89	2.39	7	CDF	0.0052	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.42	2.59	0.1128	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	76.7814		76.7814	1	12	0.0037	Significant Effect				
Error	89.2372		6.37408	14							
Total	166.019			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			26.3	8.89	3.3E-04	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.914	0.841	0.1355	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	4.96	2.03	7.89		0.05	10.9	1.24	70.71%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	88.40%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.05	6.4	10.9	1.7	4.35	8.35	4.55	3.4		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-8051-5159		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C > T			29632-002 passed reproduction			83.16%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-002	-0.792	1.76	0.722	14	CDF	0.7793	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.15	2.59	0.3206	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.4225		0.4225	1	0.628	0.4414	Non-Significant Effect				
Error	9.42188		0.672991	14							
Total	9.84438			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.7	8.89	0.5006	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.929	0.841	0.2338	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	-37.41%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-3396-4436		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-003 passed reproduction				97.13%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-003	-2.53	1.76	0.844	14	CDF	0.9880	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.75	2.59	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	5.88062		5.88062	1	6.4	0.0240		Significant Effect			
Error	12.8544		0.91817	14							
Total	18.735			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.68	8.89	0.2161		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.933	0.841	0.2706		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	-139.57%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-1659-5338		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-004 passed reproduction				96.03%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-004	-2.85	1.76	0.834	14	CDF	0.9936	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.06	2.59	0.4468	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	7.29		7.29	1	8.12	0.0128	Significant Effect				
Error	12.5644		0.897455	14							
Total	19.8544			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.6	8.89	0.2306	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.983	0.841	0.9839	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	-155.40%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-1032-2945		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-005 passed reproduction				80.66%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-005	-6.05	1.76	0.701	14	CDF	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.18	2.59	0.2921	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	23.1602		23.1602	1	36.6	3.0E-05	Significant Effect				
Error	8.86469		0.633192	14							
Total	32.0248			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.54	8.89	0.5827	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.971	0.841	0.8560	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	-276.98%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-6047-6093		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-006 failed reproduction				55.75%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-006*	2.04	1.86	0.484	8	CDF	0.0378	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.35	2.59	0.1518	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.12891		1.12891	1	4.16	0.0607	Non-Significant Effect				
Error	3.79844		0.271317	14							
Total	4.92734			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			11.3	8.89	0.0048	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.947	0.841	0.4500	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	61.15%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		

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Report Date: 12 Dec-17 15:21 (p 16 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-4453-9953		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-007 passed reproduction				91.38%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-007	0.631	1.77	0.794	13	CDF	0.2694	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.71	2.55	0.0190		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.299074		0.299074	1	0.399	0.5387		Non-Significant Effect			
Error	9.75326		0.750251	13							
Total	10.0523			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.09	9.16	0.3559		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.849	0.833	0.0169		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	32.58%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-0661-9205		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location		Lat/Long						
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-007 failed reproduction				62.12%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-007*	2.18	1.78	0.54	12	CDF	0.0249	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.49537		1.49537	1	4.76	0.0498	Significant Effect				
Error	3.77177		0.314314	12							
Total	5.26714			13							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			8.84	14.2	0.0290	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.954	0.824	0.6225	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-007		6	0.208	-0.0409	0.458		0	0.5	0.097	114.01%	76.02%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-007		0	Outlier	0	0.3	0.5	0.45	0			

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Report Date: 12 Dec-17 15:21 (p 18 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-2776-2261		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 failed reproduction	59.80%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-008*	2.25	1.76	0.52	14	CDF	0.0207	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.07	2.59	0.4222	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.75563	1.75563	1	5.05	0.0414	Significant Effect					
Error	4.87187	0.347991	14								
Total	6.6275		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.52	8.89	0.2449	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.906	0.841	0.1005	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	76.26%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-008		0	1.25	0	0	0	0	0	0.4		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-8139-4916		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-009 passed reproduction				96.95%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-009	-0.366	1.76	0.842	14	CDF	0.6401	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.5	2.59	0.0782	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.1225		0.1225	1	0.134	0.7199	Non-Significant Effect				
Error	12.8069		0.914777	14							
Total	12.9294			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.67	8.89	0.2184	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.898	0.841	0.0747	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	-20.14%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Report Date: 12 Dec-17 15:21 (p 20 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-2642-5224		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-010 passed reproduction				70.44%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-010	0.845	1.76	0.612	14	CDF	0.2060	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.2	2.59	0.2732		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.345156		0.345156	1	0.715	0.4121		Non-Significant Effect			
Error	6.75969		0.482835	14							
Total	7.10484			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.07	8.89	0.9339		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.93	0.841	0.2429		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	33.81%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Report Date: 12 Dec-17 15:21 (p 21 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-8795-9897		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:24		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29632-002 passed reproduction			83.16%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-002	0.792	1.76	0.722	14	CDF	0.2207	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.15	2.59	0.3206	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.4225		0.4225	1	0.628	0.4414	Non-Significant Effect				
Error	9.42188		0.672991	14							
Total	9.84438			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.7	8.89	0.5006	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.929	0.841	0.2338	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	-37.41%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		

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Report Date: 12 Dec-17 15:21 (p 22 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-0940-6989		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:24		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C > T			29632-003 passed reproduction			77.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-003	-1.7	1.76	0.921	14	CDF	0.9442	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.69	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	3.15062		3.15062	1	2.88	0.1116	Non-Significant Effect				
Error	15.2969		1.09263	14							
Total	18.4475			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.58	8.89	0.5616	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.901	0.841	0.0820	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	-74.35%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		

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Report Date: 12 Dec-17 15:21 (p 23 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-0822-7779		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:24		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-004 passed reproduction				76.38%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-004	-1.98	1.76	0.912	14	CDF	0.9661	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.88	2.59	0.7644	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	4.2025		4.2025	1	3.92	0.0677	Non-Significant Effect				
Error	15.0069		1.07192	14							
Total	19.2094			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.53	8.89	0.5887	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.957	0.841	0.6118	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	-85.86%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		

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Report Date: 12 Dec-17 15:21 (p 24 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-3999-7405		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-005 passed reproduction				66.30%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-005	-4.63	1.76	0.791	14	CDF	0.9998	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.97	2.59	0.5950	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	17.3264		17.3264	1	21.5	3.9E-04	Significant Effect				
Error	11.3072		0.807656	14							
Total	28.6336			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.1	8.89	0.8998	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.991	0.841	0.9995	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	-174.35%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		

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Report Date: 12 Dec-17 15:21 (p 25 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-8447-0280		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-006 failed reproduction				52.98%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-006*	2.56	1.89	0.632	7	CDF	0.0186	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.65	2.59	0.0363	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.93266	2.93266	1	6.58	0.0225	Significant Effect					
Error	6.24094	0.445781	14								
Total	9.17359		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			19.2	8.89	9.1E-04	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.888	0.841	0.0512	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	71.73%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		

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Report Date: 12 Dec-17 15:21 (p 26 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-2828-0278		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-007 passed reproduction				74.37%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-007	1.21	1.77	0.888	13	CDF	0.1234	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		2.43	2.55	0.0924		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	1.38024		1.38024	1	1.47	0.2467		Non-Significant Effect			
Error	12.1958		0.938135	13							
Total	13.576			14							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		1.23	9.16	0.7825		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.842	0.833	0.0134		Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	50.93%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Report Date: 12 Dec-17 15:21 (p 27 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	15-7079-0916	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:25	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C > T	29632-008 failed reproduction			53.32%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-008*	2.73	1.76	0.637	14	CDF	0.0081	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.44	2.59	0.0999	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	3.90062	3.90062	1	7.47	0.0162	Significant Effect					
Error	7.31437	0.522455	14								
Total	11.215		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	4.29	8.89	0.0736	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.893	0.841	0.0618	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	82.72%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-008		0	1.25	0	0	0	0	0	0.4		

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Report Date: 12 Dec-17 15:21 (p 28 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-4428-0277		Endpoint: Reproduction		CETIS Version: CETISv1.9.3							
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample		Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result			PMSD					
Untransformed	C > T		29632-009 passed reproduction			76.99%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-009	0.287	1.76	0.919	14	CDF	0.3890	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.29	2.59	0.1938	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.09		0.09	1	0.0826	0.7780	Non-Significant Effect				
Error	15.2494		1.08924	14							
Total	15.3394			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.57	8.89	0.5660	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.88	0.841	0.0389	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	12.57%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Report Date: 12 Dec-17 15:21 (p 29 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-0111-3575		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-010 passed reproduction					59.81%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-010	1.53	1.76	0.714	14	CDF	0.0746	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.18	2.59	0.2926	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.53141	1.53141	1	2.33	0.1492	Non-Significant Effect					
Error	9.20219	0.657299	14								
Total	10.7336		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.81	8.89	0.4502	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.912	0.841	0.1243	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	51.83%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Report Date: 12 Dec-17 15:21 (p 30 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-5834-8587		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-003 failed reproduction				97.13%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-003*	2.53	1.76	0.844	14	CDF	0.0120	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.75	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	5.88062		5.88062	1	6.4	0.0240	Significant Effect				
Error	12.8544		0.91817	14							
Total	18.735			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.68	8.89	0.2161	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.933	0.841	0.2706	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	-139.57%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		

CETIS Analytical Report

Report Date: 12 Dec-17 15:21 (p 31 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-4834-2580		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29632-003 passed reproduction			77.11%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-003	1.7	1.76	0.921	14	CDF	0.0558	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.69	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	3.15062		3.15062	1	2.88	0.1116	Non-Significant Effect				
Error	15.2969		1.09263	14							
Total	18.4475			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.58	8.89	0.5616	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.901	0.841	0.0820	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	-74.35%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-8427-3782		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-004 passed reproduction				48.56%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-004	-0.24	1.76	1.01	14	CDF	0.5930	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.7	2.59	1.0000		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.075625		0.075625	1	0.0574	0.8141		Non-Significant Effect			
Error	18.4394		1.3171	14							
Total	18.515			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.03	8.89	0.9680		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.955	0.841	0.5755		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	-6.61%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	11-8597-8957	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:26	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-005 passed reproduction				43.42%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-005	-2.33	1.76	0.904	14	CDF	0.9823	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.69	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	5.70016	5.70016	1	5.41	0.0355	Significant Effect					
Error	14.7397	1.05283	14								
Total	20.4398		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.74	8.89	0.4811	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.964	0.841	0.7421	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	-57.36%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-2880-9172		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result			PMSD				
Untransformed	C > T			29632-006 failed reproduction			37.83%				
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-006*	4.2	1.89	0.787	7	CDF	0.0020	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.02	2.59	0.5081	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	12.1627	12.1627	1	17.6	9.0E-04	Significant Effect					
Error	9.67344	0.69096	14								
Total	21.8361		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			30.3	8.89	2.0E-04	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.942	0.841	0.3772	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	83.78%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-6040-6616		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-007 failed reproduction				48.29%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-007*	2.64	1.77	1	13	CDF	0.0103	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.14	2.55	0.2977	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	8.35007		8.35007	1	6.95	0.0206	Significant Effect				
Error	15.6283		1.20217	13							
Total	23.9783			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.28	10.8	0.7783	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.866	0.833	0.0293	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	71.86%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-9787-5883		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-008 failed reproduction				37.07%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-008*	4.28	1.76	0.772	14	CDF	3.8E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			1.91	2.59	0.6972		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	14.0625		14.0625	1	18.3	7.6E-04		Significant Effect			
Error	10.7469		0.767634	14							
Total	24.8094			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			6.78	8.89	0.0219		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.898	0.841	0.0743		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	90.09%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-008		0	1.25	0	0	0	0	0	0.4		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-6674-6772		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-009 failed reproduction				48.88%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-009*	1.8	1.76	1.02	14	CDF	0.0470	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.07	2.59	0.4309	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	4.30562		4.30562	1	3.23	0.0941	Non-Significant Effect				
Error	18.6819		1.33442	14							
Total	22.9875			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.01	8.89	0.9948	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.878	0.841	0.0355	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	49.85%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Report Date: 12 Dec-17 15:21 (p 38 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-5617-3831		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-010 failed reproduction				40.20%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-010*	3.17	1.76	0.837	14	CDF	0.0034	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.76	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	9.07516		9.07516	1	10.1	0.0068	Significant Effect				
Error	12.6347		0.902478	14							
Total	21.7098			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.86	8.89	0.1885	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.901	0.841	0.0847	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	72.37%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Report Date: 12 Dec-17 15:21 (p 39 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-2321-9238		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-004 failed reproduction				96.03%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-004*	2.85	1.76	0.834	14	CDF	0.0064	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.06	2.59	0.4468	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	7.29		7.29	1	8.12	0.0128	Significant Effect				
Error	12.5644		0.897455	14							
Total	19.8544			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.6	8.89	0.2306	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.983	0.841	0.9839	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	-155.40%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-3364-3336		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-004 failed reproduction				76.38%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-004*	1.98	1.76	0.912	14	CDF	0.0339	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.88	2.59	0.7644	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	4.2025		4.2025	1	3.92	0.0677	Non-Significant Effect				
Error	15.0069		1.07192	14							
Total	19.2094			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.53	8.89	0.5887	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.957	0.841	0.6118	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	-85.86%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-9909-8381		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-004 passed reproduction				48.56%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-004	0.24	1.76	1.01	14	CDF	0.4070	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.7	2.59	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.075625		0.075625	1	0.0574	0.8141	Non-Significant Effect				
Error	18.4394		1.3171	14							
Total	18.515			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.03	8.89	0.9680	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.955	0.841	0.5755	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	-6.61%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-6895-6432		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-005 passed reproduction				40.32%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-005	-2.08	1.76	0.895	14	CDF	0.9718	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.92	2.59	0.6884	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	4.46266		4.46266	1	4.32	0.0564	Non-Significant Effect				
Error	14.4497		1.03212	14							
Total	18.9123			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.69	8.89	0.5061	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.973	0.841	0.8823	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	-47.61%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test											EnviroSystems, Inc.	
Analysis ID: 04-6486-1732		Endpoint: Reproduction			CETIS Version: CETISv1.9.3							
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes							
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project						
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm						
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h								
Sample Code	Material Type	Sample Source		Station Location		Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp		Comparison Result				PMSD					
Untransformed	C > T		29632-006 failed reproduction				34.95%					
Unequal Variance t Two-Sample Test												
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)			
29632-004		29632-006*	4.6	1.89	0.776	7	CDF	0.0012	Significant Effect			
Auxiliary Tests												
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test			2.38	2.59	0.1331	No Outliers Detected					
ANOVA Table												
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	14.1564		14.1564	1	21.1	4.2E-04	Significant Effect					
Error	9.38344		0.670246	14								
Total	23.5398			15								
Distributional Tests												
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test			29.4	8.89	2.3E-04	Unequal Variances					
Distribution	Shapiro-Wilk W Normality Test			0.892	0.841	0.0591	Normal Distribution					
Reproduction Summary												
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%	
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	84.79%	
Reproduction Detail												
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8			
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8			
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-0072-4940		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C > T			29632-007 failed reproduction			44.87%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-007*	2.9	1.77	0.996	13	CDF	0.0061	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.16	2.55	0.2764	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	9.95607		9.95607	1	8.44	0.0123	Significant Effect				
Error	15.3383		1.17987	13							
Total	25.2943			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	10.8	0.8077	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.909	0.833	0.1297	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	73.60%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-3291-5190	Endpoint: Reproduction		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:27	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-008 failed reproduction				34.30%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-008*	4.66	1.76	0.761	14	CDF	1.8E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.25	2.59	0.2214	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	16.2006	16.2006	1	21.7	3.7E-04	Significant Effect					
Error	10.4569	0.74692	14								
Total	26.6575		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.57	8.89	0.0239	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.905	0.841	0.0984	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	90.70%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		
29632-008		0	1.25	0	0	0	0	0	0.4		

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Report Date: 12 Dec-17 15:22 (p 46 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-6201-2685		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-009 failed reproduction				45.49%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-009*	2.05	1.76	1.01	14	CDF	0.0298	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.08	2.59	0.4083	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	5.5225		5.5225	1	4.2	0.0595	Non-Significant Effect				
Error	18.3919		1.31371	14							
Total	23.9144			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.03	8.89	0.9731	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.953	0.841	0.5410	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	52.96%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Report Date: 12 Dec-17 15:22 (p 47 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 06-2525-6453		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-010 failed reproduction				37.27%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-010*	3.5	1.76	0.827	14	CDF	0.0018	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.07	2.59	0.4208	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	10.8077		10.8077	1	12.3	0.0035	Significant Effect				
Error	12.3447		0.881763	14							
Total	23.1523			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.78	8.89	0.2015	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.954	0.841	0.5573	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	74.08%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

CETIS Analytical Report

Report Date: 12 Dec-17 15:22 (p 48 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-9224-3465	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:28	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-005 failed reproduction				80.66%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-005*	6.05	1.76	0.701	14	CDF	1.5E-05	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.18	2.59	0.2921	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	23.1602	23.1602	1	36.6	3.0E-05	Significant Effect					
Error	8.86469	0.633192	14								
Total	32.0248		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.54	8.89	0.5827	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.971	0.841	0.8560	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	-276.98%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		

CETIS Analytical Report

Report Date: 12 Dec-17 15:22 (p 49 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-0069-2372		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-005 failed reproduction				66.30%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-005*	4.63	1.76	0.791	14	CDF	1.9E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.97	2.59	0.5950	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	17.3264		17.3264	1	21.5	3.9E-04	Significant Effect				
Error	11.3072		0.807656	14							
Total	28.6336			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.1	8.89	0.8998	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.991	0.841	0.9995	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	-174.35%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	16-2979-8688	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:28	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-005 failed reproduction				43.42%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-005*	2.33	1.76	0.904	14	CDF	0.0177	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.69	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	5.70016	5.70016	1	5.41	0.0355	Significant Effect					
Error	14.7397	1.05283	14								
Total	20.4398		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.74	8.89	0.4811	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.964	0.841	0.7421	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	-57.36%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	10-7613-1411	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:28	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-005 failed reproduction			40.32%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-005*	2.08	1.76	0.895	14	CDF	0.0282	Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.92	2.59	0.6884	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	4.46266	4.46266	1	4.32	0.0564	Non-Significant Effect					
Error	14.4497	1.03212	14								
Total	18.9123		15								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.69	8.89	0.5061	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.973	0.841	0.8823	Normal Distribution					
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	-47.61%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-4013-3240		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-006 failed reproduction				18.43%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-006*	9.22	1.89	0.604	7	CDF	1.8E-05	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.72	2.59	0.0234	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	34.5156		34.5156	1	85	2.5E-07	Significant Effect				
Error	5.68375		0.405982	14							
Total	40.1994			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			17.4	8.89	0.0012	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.896	0.841	0.0696	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	0.00%
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	89.69%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-8694-4625		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-007 failed reproduction				26.48%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-007*	5.49	1.77	0.867	13	CDF	5.2E-05	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.48	2.55	0.0699	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	27.0004		27.0004	1	30.2	1.0E-04	Significant Effect				
Error	11.6386		0.895275	13							
Total	38.639			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.36	9.16	0.6914	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.912	0.833	0.1473	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	82.12%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Report Date: 12 Dec-17 15:22 (p 54 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 06-6095-8561		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Untransformed	C > T	29632-008 failed reproduction					18.68%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-008*	8.83	1.76	0.612	14	CDF	2.1E-07	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.5	2.59	0.0784	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	37.6689	37.6689	1	78	4.2E-07	Significant Effect					
Error	6.75719	0.482656	14								
Total	44.4261		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.89	8.89	0.0938	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.875	0.841	0.0322	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	93.70%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		
29632-008		0	1.25	0	0	0	0	0	0.4		

CETIS Analytical Report

Report Date: 12 Dec-17 15:22 (p 55 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-7300-7889	Endpoint: Reproduction		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:28	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C > T	29632-009 failed reproduction			27.55%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-009*	4.36	1.76	0.902	14	CDF	3.3E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.33	2.59	0.1629	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	19.9139	19.9139	1	19	6.6E-04	Significant Effect					
Error	14.6922	1.04944	14								
Total	34.6061		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.73	8.89	0.4851	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.966	0.841	0.7680	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	68.13%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

CETIS Analytical Report

Report Date: 12 Dec-17 15:22 (p 56 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-7675-8248		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C > T			29632-010 failed reproduction			21.13%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-010*	6.87	1.76	0.692	14	CDF	3.8E-06	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.21	2.59	0.2642	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	29.16		29.16	1	47.2	7.7E-06	Significant Effect				
Error	8.645		0.6175	14							
Total	37.805			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.64	8.89	0.5278	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.95	0.841	0.4941	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	82.44%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 09-2787-8758		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-006 passed reproduction				55.75%				
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-006	-2.04	1.86	0.484	8	CDF	0.9622	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.35	2.59	0.1518	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.12891		1.12891	1	4.16	0.0607	Non-Significant Effect				
Error	3.79844		0.271317	14							
Total	4.92734			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			11.3	8.89	0.0048	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.947	0.841	0.4500	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	61.15%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-6080-5649		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-006 passed reproduction				52.98%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-006	-2.56	1.89	0.632	7	CDF	0.9814	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.65	2.59	0.0363	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	2.93266		2.93266	1	6.58	0.0225	Significant Effect				
Error	6.24094		0.445781	14							
Total	9.17359			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			19.2	8.89	9.1E-04	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.888	0.841	0.0512	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	71.73%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-1890-0427		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-006 passed reproduction				37.83%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-006	-4.2	1.89	0.787	7	CDF	0.9980	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.02	2.59	0.5081		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	12.1627		12.1627	1	17.6	9.0E-04		Significant Effect			
Error	9.67344		0.69096	14							
Total	21.8361			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			30.3	8.89	2.0E-04		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.942	0.841	0.3772		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	83.78%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-3636-2629		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-006 passed reproduction				34.95%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-006	-4.6	1.89	0.776	7	CDF	0.9988	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.38	2.59	0.1331		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	14.1564		14.1564	1	21.1	4.2E-04		Significant Effect			
Error	9.38344		0.670246	14							
Total	23.5398			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			29.4	8.89	2.3E-04		Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.892	0.841	0.0591		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	84.79%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		

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Report Date: 12 Dec-17 15:22 (p 61 of 103)
 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	09-9004-9034	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:29	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-006 passed reproduction				18.43%					
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-006	-9.22	1.89	0.604	7	CDF	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.72	2.59	0.0234	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	34.5156	34.5156	1	85	2.5E-07	Significant Effect					
Error	5.68375	0.405982	14								
Total	40.1994		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	17.4	8.89	0.0012	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.896	0.841	0.0696	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	0.00%
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	89.69%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 21-1874-9534		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-007 passed reproduction				193.09%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-007	51	n/a	2	13	Exact	0.2828	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		3.3	2.55	2.8E-05		Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.230012		0.230012	1	0.455	0.5118	Non-Significant Effect				
Error	6.57232		0.505563	13							
Total	6.80233			14							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		23.7	9.16	5.2E-04		Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.67	0.833	1.2E-04		Non-Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	-73.54%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

CETIS Analytical Report

Report Date: 12 Dec-17 15:22 (p 63 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-6492-5528		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-008 failed reproduction				90.68%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-008*	51	n/a	2	14	Exact	0.0333	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			3.11	2.59	0.0012	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0689062		0.0689062	1	0.571	0.4626	Non-Significant Effect				
Error	1.69094		0.120781	14							
Total	1.75984			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.48	8.89	0.0662	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.736	0.841	4.3E-04	Non-Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	38.89%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		
29632-008		0	1.25	0	0	0	0	0	0.4		

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Report Date: 12 Dec-17 15:22 (p 64 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-8973-6520		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-009 passed reproduction				232.74%				
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-009	-1.7	1.89	0.785	7	CDF	0.9339	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.88	2.59	0.0083	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.99516		1.99516	1	2.9	0.1106	Non-Significant Effect				
Error	9.62594		0.687567	14							
Total	11.6211			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			30.2	8.89	2.1E-04	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.875	0.841	0.0328	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	-209.26%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-7339-4958		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-010 passed reproduction				131.93%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-010	69.5	n/a	5	14	Exact	0.5734	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			3.02	2.59	0.0027	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.225625	0.225625	1	0.883	0.3634	Non-Significant Effect					
Error	3.57875	0.255625	14								
Total	3.80437		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			10.6	8.89	0.0059	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.838	0.841	0.0092	Non-Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	-70.37%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-8627-7735		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-007 passed reproduction				91.38%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-007	-0.631	1.77	0.794	13	CDF	0.7306	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.71	2.55	0.0190		Outlier Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.299074		0.299074	1	0.399	0.5387		Non-Significant Effect			
Error	9.75326		0.750251	13							
Total	10.0523			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.09	9.16	0.3559		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.849	0.833	0.0169		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	32.58%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-7039-2789		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-007 passed reproduction				74.37%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-007	-1.21	1.77	0.888	13	CDF	0.8766	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.43	2.55	0.0924		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	1.38024		1.38024	1	1.47	0.2467		Non-Significant Effect			
Error	12.1958		0.938135	13							
Total	13.576			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.23	9.16	0.7825		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.842	0.833	0.0134		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	50.93%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-5518-0534		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-007 passed reproduction				48.29%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-007	-2.64	1.77	1	13	CDF	0.9897	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.14	2.55	0.2977	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	8.35007		8.35007	1	6.95	0.0206	Significant Effect				
Error	15.6283		1.20217	13							
Total	23.9783			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.28	10.8	0.7783	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.866	0.833	0.0293	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	71.86%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-9814-4941		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-007 passed reproduction				44.87%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-007	-2.9	1.77	0.996	13	CDF	0.9939	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.16	2.55	0.2764		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	9.95607		9.95607	1	8.44	0.0123		Significant Effect			
Error	15.3383		1.17987	13							
Total	25.2943			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.24	10.8	0.8077		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.909	0.833	0.1297		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	73.60%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 06-3557-5889		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C < T			29632-007 passed reproduction			26.48%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-007	-5.49	1.77	0.867	13	CDF	0.9999	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.48	2.55	0.0699	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	27.0004	27.0004	1	30.2	1.0E-04	Significant Effect					
Error	11.6386	0.895275	13								
Total	38.639		14								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.36	9.16	0.6914	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.912	0.833	0.1473	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	82.12%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test											EnviroSystems, Inc.
Analysis ID: 01-6738-9265		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Untransformed	C < T	29632-007 passed reproduction					193.09%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-007	61	n/a	2	13	Exact	0.7368	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.3	2.55	2.8E-05	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.230012	0.230012	1	0.455	0.5118	Non-Significant Effect					
Error	6.57232	0.505563	13								
Total	6.80233		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	23.7	9.16	5.2E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.67	0.833	1.2E-04	Non-Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	0.00%
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	-73.54%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		
29632-007		0	2.85	0	0.3	0.5	0.45	0			

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Report Date: 12 Dec-17 15:22 (p 72 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-1739-6558		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-008 passed reproduction				120.01%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-008	55	n/a	1	13	Exact	0.1231	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			3.06	2.55	9.9E-04	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.537574	0.537574	1	0.914	0.3565	Non-Significant Effect					
Error	7.64576	0.588135	13								
Total	8.18333		14								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.29	9.16	0.0460	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.661	0.833	9.8E-05	Non-Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	64.79%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	2.85	0	0.3	0.5	0.45	0			
29632-008		0	1.25	0	0	0	0	0	0.4		

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Report Date: 12 Dec-17 15:22 (p 73 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-5831-2586		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-009 passed reproduction				171.31%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-009	72.5	n/a	2	13	Exact	0.8443	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.19	2.55	0.2538		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.783241		0.783241	1	0.654	0.4334	Non-Significant Effect				
Error	15.5808		1.19852	13							
Total	16.364			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.28	10.8	0.7830		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.772	0.833	0.0016		Non-Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	-78.20%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	2.85	0	0.3	0.5	0.45	0			
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-5627-0707		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-010 passed reproduction				134.01%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-010	69.5	n/a	1	13	Exact	0.7448	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		2.74	2.55	0.0155		Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0004286		0.0004286	1	0.000584	0.9811	Non-Significant Effect				
Error	9.53357		0.733352	13							
Total	9.534			14							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		2.23	9.16	0.3166		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.713	0.833	3.4E-04		Non-Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	1.83%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	2.85	0	0.3	0.5	0.45	0			
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-1101-4051	Endpoint: Reproduction		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:31	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform		Alt Hyp		Comparison Result		PMSD					
Untransformed		C > T		29632-010 passed reproduction		251.37%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-010	-1.25	1.78	0.524	12	CDF	0.8821	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.460952	0.460952	1	1.56	0.2359	Non-Significant Effect					
Error	3.55208	0.296007	12								
Total	4.01304		13								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		8.28	14.2	0.0334	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.833	0.824	0.0130	Normal Distribution					
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		6	0.208	-0.0409	0.458		0	0.5	0.097	114.01%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	-176.00%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	Outlier	0	0.3	0.5	0.45	0			
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-0319-1145		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-008 passed reproduction				59.80%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-008	-2.25	1.76	0.52	14	CDF	0.9793	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.07	2.59	0.4222	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	1.75563		1.75563	1	5.05	0.0414	Significant Effect				
Error	4.87187		0.347991	14							
Total	6.6275			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.52	8.89	0.2449	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.906	0.841	0.1005	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	76.26%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-008		0	1.25	0	0	0	0	0	0.4		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-6866-5556		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C < T			29632-008 passed reproduction					53.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-008	-2.73	1.76	0.637	14	CDF	0.9919	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.44	2.59	0.0999	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	3.90062		3.90062	1	7.47	0.0162	Significant Effect				
Error	7.31437		0.522455	14							
Total	11.215			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.29	8.89	0.0736	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.893	0.841	0.0618	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	82.72%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-008		0	1.25	0	0	0	0	0	0.4		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	04-0586-3047	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:31	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-008 passed reproduction				37.07%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-008	-4.28	1.76	0.772	14	CDF	0.9996	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.91	2.59	0.6972	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	14.0625	14.0625	1	18.3	7.6E-04	Significant Effect					
Error	10.7469	0.767634	14								
Total	24.8094		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.78	8.89	0.0219	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.898	0.841	0.0743	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	90.09%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-008		0	1.25	0	0	0	0	0	0.4		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	21-2406-3778	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:31	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-008 passed reproduction				34.30%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-008	-4.66	1.76	0.761	14	CDF	0.9998	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.25	2.59	0.2214	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	16.2006	16.2006	1	21.7	3.7E-04	Significant Effect					
Error	10.4569	0.74692	14								
Total	26.6575		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.57	8.89	0.0239	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.905	0.841	0.0984	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	90.70%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		
29632-008		0	1.25	0	0	0	0	0	0.4		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-3398-7159		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-008 passed reproduction				18.68%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-008	-8.83	1.76	0.612	14	CDF	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.5	2.59	0.0784		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	37.6689		37.6689	1	78	4.2E-07		Significant Effect			
Error	6.75719		0.482656	14							
Total	44.4261			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			3.89	8.89	0.0938		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.875	0.841	0.0322		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	93.70%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		
29632-008		0	1.25	0	0	0	0	0	0.4		

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Report Date: 12 Dec-17 15:22 (p 81 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-9750-8898	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:32	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-008 passed reproduction				50.29%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-008	-2.92	1.77	0.17	13	CDF	0.9941	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.29344	0.29344	1	8.56	0.0118	Significant Effect					
Error	0.445893	0.0342995	13								
Total	0.739333		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.93	10.8	0.4411	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.949	0.833	0.5014	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	0.00%
29632-008		7	0.0571	-0.0827	0.197		0	0.4	0.0571	264.58%	83.07%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		
29632-008		0	Outlier	0	0	0	0	0	0.4		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-9791-9805		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed reproduction	120.01%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-008	73	n/a	1	13	Exact	0.8867	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.06	2.55	9.9E-04	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.537574	0.537574	1	0.914	0.3565	Non-Significant Effect					
Error	7.64576	0.588135	13								
Total	8.18333		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.29	9.16	0.0460	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.661	0.833	9.8E-05	Non-Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	0.00%
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	64.79%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	2.85	0	0.3	0.5	0.45	0			
29632-008		0	1.25	0	0	0	0	0	0.4		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-3565-5185		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-009 passed reproduction				373.27%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-009	-1.92	1.76	0.77	14	CDF	0.9620	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		2.73	2.59	0.0221		Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	2.80562		2.80562	1	3.67	0.0760		Non-Significant Effect			
Error	10.6994		0.764241	14							
Total	13.505			15							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		6.74	8.89	0.0222		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.86	0.841	0.0189		Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	-406.06%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0	1.25	0	0	0	0	0	0.4		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-3748-7327		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-010 passed reproduction				246.14%					
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-010	85.5	n/a	2	14	Exact	0.9754	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.65	2.59	0.0356	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.543906	0.543906	1	1.64	0.2216	Non-Significant Effect					
Error	4.65219	0.332299	14								
Total	5.19609		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.37	8.89	0.2785	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.768	0.841	0.0011	Non-Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.206	-0.165	0.578	0	0	1.25	0.157	215.45%	0.00%
29632-010		8	0.575	0.0036	1.15	0	0	2.05	0.242	118.87%	-178.79%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0	1.25	0	0	0	0	0	0	0.4	
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-6691-1656		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-009 passed reproduction				96.95%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-009	0.366	1.76	0.842	14	CDF	0.3599	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.5	2.59	0.0782		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	0.1225		0.1225	1	0.134	0.7199		Non-Significant Effect			
Error	12.8069		0.914777	14							
Total	12.9294			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.67	8.89	0.2184		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.898	0.841	0.0747		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	-20.14%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-3554-8380		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-009 passed reproduction				76.99%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-009	-0.287	1.76	0.919	14	CDF	0.6110	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.29	2.59	0.1938	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.09	0.09	1	0.0826	0.7780	Non-Significant Effect					
Error	15.2494	1.08924	14								
Total	15.3394		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.57	8.89	0.5660	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.88	0.841	0.0389	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	12.57%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-5871-1986		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-009 passed reproduction				48.88%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-009	-1.8	1.76	1.02	14	CDF	0.9530	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.07	2.59	0.4309	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	4.30562		4.30562	1	3.23	0.0941	Non-Significant Effect				
Error	18.6819		1.33442	14							
Total	22.9875			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.01	8.89	0.9948	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.878	0.841	0.0355	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	49.85%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Report Date: 12 Dec-17 15:23 (p 88 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-6659-3731		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-009 passed reproduction				45.49%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-009	-2.05	1.76	1.01	14	CDF	0.9702	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.08	2.59	0.4083	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	5.5225		5.5225	1	4.2	0.0595	Non-Significant Effect				
Error	18.3919		1.31371	14							
Total	23.9144			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.03	8.89	0.9731	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.953	0.841	0.5410	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	52.96%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Report Date: 12 Dec-17 15:23 (p 89 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 06-6469-1930	Endpoint: Reproduction		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:33	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform		Alt Hyp		Comparison Result		PMSD					
Untransformed		C < T		29632-009 passed reproduction		27.55%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-009	-4.36	1.76	0.902	14	CDF	0.9997	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.33	2.59	0.1629	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	19.9139	19.9139	1	19	6.6E-04	Significant Effect					
Error	14.6922	1.04944	14								
Total	34.6061		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.73	8.89	0.4851	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.966	0.841	0.7680	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	68.13%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Report Date: 12 Dec-17 15:23 (p 90 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	11-5248-8262	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:33	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-009 passed reproduction				165.50%					
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-009	1.31	1.94	0.559	6	CDF	0.1189	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.530012	0.530012	1	1.94	0.1868	Non-Significant Effect					
Error	3.54732	0.272871	13								
Total	4.07733		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	12.2	9.16	0.0042	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.898	0.833	0.0873	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	0.00%
29632-009		7	0.714	0.0348	1.39		0	1.95	0.278	102.86%	-111.64%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		
29632-009		0.45	0.4	0	0.45	1.55	0.2	Outlier	1.95		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 14-2195-1432		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-009 passed reproduction				171.31%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-009	55.5	n/a	2	13	Exact	0.1722	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		2.19	2.55	0.2538		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.783241		0.783241	1	0.654	0.4334	Non-Significant Effect				
Error	15.5808		1.19852	13							
Total	16.364			14							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		1.28	10.8	0.7830		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.772	0.833	0.0016		Non-Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	0.00%
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	-78.20%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	2.85	0	0.3	0.5	0.45	0			
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-4937-1729	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:33	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-009 failed reproduction				373.27%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-009*	1.92	1.76	0.77	14	CDF	0.0380	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.73	2.59	0.0221	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.80562	2.80562	1	3.67	0.0760	Non-Significant Effect					
Error	10.6994	0.764241	14								
Total	13.505		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.74	8.89	0.0222	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.86	0.841	0.0189	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.206	-0.165	0.578	0	0	1.25	0.157	215.45%	0.00%
29632-009		8	1.04	0.0792	2.01	0	0	3.35	0.408	110.53%	-406.06%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0	1.25	0	0	0	0	0	0.4		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-1194-6303		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-010 passed reproduction				80.00%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-009		29632-010	0.989	1.76	0.835	14	CDF	0.1698	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.52	2.59	0.0705	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.878906		0.878906	1	0.978	0.3396	Non-Significant Effect				
Error	12.5872		0.899085	14							
Total	13.4661			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.85	8.89	0.1905	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.863	0.841	0.0212	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	44.91%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-6649-2612		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-010 passed reproduction				70.44%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-010	-0.845	1.76	0.612	14	CDF	0.7940	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.2	2.59	0.2732	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.345156		0.345156	1	0.715	0.4121	Non-Significant Effect				
Error	6.75969		0.482835	14							
Total	7.10484			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.07	8.89	0.9339	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.93	0.841	0.2429	Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	0.869	0.278	1.46		0	2.05	0.25	81.27%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	33.81%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	2.05	1.35	0.5	1.3	0.75	1	0		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-7434-3897		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-010 passed reproduction				59.81%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-010	-1.53	1.76	0.714	14	CDF	0.9254	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.18	2.59	0.2926		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value		Decision(α:5%)			
Between	1.53141		1.53141	1	2.33	0.1492		Non-Significant Effect			
Error	9.20219		0.657299	14							
Total	10.7336			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			1.81	8.89	0.4502		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.912	0.841	0.1243		Normal Distribution			
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	1.19	0.424	1.96		0.25	2.9	0.325	77.12%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	51.83%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		1.3	1.35	0.25	1.95	2.9	0.4	0.25	1.15		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	05-3717-0878	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:34	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-010 passed reproduction			40.20%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-010	-3.17	1.76	0.837	14	CDF	0.9966	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.76	2.59	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	9.07516	9.07516	1	10.1	0.0068	Significant Effect					
Error	12.6347	0.902478	14								
Total	21.7098		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.86	8.89	0.1885	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.901	0.841	0.0847	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	2.08	1.11	3.05		0.8	3.7	0.409	55.57%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	72.37%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		3.1	1.15	1.1	3.45	1.8	1.55	3.7	0.8		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-4139-8126	Endpoint: Reproduction		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:34	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C < T	29632-010 passed reproduction			37.27%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-010	-3.5	1.76	0.827	14	CDF	0.9982	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.07	2.59	0.4208	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	10.8077	10.8077	1	12.3	0.0035	Significant Effect					
Error	12.3447	0.881763	14								
Total	23.1523		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.78	8.89	0.2015	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.954	0.841	0.5573	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	2.22	1.27	3.17		0.4	4.1	0.403	51.32%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	74.08%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		4.1	3.25	2.35	2.4	1.25	2.2	0.4	1.8		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-1069-6740	Endpoint: Reproduction		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:34	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-010 passed reproduction				21.13%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-010	-6.87	1.76	0.692	14	CDF	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.21	2.59	0.2642	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	29.16	29.16	1	47.2	7.7E-06	Significant Effect					
Error	8.645	0.6175	14								
Total	37.805		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.64	8.89	0.5278	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.95	0.841	0.4941	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	3.27	2.54	4.01		1.6	4.45	0.31	26.76%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	82.44%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		2.95	3.1	1.6	3.65	2.85	4.1	3.5	4.45		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

CETIS Analytical Report

Report Date: 12 Dec-17 15:23 (p 99 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	18-4673-5621	Endpoint:	Reproduction	CETIS Version:	CETISv1.9.3						
Analyzed:	08 Dec-17 12:34	Analysis:	Parametric-Two Sample	Official Results:	Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-010 passed reproduction				78.72%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-010	0.179	1.77	0.266	13	CDF	0.4305	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0026786	0.0026786	1	0.0319	0.8610	Non-Significant Effect					
Error	1.09232	0.0840247	13								
Total	1.095		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.96	9.16	0.1816	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.919	0.833	0.1849	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.338	0.162	0.513		0	0.55	0.0743	62.23%	0.00%
29632-010		7	0.364	0.0301	0.699		0	1.05	0.137	99.20%	-7.94%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		0.55	0.4	0.15	0	0.5	0.4	0.15	0.55		
29632-010		Outlier	0.55	0.05	0.4	0.15	0.35	1.05	0		

CETIS Analytical Report

Report Date: 12 Dec-17 15:23 (p 100 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 09-9567-7544		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C < T		29632-010 passed reproduction				134.01%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-010	58.5	n/a	1	13	Exact	0.2730	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		2.74	2.55	0.0155		Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0004286		0.0004286	1	0.000584	0.9811	Non-Significant Effect				
Error	9.53357		0.733352	13							
Total	9.534			14							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		2.23	9.16	0.3166		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.713	0.833	3.4E-04		Non-Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	0.586	-0.359	1.53		0	2.85	0.386	174.44%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	1.83%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	2.85	0	0.3	0.5	0.45	0			
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

CETIS Analytical Report

Report Date: 12 Dec-17 15:23 (p 101 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-3699-4220		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-010 failed reproduction				246.14%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-010*	50.5	n/a	2	14	Exact	0.0290	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.65	2.59	0.0356	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.543906		0.543906	1	1.64	0.2216	Non-Significant Effect				
Error	4.65219		0.332299	14							
Total	5.19609			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.37	8.89	0.2785	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.768	0.841	0.0011	Non-Normal Distribution				
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	-178.79%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0	1.25	0	0	0	0	0	0.4		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

CETIS Analytical Report

Report Date: 12 Dec-17 15:23 (p 102 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-7995-5917		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Untransformed	C < T	29632-010 passed reproduction					181.38%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-010	42.5	n/a	2	13	Exact	0.0545	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0932411	0.0932411	1	0.56	0.4677	Non-Significant Effect					
Error	2.16576	0.166597	13								
Total	2.259		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.51	10.8	0.6306	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.758	0.833	0.0011	Non-Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.206	-0.165	0.578		0	1.25	0.157	215.45%	0.00%
29632-010		7	0.364	0.0301	0.699		0	1.05	0.137	99.20%	-76.62%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0	1.25	0	0	0	0	0	0.4		
29632-010		Outlier	0.55	0.05	0.4	0.15	0.35	1.05	0		

CETIS Analytical Report

Report Date: 12 Dec-17 15:23 (p 103 of 103)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 19-3319-0938		Endpoint: Reproduction			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Untransformed	C < T	29632-010 passed reproduction					80.00%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-009		29632-010	-0.989	1.76	0.835	14	CDF	0.8302	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.52	2.59	0.0705	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.878906	0.878906	1	0.978	0.3396	Non-Significant Effect					
Error	12.5872	0.899085	14								
Total	13.4661		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.85	8.89	0.1905	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.863	0.841	0.0212	Normal Distribution						
Reproduction Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	1.04	0.0792	2.01		0	3.35	0.408	110.53%	0.00%
29632-010		8	0.575	0.0036	1.15		0	2.05	0.242	118.87%	44.91%
Reproduction Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009		0.45	0.4	0	0.45	1.55	0.2	3.35	1.95		
29632-010		2.05	0.55	0.05	0.4	0.15	0.35	1.05	0		

28 day *Leptocheirus plumulosus*
Survival, Growth and Reproduction
Sediment Evaluation

CETIS™ Summary, Ad Hoc Query and
Analytical Reports

Offspring/Surviving Female
Statistical Analysis

CETIS Summary Report

Report Date: 08 Dec-17 12:49 (p 1 of 4)
 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test	EnviroSystems, Inc.
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Batch ID: 00-1863-2192	Test Type: Leptocheirus (28-d)	Analyst: Nancy Roka
Start Date: 24 Oct-17 11:00	Protocol: EPA/600/R-01/020 (2001)	Diluent: Not Applicable
Ending Date: 21 Nov-17 11:00	Species: Leptocheirus plumulosus	Brine: Not Applicable
Duration: 28d 0h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h		
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h		
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h		
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)	
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)	
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car	
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car	
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca	
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)	
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)	
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%	
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)	
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)	
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
18-6857-1862	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0059	29632-001 failed offspring/surviving female
09-8963-9147	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0051	29632-001 failed offspring/surviving female
10-9905-2041	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.5292	29632-002 passed offspring/surviving female
14-6162-0446	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.4708	29632-002 passed offspring/surviving female
17-1901-2143	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0044	29632-002 failed offspring/surviving female
12-2065-4147	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0103	29632-002 failed offspring/surviving female
01-8656-9081	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.2013	29632-003 passed offspring/surviving female
10-5379-5432	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.7987	29632-003 passed offspring/surviving female
16-4777-6714	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.8304	29632-003 passed offspring/surviving female
19-1438-4058	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.1696	29632-003 passed offspring/surviving female
02-7139-8584	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0205	29632-003 failed offspring/surviving female
15-4713-4525	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0141	29632-003 failed offspring/surviving female
03-8163-3833	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.6004	29632-004 passed offspring/surviving female
08-9661-1114	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.8687	29632-004 passed offspring/surviving female
10-9815-9746	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.1313	29632-004 passed offspring/surviving female
12-9780-7221	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.1610	29632-004 passed offspring/surviving female
15-5054-9339	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.8390	29632-004 passed offspring/surviving female
20-0038-0285	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.3996	29632-004 passed offspring/surviving female
20-6558-0634	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0138	29632-004 failed offspring/surviving female
11-2641-7204	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0249	29632-004 failed offspring/surviving female
00-7063-2939	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0550	29632-005 passed offspring/surviving female
00-7484-2313	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0234	29632-005 failed offspring/surviving female
08-0175-8552	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9896	29632-005 passed offspring/surviving female

CETIS Summary Report

Report Date: 08 Dec-17 12:49 (p 2 of 4)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test					EnviroSystems, Inc.
Single Comparison Summary					
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	
08-2299-2375	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.8982	29632-005 passed offspring/surviving female	
12-9728-4637	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.1018	29632-005 passed offspring/surviving female	
17-4101-9524	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9450	29632-005 passed offspring/surviving female	
18-9548-0931	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0437	29632-005 failed offspring/surviving female	
20-4713-0356	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9766	29632-005 passed offspring/surviving female	
21-1927-3891	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0104	29632-005 failed offspring/surviving female	
03-6225-7732	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0415	29632-005 failed offspring/surviving female	
10-2123-9674	Offspring/Surviving Female	Equal Variance t Two-Sample Test	3.0E-05	29632-006 failed offspring/surviving female	
18-2044-4259	Offspring/Surviving Female	Equal Variance t Two-Sample Test	1.0000	29632-006 passed offspring/surviving female	
00-1676-3680	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.9325	29632-006 passed offspring/surviving female	
00-4328-1794	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.9989	29632-006 passed offspring/surviving female	
03-4627-5430	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.9609	29632-006 passed offspring/surviving female	
05-0103-7919	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0675	29632-006 passed offspring/surviving female	
05-7806-4564	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.9988	29632-006 passed offspring/surviving female	
07-7150-6808	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.9998	29632-006 passed offspring/surviving female	
09-1342-7725	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.9923	29632-006 passed offspring/surviving female	
09-3436-4934	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0089	29632-006 failed offspring/surviving female	
10-9345-2381	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0077	29632-006 failed offspring/surviving female	
12-4391-3333	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0012	29632-006 failed offspring/surviving female	
14-0859-9724	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0391	29632-006 failed offspring/surviving female	
16-3056-7445	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.9911	29632-006 passed offspring/surviving female	
17-5602-6861	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0033	29632-006 failed offspring/surviving female	
17-7272-4974	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	1.6E-04	29632-006 failed offspring/surviving female	
19-5123-7953	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0011	29632-006 failed offspring/surviving female	
01-6057-7238	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.9996	29632-006 passed offspring/surviving female	
04-6135-2235	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	7.0E-04	29632-006 failed offspring/surviving female	
19-3294-0033	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0031	29632-006 failed offspring/surviving female	
01-4867-2811	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0018	29632-007 failed offspring/surviving female	
04-0860-8899	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0022	29632-007 failed offspring/surviving female	
05-5446-5984	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0588	29632-007 passed offspring/surviving female	
06-1628-4324	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9818	29632-007 passed offspring/surviving female	
09-4433-3762	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9982	29632-007 passed offspring/surviving female	
11-9537-0109	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0507	29632-007 passed offspring/surviving female	
16-9198-4822	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9493	29632-007 passed offspring/surviving female	
18-1582-0694	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9978	29632-007 passed offspring/surviving female	
18-2908-3596	Offspring/Surviving Female	Equal Variance t Two-Sample Test	9.7E-05	29632-007 failed offspring/surviving female	
19-8339-2937	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9412	29632-007 passed offspring/surviving female	
20-1990-8434	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0182	29632-007 failed offspring/surviving female	
21-4204-3054	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9999	29632-007 passed offspring/surviving female	
10-6054-1499	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0040	29632-007 failed offspring/surviving female	
00-1729-9514	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0019	29632-007 failed offspring/surviving female	
01-2455-4091	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.8315	29632-007 passed offspring/surviving female	
03-8609-0400	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.1887	29632-007 passed offspring/surviving female	
01-2625-6310	Offspring/Surviving Female	Equal Variance t Two-Sample Test	4.3E-05	29632-008 failed offspring/surviving female	
02-2865-4864	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9999	29632-008 passed offspring/surviving female	
04-7557-7429	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0188	29632-008 failed offspring/surviving female	
05-0817-2277	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9998	29632-008 passed offspring/surviving female	
07-4668-8471	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0013	29632-008 failed offspring/surviving female	
07-6687-3561	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9987	29632-008 passed offspring/surviving female	
07-9295-5627	Offspring/Surviving Female	Equal Variance t Two-Sample Test	1.0000	29632-008 passed offspring/surviving female	
08-9509-6084	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9983	29632-008 passed offspring/surviving female	
09-2005-5552	Offspring/Surviving Female	Equal Variance t Two-Sample Test	1.0000	29632-008 passed offspring/surviving female	
09-7001-9253	Offspring/Surviving Female	Equal Variance t Two-Sample Test	8.9E-05	29632-008 failed offspring/surviving female	

CETIS Summary Report

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test					EnviroSystems, Inc.
Single Comparison Summary					
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	
14-1525-0366	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9812	29632-008 passed offspring/surviving female	
15-0995-6917	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0010	29632-008 failed offspring/surviving female	
15-2306-4987	Offspring/Surviving Female	Equal Variance t Two-Sample Test	2.2E-05	29632-008 failed offspring/surviving female	
16-8351-8667	Offspring/Surviving Female	Equal Variance t Two-Sample Test	1.6E-04	29632-008 failed offspring/surviving female	
18-1020-8957	Offspring/Surviving Female	Equal Variance t Two-Sample Test	1.0000	29632-008 passed offspring/surviving female	
19-3130-8605	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9990	29632-008 passed offspring/surviving female	
20-2959-4554	Offspring/Surviving Female	Equal Variance t Two-Sample Test	4.2E-06	29632-008 failed offspring/surviving female	
21-0434-8288	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0017	29632-008 failed offspring/surviving female	
15-9443-0622	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.9771	29632-008 passed offspring/surviving female	
19-8971-1602	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0027	29632-008 failed offspring/surviving female	
21-2460-8708	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0229	29632-008 failed offspring/surviving female	
05-4420-4014	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.9792	29632-008 passed offspring/surviving female	
07-3154-3705	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.8867	29632-008 passed offspring/surviving female	
13-8998-9183	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0252	29632-008 failed offspring/surviving female	
17-5398-6061	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.7692	29632-008 passed offspring/surviving female	
19-4256-8282	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	3.1E-04	29632-008 failed offspring/surviving female	
19-7710-5851	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.1231	29632-008 passed offspring/surviving female	
20-3500-9943	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.2378	29632-008 passed offspring/surviving female	
00-0030-3211	Offspring/Surviving Female	Equal Variance t Two-Sample Test	7.3E-04	29632-009 failed offspring/surviving female	
00-5802-9782	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9993	29632-009 passed offspring/surviving female	
01-1898-5777	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.8859	29632-009 passed offspring/surviving female	
02-1942-5291	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.2081	29632-009 passed offspring/surviving female	
03-9131-6260	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.8697	29632-009 passed offspring/surviving female	
04-9074-4032	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9807	29632-009 passed offspring/surviving female	
08-4728-2208	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9844	29632-009 passed offspring/surviving female	
11-2255-1914	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.1141	29632-009 passed offspring/surviving female	
12-5182-1187	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0193	29632-009 failed offspring/surviving female	
13-0131-7883	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0156	29632-009 failed offspring/surviving female	
15-2334-8531	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9832	29632-009 passed offspring/surviving female	
16-4238-8969	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0168	29632-009 failed offspring/surviving female	
16-5630-3295	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.7919	29632-009 passed offspring/surviving female	
20-8905-7927	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.1303	29632-009 passed offspring/surviving female	
00-8753-0969	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0071	29632-009 failed offspring/surviving female	
11-0765-3176	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0539	29632-009 passed offspring/surviving female	
12-5501-4772	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.9461	29632-009 passed offspring/surviving female	
14-4869-6333	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0074	29632-009 failed offspring/surviving female	
07-0005-0840	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.6054	29632-010 passed offspring/surviving female	
07-6259-5592	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.7407	29632-010 passed offspring/surviving female	
09-7527-9518	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.0064	29632-010 failed offspring/surviving female	
13-1227-8425	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9936	29632-010 passed offspring/surviving female	
17-7819-9611	Offspring/Surviving Female	Equal Variance t Two-Sample Test	3.1E-04	29632-010 failed offspring/surviving female	
18-3888-1518	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.2593	29632-010 passed offspring/surviving female	
20-0736-6817	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.8929	29632-010 passed offspring/surviving female	
20-2508-3927	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.3946	29632-010 passed offspring/surviving female	
20-8670-6904	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.9997	29632-010 passed offspring/surviving female	
21-0412-8619	Offspring/Surviving Female	Equal Variance t Two-Sample Test	0.1071	29632-010 passed offspring/surviving female	
07-6968-7572	Offspring/Surviving Female	Unequal Variance t Two-Sample Test	0.0041	29632-010 failed offspring/surviving female	
02-0663-9945	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0186	29632-010 failed offspring/surviving female	
04-3324-9525	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0350	29632-010 failed offspring/surviving female	
04-8285-2929	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.4897	29632-010 passed offspring/surviving female	
09-9547-2322	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.3214	29632-010 passed offspring/surviving female	
11-5111-0619	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.5305	29632-010 passed offspring/surviving female	
16-0892-6191	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0034	29632-010 failed offspring/surviving female	

CETIS Summary Report

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test **EnviroSystems, Inc.**

Single Comparison Summary						
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison	Result	
16-1207-6963	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.2036	29632-010	passed	offspring/surviving female
16-7643-0900	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.9683	29632-010	passed	offspring/surviving female
17-0265-2429	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.7054	29632-010	passed	offspring/surviving female
18-0336-0403	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.9846	29632-010	passed	offspring/surviving female
18-3118-3804	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.8081	29632-010	passed	offspring/surviving female
18-7875-4657	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0051	29632-010	failed	offspring/surviving female
18-9194-2591	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.9924	29632-010	passed	offspring/surviving female
19-3254-6571	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.0099	29632-010	failed	offspring/surviving female
20-9470-9616	Offspring/Surviving Female	Wilcoxon Rank Sum Two-Sample Test	0.9964	29632-010	passed	offspring/surviving female

Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
29632-000	LC	8	15.5	4.88	26.2	0.333	42.7	4.5	12.7	82.00%	0.00%
29632-001	N	8	3.49	0.582	6.4	0	10	1.23	3.48	99.66%	77.52%
29632-002		8	3.6	1.59	5.61	1.25	8.29	0.849	2.4	66.68%	76.80%
29632-003		8	4.76	2.86	6.65	2.3	9.25	0.801	2.26	47.63%	69.36%
29632-004		8	5.07	2.87	7.28	1	10.2	0.934	2.64	52.07%	67.31%
29632-005		8	6.79	4.7	8.87	2.67	10.4	0.88	2.49	36.70%	56.28%
29632-006		8	0.928	0.509	1.35	0	1.57	0.177	0.501	54.01%	94.02%
29632-007		7	1.06	-0.502	2.62	0	4.75	0.639	1.69	159.27%	93.16%
29632-008		8	0.412	-0.33	1.16	0	2.5	0.314	0.889	215.45%	97.34%
29632-009		8	2.3	0.592	4	0	5.15	0.72	2.04	88.78%	85.21%
29632-010		8	1.59	-0.282	3.46	0	6.83	0.79	2.24	140.83%	89.77%

Offspring/Surviving Female Detail										
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	
29632-000	LC	0.333	42.7	19.7	4.86	10.9	13.9	18.2	13.6	
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0	
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29	
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67	
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27	
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85	
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1	
29632-007		0	4.75	0	0.75	1.11	0.818	0	0	
29632-008		0	2.5	0	0	0	0	0	0.8	
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88	
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0	

CETIS Analytical Report

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-8963-9147		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-001 failed offspring/surviving female	52.93%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Negative Control*	44	n/a	0	14	Exact	0.0051	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.01	2.59	0.0029	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	579.165	579.165	1	6.65	0.0218	Significant Effect					
Error	1218.63	87.0449	14								
Total	1797.79		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	13.4	8.89	0.0029	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.836	0.841	0.0085	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	15.5	4.88	26.2		0.333	42.7	4.5	82.00%	0.00%
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	77.52%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	42.7	19.7	4.86	10.9	13.9	18.2	13.6		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		

CETIS Analytical Report

Report Date: 08 Dec-17 12:48 (p 2 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-6857-1862		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-001 failed offspring/surviving female				42.36%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Negative Control*	2.93	1.77	4.93	13	CDF	0.0059	Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	248.289	248.289	1	8.57	0.0118	Significant Effect					
Error	376.534	28.9642	13								
Total	624.823		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	4.02	9.16	0.0910	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.969	0.833	0.8464	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	11.6	5.19	18.1		0.333	19.7	2.64	59.90%	0.00%
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	70.04%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	Outlier	19.7	4.86	10.9	13.9	18.2	13.6		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		

CETIS Analytical Report

Report Date: 08 Dec-17 12:48 (p 3 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 12-2065-4147		Endpoint: Offspring/Surviving Female				CETIS Version: CETISv1.9.3					
Analyzed: 07 Dec-17 11:27		Analysis: Nonparametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result						PMSD			
Untransformed	C > T	29632-002 failed offspring/surviving female						51.96%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-002*	46	n/a	0	14	Exact	0.0103	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.07	2.59	0.0017	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	568.481	568.481	1	6.78	0.0208	Significant Effect					
Error	1174.34	83.8816	14								
Total	1742.82		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	28.1	8.89	2.6E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.799	0.841	0.0027	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	15.5	4.88	26.2		0.333	42.7	4.5	82.00%	0.00%
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	76.80%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	42.7	19.7	4.86	10.9	13.9	18.2	13.6		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-4713-4525		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-003 failed offspring/surviving female	51.86%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-003*	47	n/a	0	14	Exact	0.0141	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.07	2.59	0.0016	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	463.696	463.696	1	5.55	0.0336	Significant Effect					
Error	1169.9	83.5639	14								
Total	1633.59		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	31.6	8.89	1.8E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.795	0.841	0.0024	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	15.5	4.88	26.2		0.333	42.7	4.5	82.00%	0.00%
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	69.36%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	42.7	19.7	4.86	10.9	13.9	18.2	13.6		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-6558-0634		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-004 failed offspring/surviving female				40.30%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-004*	2.48	1.77	4.69	13	CDF	0.0138	Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	161.15	161.15	1	6.15	0.0276	Significant Effect					
Error	340.765	26.2127	13								
Total	501.915		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.97	9.16	0.0218	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.955	0.833	0.6038	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	11.6	5.19	18.1		0.333	19.7	2.64	59.90%	0.00%
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	56.42%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	Outlier	19.7	4.86	10.9	13.9	18.2	13.6		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-6225-7732		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:27		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-005 failed offspring/surviving female	52.03%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-005*	51	n/a	0	14	Exact	0.0415	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.06	2.59	0.0018	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	305.277	305.277	1	3.63	0.0775	Non-Significant Effect					
Error	1177.4	84.0998	14								
Total	1482.67		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	26.1	8.89	3.3E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.801	0.841	0.0028	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	15.5	4.88	26.2		0.333	42.7	4.5	82.00%	0.00%
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	56.28%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	42.7	19.7	4.86	10.9	13.9	18.2	13.6		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-3294-0033		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-006 failed offspring/surviving female	51.10%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-006*	43	n/a	0	14	Exact	0.0031	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.12	2.59	0.0010	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	851.978	851.978	1	10.5	0.0059	Significant Effect					
Error	1135.75	81.1248	14								
Total	1987.72		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	645	8.89	<1.0E-37	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.745	0.841	5.6E-04	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	15.5	4.88	26.2		0.333	42.7	4.5	82.00%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	94.02%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	42.7	19.7	4.86	10.9	13.9	18.2	13.6		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	17-5602-6861		Endpoint:	Offspring/Surviving Female		CETIS Version:	CETISv1.9.3				
Analyzed:	07 Dec-17 11:28		Analysis:	Parametric-Two Sample		Official Results:	Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		A/L/0% (Lp Lab)							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Untransformed		C > T			29632-006 failed offspring/surviving female			44.09%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-006*	4.06	1.94	5.13	6	CDF	0.0033	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	428.75		428.75		1	19	7.8E-04	Significant Effect			
Error	293.653		22.5887		13						
Total	722.403				14						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				194	9.16	4.1E-07	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.863	0.833	0.0264	Normal Distribution			
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	7	11.6	5.19	18.1		0.333	19.7	2.64	59.90%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	92.03%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	Outlier	19.7	4.86	10.9	13.9	18.2	13.6		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-1729-9514		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 failed offspring/surviving female	55.56%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-007*	32	n/a	0	13	Exact	0.0019	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.99	2.55	0.0021	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	780.682	780.682	1	8.82	0.0109	Significant Effect					
Error	1151.13	88.5487	13								
Total	1931.82		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	56.7	10.8	9.3E-05	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.781	0.833	0.0021	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	15.5	4.88	26.2		0.333	42.7	4.5	82.00%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	93.16%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	42.7	19.7	4.86	10.9	13.9	18.2	13.6		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test											EnviroSystems, Inc.
Analysis ID: 19-4256-8282		Endpoint: Offspring/Surviving Female				CETIS Version: CETISv1.9.3					
Analyzed: 07 Dec-17 11:28		Analysis: Nonparametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result						PMSD			
Untransformed	C > T	29632-008 failed offspring/surviving female						51.19%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-008*	38	n/a	0	14	Exact	3.1E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.11	2.59	0.0011	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	913.189	913.189	1	11.2	0.0048	Significant Effect					
Error	1139.52	81.3942	14								
Total	2052.71		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	205	8.89	2.9E-07	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.749	0.841	6.1E-04	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	15.5	4.88	26.2		0.333	42.7	4.5	82.00%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	97.34%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	42.7	19.7	4.86	10.9	13.9	18.2	13.6		
29632-008		0	2.5	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-4869-6333		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 failed offspring/surviving female	51.71%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-009*	45	n/a	0	14	Exact	0.0074	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.08	2.59	0.0015	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	699.802	699.802	1	8.42	0.0116	Significant Effect					
Error	1163.05	83.0751	14								
Total	1862.85		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	39	8.89	8.7E-05	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.785	0.841	0.0017	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	15.5	4.88	26.2		0.333	42.7	4.5	82.00%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	85.21%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	42.7	19.7	4.86	10.9	13.9	18.2	13.6		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	16-0892-6191		Endpoint:	Offspring/Surviving Female			CETIS Version:	CETISv1.9.3			
Analyzed:	07 Dec-17 11:28		Analysis:	Nonparametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-000	08-0747-4934	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	A/L/0% (Lp Lab)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-010 failed offspring/surviving female				51.84%					
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29632-010*	43	n/a	1	14	Exact	0.0034	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.07	2.59	0.0016	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	776.721	776.721	1	9.3	0.0087	Significant Effect					
Error	1168.96	83.4974	14								
Total	1945.68										
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	32.4	8.89	1.6E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.783	0.841	0.0016	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-000	LC	8	15.5	4.88	26.2		0.333	42.7	4.5	82.00%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	89.77%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-000	LC	0.333	42.7	19.7	4.86	10.9	13.9	18.2	13.6		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-9905-2041		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-002 passed offspring/surviving female	75.42%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-002	-0.0746	1.76	2.63	14	CDF	0.5292	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.26	2.59	0.2194	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0497361	0.0497361	1	0.00557	0.9416	Non-Significant Effect					
Error	124.992	8.928	14								
Total	125.042		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.1	8.89	0.3495	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.918	0.841	0.1585	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	-3.20%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		

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Report Date: 08 Dec-17 12:48 (p 14 of 105)
 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-5379-5432		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-003 passed offspring/surviving female	74.06%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-003	-0.863	1.76	2.58	14	CDF	0.7987	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.3	2.59	0.1866	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	6.41225	6.41225	1	0.745	0.4027	Non-Significant Effect					
Error	120.545	8.61033	14								
Total	126.957		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.36	8.89	0.2805	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.925	0.841	0.1995	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	-36.29%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-5054-9339		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-004 passed offspring/surviving female	77.94%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-004	-1.03	1.76	2.72	14	CDF	0.8390	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.18	2.59	0.2884	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	10.0501	10.0501	1	1.05	0.3220	Non-Significant Effect					
Error	133.509	9.53633	14								
Total	143.559		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.73	8.89	0.4858	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.926	0.841	0.2095	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	-45.43%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-4713-0356		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-005 passed offspring/surviving female	76.33%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-005	-2.18	1.76	2.66	14	CDF	0.9766	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.23	2.59	0.2433	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	43.4766	43.4766	1	4.75	0.0468	Significant Effect					
Error	128.047	9.14624	14								
Total	171.524		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.95	8.89	0.3981	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.933	0.841	0.2672	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	-94.49%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 14-0859-9724		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-006 failed offspring/surviving female	67.45%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-006*	2.06	1.89	2.35	7	CDF	0.0391	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.71	2.59	0.0246	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	26.2433	26.2433	1	4.25	0.0583	Non-Significant Effect					
Error	86.3961	6.17115	14								
Total	112.639		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	48.2	8.89	4.3E-05	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.853	0.841	0.0151	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	73.41%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-5446-5984		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 passed offspring/surviving female	73.50%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-007	1.68	1.77	2.56	13	CDF	0.0588	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.41	2.55	0.0974	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	22.0043	22.0043	1	2.81	0.1175	Non-Significant Effect					
Error	101.783	7.82946	13								
Total	123.787		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	4.23	10.8	0.0987	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.885	0.833	0.0566	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	69.58%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Report Date: 08 Dec-17 12:48 (p 19 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 21-2460-8708		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 failed offspring/surviving female	68.90%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-008*	2.42	1.89	2.4	7	CDF	0.0229	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.66	2.59	0.0343	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	37.8616	37.8616	1	5.88	0.0294	Significant Effect					
Error	90.1677	6.44055	14								
Total	128.029		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	15.3	8.89	0.0019	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.857	0.841	0.0170	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	88.18%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-008		0	2.5	0	0	0	0	0	0.8		

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Report Date: 08 Dec-17 12:48 (p 20 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-1942-5291		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 passed offspring/surviving female	71.93%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-009	0.838	1.76	2.51	14	CDF	0.2081	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.36	2.59	0.1411	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	5.7022	5.7022	1	0.702	0.4162	Non-Significant Effect					
Error	113.701	8.12151	14								
Total	119.403		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.91	8.89	0.1818	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.936	0.841	0.3020	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4	0	0	10	1.23	99.66%	0.00%
29632-009		8	2.3	0.592	4	0	0	5.15	0.72	88.78%	34.22%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Report Date: 08 Dec-17 12:48 (p 21 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 21-0412-8619		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 07 Dec-17 11:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 passed offspring/surviving female	73.78%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-010	1.3	1.76	2.57	14	CDF	0.1071	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.31	2.59	0.1801	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	14.4694	14.4694	1	1.69	0.2141	Non-Significant Effect					
Error	119.613	8.54381	14								
Total	134.083		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.42	8.89	0.2664	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.872	0.841	0.0293	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	54.51%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

CETIS Analytical Report

Report Date: 08 Dec-17 12:48 (p 22 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 14-6162-0446		Endpoint: Offspring/Surviving Female				CETIS Version: CETISv1.9.3					
Analyzed: 08 Dec-17 12:24		Analysis: Parametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car)								
Data Transform	Alt Hyp	Comparison Result							PMSD		
Untransformed	C < T	29632-002 passed offspring/surviving female							75.42%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-002	0.0746	1.76	2.63	14	CDF	0.4708	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.26	2.59	0.2194	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0497361	0.0497361	1	0.00557	0.9416	Non-Significant Effect					
Error	124.992	8.928	14								
Total	125.042		15								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		2.1	8.89	0.3495	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.918	0.841	0.1585	Normal Distribution					
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	-3.20%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		

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Report Date: 08 Dec-17 12:48 (p 23 of 105)
 Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	16-4777-6714	Endpoint:	Offspring/Surviving Female		CETIS Version:	CETISv1.9.3					
Analyzed:	08 Dec-17 12:24	Analysis:	Parametric-Two Sample		Official Results:	Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
Data Transform	Alt Hyp	Comparison Result			PMSD						
Untransformed	C > T	29632-003 passed offspring/surviving female			57.08%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-003	-0.989	1.76	2.06	14	CDF	0.8304	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.08	2.59	0.4150	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	5.33253	5.33253	1	0.979	0.3392	Non-Significant Effect					
Error	76.2587	5.44705	14								
Total	81.5912		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.12	8.89	0.8815	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.886	0.841	0.0486	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	-32.07%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		

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Report Date: 08 Dec-17 12:48 (p 24 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	08-9661-1114		Endpoint:	Offspring/Surviving Female		CETIS Version:	CETISv1.9.3				
Analyzed:	08 Dec-17 12:24		Analysis:	Parametric-Two Sample		Official Results:	Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
Data Transform	Alt Hyp			Comparison Result			PMSD				
Untransformed	C > T			29632-004 passed offspring/surviving female			61.75%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-004	-1.17	1.76	2.22	14	CDF	0.8687	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.12	2.59	0.3570	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	8.6858	8.6858	1	1.36	0.2625	Non-Significant Effect					
Error	89.2227	6.37305	14								
Total	97.9085		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.21	8.89	0.8070	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.934	0.841	0.2780	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	-40.93%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		

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Report Date: 08 Dec-17 12:48 (p 25 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-0175-8552		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-005 passed offspring/surviving female					59.83%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-005	-2.6	1.76	2.15	14	CDF	0.9896	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.98	2.59	0.5639	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	40.5854		40.5854	1	6.78	0.0208	Significant Effect				
Error	83.7614		5.98296	14							
Total	124.347			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.08	8.89	0.9258	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.957	0.841	0.6038	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	-88.47%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-3436-4934		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-006 failed offspring/surviving female					45.63%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-006*	3.08	1.89	1.64	7	CDF	0.0089	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.8	2.59	0.0146	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	28.5779		28.5779	1	9.5	0.0081	Significant Effect				
Error	42.1102		3.00787	14							
Total	70.6881			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			23	8.89	5.1E-04	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.878	0.841	0.0360	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	74.24%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Report Date: 08 Dec-17 12:48 (p 27 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-1990-8434		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 failed offspring/surviving female	53.53%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-007*	2.33	1.77	1.93	13	CDF	0.0182	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.31	2.55	0.1537	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	24.0721	24.0721	1	5.44	0.0364	Significant Effect					
Error	57.4971	4.42285	13								
Total	81.5692		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.02	10.8	0.4108	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.873	0.833	0.0374	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	70.52%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Report Date: 08 Dec-17 12:48 (p 28 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 21-0434-8288		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-008 failed offspring/surviving female					44.28%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-008*	3.52	1.76	1.59	14	CDF	0.0017	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.68	2.59	0.0300	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	40.6558		40.6558	1	12.4	0.0034	Significant Effect				
Error	45.8818		3.27727	14							
Total	86.5376			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			7.3	8.89	0.0177	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.86	0.841	0.0193	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	88.54%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-008		0	2.5	0	0	0	0	0	0.8		

CETIS Analytical Report

Report Date: 08 Dec-17 12:48 (p 29 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-8905-7927		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 passed offspring/surviving female	54.46%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-009	1.17	1.76	1.96	14	CDF	0.1303	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.18	2.59	0.2931	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	6.81702	6.81702	1	1.37	0.2605	Non-Significant Effect					
Error	69.4153	4.95823	14								
Total	76.2323		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.39	8.89	0.6759	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.909	0.841	0.1132	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	36.26%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-3254-6571		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 failed offspring/surviving female	56.73%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-010*	46	n/a	0	14	Exact	0.0099	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.34	2.59	0.1559	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	16.2158	16.2158	1	3.01	0.1045	Non-Significant Effect					
Error	75.3275	5.38053	14								
Total	91.5433		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.15	8.89	0.8552	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.835	0.841	0.0082	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	55.92%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-8656-9081		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:25		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C < T			29632-003 passed offspring/surviving female				74.06%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-003	0.863	1.76	2.58	14	CDF	0.2013	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:5%)			
Extreme Value	Grubbs Extreme Value Test			2.3	2.59	0.1866		No Outliers Detected			
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	6.41225		6.41225		1	0.745	0.4027	Non-Significant Effect			
Error	120.545		8.61033		14						
Total	126.957				15						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value		Decision(α:1%)			
Variances	Variance Ratio F Test			2.36	8.89	0.2805		Equal Variances			
Distribution	Shapiro-Wilk W Normality Test			0.925	0.841	0.1995		Normal Distribution			
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	-36.29%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-1438-4058		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-003 passed offspring/surviving female	57.08%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-003	0.989	1.76	2.06	14	CDF	0.1696	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.08	2.59	0.4150	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	5.33253	5.33253	1	0.979	0.3392	Non-Significant Effect					
Error	76.2587	5.44705	14								
Total	81.5912		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.12	8.89	0.8815	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.886	0.841	0.0486	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	-32.07%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-8163-3833		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-004 passed offspring/surviving female	45.57%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-004	-0.259	1.76	2.17	14	CDF	0.6004	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.18	2.59	0.2939	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.40697	0.40697	1	0.0672	0.7992	Non-Significant Effect					
Error	84.7754	6.05538	14								
Total	85.1823		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.36	8.89	0.6945	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.938	0.841	0.3258	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	-6.71%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-4101-9524		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-005 passed offspring/surviving female	44.08%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-005	-1.71	1.76	2.1	14	CDF	0.9450	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.95	2.59	0.6144	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	16.4953	16.4953	1	2.91	0.1100	Non-Significant Effect					
Error	79.3141	5.66529	14								
Total	95.8094		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.21	8.89	0.8087	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.948	0.841	0.4656	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	-42.71%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	19-5123-7953		Endpoint:	Offspring/Surviving Female			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:26		Analysis:	Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Untransformed	C > T	29632-006 failed offspring/surviving female					32.67%				
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-006*	4.67	1.89	1.55	7	CDF	0.0011	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.84	2.59	0.0111	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	58.5999	58.5999	1	21.8	3.6E-04	Significant Effect					
Error	37.6629	2.69021	14								
Total	96.2628		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	20.4	8.89	7.5E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.897	0.841	0.0712	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	80.49%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-4867-2811		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-007 failed offspring/surviving female				38.94%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-007*	3.53	1.77	1.85	13	CDF	0.0018	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.31	2.55	0.1555	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	50.9404		50.9404	1	12.5	0.0037	Significant Effect				
Error	53.0498		4.08075	13							
Total	103.99			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.8	10.8	0.4932	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.864	0.833	0.0280	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	77.68%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-2306-4987		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-008 failed offspring/surviving female					26.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-008*	6.02	1.77	1.09	13	CDF	2.2E-05	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	51.1258		51.1258	1	36.2	4.3E-05	Significant Effect				
Error	18.3451		1.41116	13							
Total	69.4709			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			2.7	9.16	0.2191	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.861	0.833	0.0247	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		7	4.11	2.76	5.46		2.3	6.2	0.552	35.53%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	89.97%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	Outlier	2.67		
29632-008		0	2.5	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-5182-1187		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-009 failed offspring/surviving female				39.90%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-009*	2.28	1.76	1.9	14	CDF	0.0193	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.16	2.59	0.3129	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	24.2081		24.2081	1	5.22	0.0385	Significant Effect				
Error	64.9679		4.64057	14							
Total	89.176			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	8.89	0.7874	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.916	0.841	0.1461	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	51.73%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	18-7875-4657		Endpoint:	Offspring/Surviving Female			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:26		Analysis:	Nonparametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-010 failed offspring/surviving female				41.67%					
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-010*	44	n/a	0	14	Exact	0.0051	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.41	2.59	0.1143	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	40.1463	40.1463	1	7.93	0.0137	Significant Effect					
Error	70.8801	5.06287	14								
Total	111.026		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.03	8.89	0.9732	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.827	0.841	0.0063	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	66.62%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-9780-7221		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:26		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-004 passed offspring/surviving female	77.94%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-004	1.03	1.76	2.72	14	CDF	0.1610	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.18	2.59	0.2884	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	10.0501	10.0501	1	1.05	0.3220	Non-Significant Effect					
Error	133.509	9.53633	14								
Total	143.559		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.73	8.89	0.4858	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.926	0.841	0.2095	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	-45.43%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 10-9815-9746		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-004 passed offspring/surviving female	61.75%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-004	1.17	1.76	2.22	14	CDF	0.1313	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.12	2.59	0.3570	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	8.6858	8.6858	1	1.36	0.2625	Non-Significant Effect					
Error	89.2227	6.37305	14								
Total	97.9085		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.21	8.89	0.8070	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.934	0.841	0.2780	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	-40.93%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-0038-0285		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-004 passed offspring/surviving female	45.57%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-004	0.259	1.76	2.17	14	CDF	0.3996	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.18	2.59	0.2939	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.40697	0.40697	1	0.0672	0.7992	Non-Significant Effect					
Error	84.7754	6.05538	14								
Total	85.1823		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.36	8.89	0.6945	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.938	0.841	0.3258	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	-6.71%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-2299-2375		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-005 passed offspring/surviving female					44.56%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-005	-1.33	1.76	2.26	14	CDF	0.8982	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.09	2.59	0.4028	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	11.7203		11.7203	1	1.78	0.2037	Non-Significant Effect				
Error	92.2781		6.59129	14							
Total	103.998			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.13	8.89	0.8798	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.938	0.841	0.3201	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	-33.73%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-6135-2235		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-006 failed offspring/surviving female	33.00%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-006*	39.5	n/a	1	14	Exact	7.0E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.82	2.59	0.0127	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	68.7739	68.7739	1	19	6.5E-04	Significant Effect					
Error	50.6269	3.6162	14								
Total	119.401		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	27.8	8.89	2.7E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.829	0.841	0.0069	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	81.72%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-4391-3333		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result				PMSD			
Untransformed	C > T			29632-006 failed offspring/surviving female				30.60%			
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-006*	4.99	1.94	1.33	6	CDF	0.0012	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	43.3377		43.3377	1	28.2	1.4E-04	Significant Effect				
Error	20.0107		1.53929	13							
Total	63.3484			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			12.1	9.16	0.0043	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.877	0.833	0.0432	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		7	4.33	2.72	5.95		1	6	0.659	40.24%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	78.60%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		Outlier	5.91	4.27	6	5	4.89	1	3.27		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-0860-8899		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 failed offspring/surviving female	40.70%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-007*	3.44	1.77	2.07	13	CDF	0.0022	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.38	2.55	0.1124	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	60.1178	60.1178	1	11.8	0.0044	Significant Effect					
Error	66.0137	5.07798	13								
Total	126.132		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.44	10.8	0.2964	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.887	0.833	0.0601	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	79.08%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-8351-8667		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 failed offspring/surviving female	34.21%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-008*	4.73	1.76	1.74	14	CDF	1.6E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.72	2.59	0.0239	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	86.925	86.925	1	22.4	3.2E-04	Significant Effect					
Error	54.3984	3.8856	14								
Total	141.323		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	8.84	8.89	0.0102	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.849	0.841	0.0133	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	91.87%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-008		0	2.5	0	0	0	0	0	0.8		

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Report Date: 08 Dec-17 12:48 (p 48 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-4238-8969		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 failed offspring/surviving female	40.95%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-009*	2.36	1.76	2.08	14	CDF	0.0168	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.27	2.59	0.2068	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	30.8926	30.8926	1	5.55	0.0336	Significant Effect					
Error	77.9319	5.56656	14								
Total	108.825		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.68	8.89	0.5093	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.972	0.841	0.8664	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	54.77%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-7527-9518		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:27		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C > T			29632-010 failed offspring/surviving female					42.47%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-010*	2.85	1.76	2.16	14	CDF	0.0064	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.22	2.59	0.2521	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	48.6374		48.6374	1	8.12	0.0129	Significant Effect				
Error	83.8441		5.98886	14							
Total	132.482			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.4	8.89	0.6700	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.851	0.841	0.0140	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	68.72%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-7484-2313		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-005 failed offspring/surviving female	76.33%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-005*	2.18	1.76	2.66	14	CDF	0.0234	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.23	2.59	0.2433	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	43.4766	43.4766	1	4.75	0.0468	Significant Effect					
Error	128.047	9.14624	14								
Total	171.524		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.95	8.89	0.3981	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.933	0.841	0.2672	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	-94.49%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 21-1927-3891		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-005 failed offspring/surviving female	59.83%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-005*	2.6	1.76	2.15	14	CDF	0.0104	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.98	2.59	0.5639	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	40.5854	40.5854	1	6.78	0.0208	Significant Effect					
Error	83.7614	5.98296	14								
Total	124.347		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.08	8.89	0.9258	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.957	0.841	0.6038	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	-88.47%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-7063-2939		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C < T			29632-005 passed offspring/surviving female					44.08%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-005	1.71	1.76	2.1	14	CDF	0.0550	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.95	2.59	0.6144	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	16.4953	16.4953	1	2.91	0.1100	Non-Significant Effect					
Error	79.3141	5.66529	14								
Total	95.8094		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.21	8.89	0.8087	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.948	0.841	0.4656	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	-42.71%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		

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Report Date: 08 Dec-17 12:48 (p 53 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-9728-4637		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-005 passed offspring/surviving female	44.56%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-005	1.33	1.76	2.26	14	CDF	0.1018	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.09	2.59	0.4028	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	11.7203	11.7203	1	1.78	0.2037	Non-Significant Effect					
Error	92.2781	6.59129	14								
Total	103.998		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.13	8.89	0.8798	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.938	0.841	0.3201	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	-33.73%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		

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Report Date: 08 Dec-17 12:48 (p 54 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-7272-4974		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-006 failed offspring/surviving female	25.07%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-006*	6.52	1.89	1.7	7	CDF	1.6E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.37	2.59	0.1357	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	137.276	137.276	1	42.6	1.3E-05	Significant Effect					
Error	45.1656	3.22611	14								
Total	182.442		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	24.7	8.89	4.0E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.863	0.841	0.0213	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	86.33%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-2908-3596		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 failed offspring/surviving female	29.15%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-007*	5.13	1.77	1.98	13	CDF	9.7E-05	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.98	2.55	0.5169	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	122.345	122.345	1	26.3	1.9E-04	Significant Effect					
Error	60.5525	4.65788	13								
Total	182.898		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.17	10.8	0.3641	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.841	0.833	0.0129	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	84.36%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-2959-4554		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-005	Treated Sediment	USDC Penobscot, Winterport ME		A/S/3% (Lp SediMite 3%)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Untransformed	C > T		29632-008 failed offspring/surviving female				24.26%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-008*	6.82	1.76	1.65	14	CDF	4.2E-06	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.28	2.59	0.1990	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	162.482		162.482	1	46.5	8.4E-06	Significant Effect				
Error	48.9372		3.49551	14							
Total	211.419			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			7.85	8.89	0.0144	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.855	0.841	0.0162	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	93.92%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		
29632-008		0	2.5	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-0030-3211		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 failed offspring/surviving female	29.53%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-009*	3.95	1.76	2	14	CDF	7.3E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.87	2.59	0.7794	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	80.6693	80.6693	1	15.6	0.0015	Significant Effect					
Error	72.4706	5.17647	14								
Total	153.14		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.49	8.89	0.6097	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.938	0.841	0.3286	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	66.18%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-7819-9611		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 failed offspring/surviving female	30.71%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-010*	4.39	1.76	2.08	14	CDF	3.1E-04	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.29	2.59	0.1880	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	108.109	108.109	1	19.3	6.1E-04	Significant Effect					
Error	78.3828	5.59877	14								
Total	186.492		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.24	8.89	0.7829	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.871	0.841	0.0287	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	76.61%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-4627-5430		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:28		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-006 passed offspring/surviving female	67.45%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-006	-2.06	1.89	2.35	7	CDF	0.9609	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.71	2.59	0.0246	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	26.2433	26.2433	1	4.25	0.0583	Non-Significant Effect					
Error	86.3961	6.17115	14								
Total	112.639		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	48.2	8.89	4.3E-05	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.853	0.841	0.0151	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	73.41%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-1342-7725		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-002	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/3% (Lp Activated Car							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C < T			29632-006 passed offspring/surviving female					40.61%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-006	-3.19	1.89	1.19	7	CDF	0.9923	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	14.9874		14.9874	1	11.4	0.0049	Significant Effect				
Error	17.0241		1.30955	13							
Total	32.0115			14							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			10.1	9.16	0.0074	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.949	0.833	0.5108	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		7	2.93	1.46	4.41		1.25	5.4	0.603	54.42%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	68.35%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	Outlier	1.33	1.25	3.29		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Report Date: 08 Dec-17 12:49 (p 61 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-4328-1794		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-006 passed offspring/surviving female	32.67%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-006	-4.67	1.89	1.55	7	CDF	0.9989	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.84	2.59	0.0111	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	58.5999	58.5999	1	21.8	3.6E-04	Significant Effect					
Error	37.6629	2.69021	14								
Total	96.2628		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	20.4	8.89	7.5E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.897	0.841	0.0712	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	80.49%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	01-6057-7238		Endpoint:	Offspring/Surviving Female			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:29		Analysis:	Nonparametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-006 passed offspring/surviving female				33.00%					
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-006	96.5	n/a	1	14	Exact	0.9996	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.82	2.59	0.0127	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	68.7739	68.7739	1	19	6.5E-04	Significant Effect					
Error	50.6269	3.6162	14								
Total	119.401		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	27.8	8.89	2.7E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.829	0.841	0.0069	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	81.72%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-7806-4564		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-004	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/10% (Lp Activated Ca							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME		A/S/5% (Lp SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Untransformed		C < T			29632-006 passed offspring/surviving female				30.60%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-006	-4.99	1.94	1.33	6	CDF	0.9988	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	43.3377		43.3377		1	28.2	1.4E-04	Significant Effect			
Error	20.0107		1.53929		13						
Total	63.3484				14						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance Ratio F Test				12.1	9.16	0.0043	Unequal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.877	0.833	0.0432	Normal Distribution			
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		7	4.33	2.72	5.95		1	6	0.659	40.24%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	78.60%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		Outlier	5.91	4.27	6	5	4.89	1	3.27		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-7150-6808		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-006 passed offspring/surviving female	25.07%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-006	-6.52	1.89	1.7	7	CDF	0.9998	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.37	2.59	0.1357	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	137.276	137.276	1	42.6	1.3E-05	Significant Effect					
Error	45.1656	3.22611	14								
Total	182.442		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	24.7	8.89	4.0E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.863	0.841	0.0213	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	0.00%
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	86.33%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 03-8609-0400		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-007 passed offspring/surviving female	119.13%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-007	48	n/a	2	13	Exact	0.1887	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.17	2.55	2.5E-04	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.066685	0.066685	1	0.0459	0.8337	Non-Significant Effect					
Error	18.9013	1.45394	13								
Total	18.9679		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	11.4	9.16	0.0052	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.732	0.833	5.5E-04	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	-14.41%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-4668-8471	Endpoint: Offspring/Surviving Female		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:29	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-008 failed offspring/surviving female				41.61%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-008*	3.73	1.77	0.386	13	CDF	0.0013	Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.47	2.47	1	13.9	0.0025	Significant Effect					
Error	2.30576	0.177366	13								
Total	4.77576		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.75	10.8	0.2393	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.877	0.833	0.0432	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	0.00%
29632-008		7	0.114	-0.165	0.394		0	0.8	0.114	264.58%	87.68%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		
29632-008		0	Outlier	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 12-5501-4772		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:29		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 passed offspring/surviving female	151.51%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-009	-1.84	1.89	1.41	7	CDF	0.9461	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.99	2.59	0.5436	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	7.47962	7.47962	1	3.4	0.0866	Non-Significant Effect					
Error	30.8194	2.20139	14								
Total	38.299		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	16.5	8.89	0.0015	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.955	0.841	0.5806	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.928	0.509	1.35	0	0	1.57	0.177	54.01%	0.00%
29632-009		8	2.3	0.592	4	0	0	5.15	0.72	88.78%	-147.41%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-8285-2929		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C > T	29632-010 passed offspring/surviving female				153.77%					
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-010	67.5	n/a	1	14	Exact	0.4897	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		3.35	2.59	4.9E-05	Outlier Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.73962	1.73962	1	0.663	0.4291	Non-Significant Effect					
Error	36.7316	2.62369	14								
Total	38.4712		15								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		19.9	8.89	8.1E-04	Unequal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.712	0.841	2.3E-04	Non-Normal Distribution					
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	-71.09%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-8339-2937		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed offspring/surviving female	73.50%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-007	-1.68	1.77	2.56	13	CDF	0.9412	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.41	2.55	0.0974	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	22.0043	22.0043	1	2.81	0.1175	Non-Significant Effect					
Error	101.783	7.82946	13								
Total	123.787		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	4.23	10.8	0.0987	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.885	0.833	0.0566	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	69.58%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 06-1628-4324		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed offspring/surviving female	53.53%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-007	-2.33	1.77	1.93	13	CDF	0.9818	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.31	2.55	0.1537	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	24.0721	24.0721	1	5.44	0.0364	Significant Effect					
Error	57.4971	4.42285	13								
Total	81.5692		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.02	10.8	0.4108	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.873	0.833	0.0374	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	70.52%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 09-4433-3762		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed offspring/surviving female	38.94%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-007	-3.53	1.77	1.85	13	CDF	0.9982	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.31	2.55	0.1555	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	50.9404	50.9404	1	12.5	0.0037	Significant Effect					
Error	53.0498	4.08075	13								
Total	103.99		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.8	10.8	0.4932	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.864	0.833	0.0280	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	77.68%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-1582-0694		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed offspring/surviving female	40.70%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-007	-3.44	1.77	2.07	13	CDF	0.9978	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.38	2.55	0.1124	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	60.1178	60.1178	1	11.8	0.0044	Significant Effect					
Error	66.0137	5.07798	13								
Total	126.132		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.44	10.8	0.2964	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.887	0.833	0.0601	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	79.08%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 21-4204-3054		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed offspring/surviving female	29.15%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-007	-5.13	1.77	1.98	13	CDF	0.9999	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.98	2.55	0.5169	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	122.345	122.345	1	26.3	1.9E-04	Significant Effect					
Error	60.5525	4.65788	13								
Total	182.898		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.17	10.8	0.3641	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.841	0.833	0.0129	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	84.36%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-2455-4091		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:30		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-007 passed offspring/surviving female	119.13%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-007	64	n/a	2	13	Exact	0.8315	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.17	2.55	2.5E-04	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.066685	0.066685	1	0.0459	0.8337	Non-Significant Effect					
Error	18.9013	1.45394	13								
Total	18.9679		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	11.4	9.16	0.0052	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.732	0.833	5.5E-04	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	0.00%
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	-14.41%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		
29632-007		0	4.75	0	0.75	1.11	0.818	0			

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	19-7710-5851		Endpoint:	Offspring/Surviving Female			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:31		Analysis:	Nonparametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Untransformed	C > T	29632-008 passed offspring/surviving female					114.05%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-008	55	n/a	1	13	Exact	0.1231	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.9	2.55	0.0049	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.57165	1.57165	1	0.901	0.3598	Non-Significant Effect					
Error	22.6728	1.74406	13								
Total	24.2445		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	3.62	9.16	0.1167	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.694	0.833	2.2E-04	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	61.13%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	4.75	0	0.75	1.11	0.818	0			
29632-008		0	2.5	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-3500-9943		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-008 passed offspring/surviving female	162.25%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-008	55	n/a	1	12	Exact	0.2378	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0039748	0.0039748	1	0.00702	0.9346	Non-Significant Effect					
Error	6.7988	0.566567	12								
Total	6.80278		13								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	3.11	14.2	0.2300	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.67	0.824	1.8E-04	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		6	0.447	-0.0824	0.975		0	1.11	0.206	112.86%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	7.62%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	Outlier	0	0.75	1.11	0.818	0			
29632-008		0	2.5	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 01-1898-5777		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-007	Treated Sediment	USDC Penobscot, Winterport ME	A/S/10% (Lp SediMite 10%								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 passed offspring/surviving female	162.81%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-009	-1.26	1.77	1.73	13	CDF	0.8859	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.03	2.55	0.4400	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	5.68308	5.68308	1	1.6	0.2283	Non-Significant Effect					
Error	46.2063	3.55433	13								
Total	51.8894		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.45	10.8	0.6650	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.876	0.833	0.0412	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	-116.25%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	4.75	0	0.75	1.11	0.818	0			
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 18-3118-3804		Endpoint: Offspring/Surviving Female				CETIS Version: CETISv1.9.3					
Analyzed: 08 Dec-17 12:31		Analysis: Nonparametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result						PMSD		
Untransformed	C > T		29632-010 passed offspring/surviving female						172.91%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-010	71.5	n/a	1	13	Exact	0.8081	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.72	2.55	0.0182	Outlier Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.03224	1.03224	1	0.257	0.6204	Non-Significant Effect					
Error	52.1185	4.00912	13								
Total	53.1507		14								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.75	10.8	0.5130	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.702	0.833	2.6E-04	Non-Normal Distribution					
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	-49.54%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	4.75	0	0.75	1.11	0.818	0			
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	14-1525-0366		Endpoint:	Offspring/Surviving Female		CETIS Version:	CETISv1.9.3				
Analyzed:	08 Dec-17 12:31		Analysis:	Parametric-Two Sample		Official Results:	Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME		A/N/0% (Lp Mendall Marsh)							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Untransformed		C < T		29632-008 passed offspring/surviving female				64.16%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-008	-2.32	1.77	1.64	13	CDF	0.9812	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	17.2005		17.2005		1	5.36	0.0376	Significant Effect			
Error	41.7197		3.20921		13						
Total	58.9202				14						
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		7.64	9.16	0.0169	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.911	0.833	0.1399	Normal Distribution					
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	7	2.56	0.288	4.83		0	6.83	0.928	95.98%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	83.88%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	Outlier	2.89	1	3.33	0		
29632-008		0	2.5	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 19-3130-8605		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed offspring/surviving female	39.55%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-008	-3.85	1.77	1.16	13	CDF	0.9990	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	23.6854	23.6854	1	14.8	0.0020	Significant Effect					
Error	20.7957	1.59967	13								
Total	44.4811		14								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	3.22	9.16	0.1514	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.905	0.833	0.1153	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		7	2.93	1.46	4.41		1.25	5.4	0.603	54.42%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	85.93%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	Outlier	1.33	1.25	3.29		
29632-008		0	2.5	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 02-2865-4864		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C < T			29632-008 passed offspring/surviving female					31.86%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-008	-5.05	1.76	1.52	14	CDF	0.9999	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.7	2.59	0.0259	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	75.4365		75.4365	1	25.5	1.8E-04	Significant Effect				
Error	41.4344		2.9596	14							
Total	116.871			15							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			6.49	8.89	0.0246	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.877	0.841	0.0350	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	91.33%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-008		0	2.5	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-0817-2277		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:31		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed offspring/surviving female	34.21%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-008	-4.73	1.76	1.74	14	CDF	0.9998	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.72	2.59	0.0239	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	86.925	86.925	1	22.4	3.2E-04	Significant Effect					
Error	54.3984	3.8856	14								
Total	141.323		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	8.84	8.89	0.0102	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.849	0.841	0.0133	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	91.87%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-008		0	2.5	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-9295-5627		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed offspring/surviving female	24.26%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-008	-6.82	1.76	1.65	14	CDF	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.28	2.59	0.1990	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	162.482	162.482	1	46.5	8.4E-06	Significant Effect					
Error	48.9372	3.49551	14								
Total	211.419		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	7.85	8.89	0.0144	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.855	0.841	0.0162	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	93.92%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		
29632-008		0	2.5	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 05-4420-4014		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-008 passed offspring/surviving female	68.48%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-008	86	n/a	1	14	Exact	0.9792	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3	2.59	0.0033	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.06164	1.06164	1	2.04	0.1751	Non-Significant Effect					
Error	7.28594	0.520424	14								
Total	8.34757		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	3.15	8.89	0.1535	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.806	0.841	0.0033	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	55.53%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		
29632-008		0	2.5	0	0	0	0	0	0.8		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 17-5398-6061		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME		A/B/3% (Lp Biochar 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C < T			29632-008 passed offspring/surviving female					162.25%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-008	65	n/a	1	12	Exact	0.7692	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0039748		0.0039748	1	0.00702	0.9346	Non-Significant Effect				
Error	6.7988		0.566567	12							
Total	6.80278			13							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.11	14.2	0.2300	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.67	0.824	1.8E-04	Non-Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		6	0.447	-0.0824	0.975		0	1.11	0.206	112.86%	0.00%
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	7.62%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	Outlier	0	0.75	1.11	0.818	0			
29632-008		0	2.5	0	0	0	0	0	0.8		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 08-4728-2208		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-009 passed offspring/surviving female	335.58%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-009	-2.4	1.76	1.38	14	CDF	0.9844	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.88	2.59	0.7607	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	14.1771	14.1771	1	5.74	0.0311	Significant Effect					
Error	34.591	2.47078	14								
Total	48.7681		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.26	8.89	0.0437	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.892	0.841	0.0595	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.413	-0.33	1.16	0	0	2.5	0.314	215.45%	0.00%
29632-009		8	2.3	0.592	4	0	0	5.15	0.72	88.78%	-456.39%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0	2.5	0	0	0	0	0	0.8		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 18-0336-0403		Endpoint: Offspring/Surviving Female				CETIS Version: CETISv1.9.3					
Analyzed: 08 Dec-17 12:32		Analysis: Nonparametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result							PMSD		
Untransformed	C > T	29632-010 passed offspring/surviving female							363.13%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-010	87	n/a	1	14	Exact	0.9846	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.19	2.59	4.6E-04	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	5.51924	5.51924	1	1.91	0.1889	Non-Significant Effect					
Error	40.5032	2.89308	14								
Total	46.0224		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.33	8.89	0.0265	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.699	0.841	1.6E-04	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	-284.76%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0	2.5	0	0	0	0	0	0.8		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 16-5630-3295		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:32		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-009 passed offspring/surviving female	71.93%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-009	-0.838	1.76	2.51	14	CDF	0.7919	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.36	2.59	0.1411	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	5.7022	5.7022	1	0.702	0.4162	Non-Significant Effect					
Error	113.701	8.12151	14								
Total	119.403		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.91	8.89	0.1818	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.936	0.841	0.3020	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	34.22%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	03-9131-6260	Endpoint:	Offspring/Surviving Female		CETIS Version:	CETISv1.9.3					
Analyzed:	08 Dec-17 12:32	Analysis:	Parametric-Two Sample		Official Results:	Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-009 passed offspring/surviving female				54.46%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-009	-1.17	1.76	1.96	14	CDF	0.8697	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.18	2.59	0.2931	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	6.81702	6.81702	1	1.37	0.2605	Non-Significant Effect					
Error	69.4153	4.95823	14								
Total	76.2323		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.39	8.89	0.6759	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.909	0.841	0.1132	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	36.26%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 04-9074-4032		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-003	Treated Sediment	USDC Penobscot, Winterport ME		A/AC/5% (Lp Activated Car							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Untransformed	C < T			29632-009 passed offspring/surviving female					39.90%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-009	-2.28	1.76	1.9	14	CDF	0.9807	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.16	2.59	0.3129	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	24.2081	24.2081	1	5.22	0.0385	Significant Effect					
Error	64.9679	4.64057	14								
Total	89.176		15								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.24	8.89	0.7874	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.916	0.841	0.1461	Normal Distribution				
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	51.73%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 15-2334-8531		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-009 passed offspring/surviving female	40.95%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-009	-2.36	1.76	2.08	14	CDF	0.9832	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.27	2.59	0.2068	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	30.8926	30.8926	1	5.55	0.0336	Significant Effect					
Error	77.9319	5.56656	14								
Total	108.825		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.68	8.89	0.5093	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.972	0.841	0.8664	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	54.77%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 00-5802-9782		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-009 passed offspring/surviving female	29.53%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-009	-3.95	1.76	2	14	CDF	0.9993	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.87	2.59	0.7794	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	80.6693	80.6693	1	15.6	0.0015	Significant Effect					
Error	72.4706	5.17647	14								
Total	153.14		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.49	8.89	0.6097	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.938	0.841	0.3286	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	66.18%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-0765-3176		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-009 passed offspring/surviving female	151.51%								
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-009	1.84	1.89	1.41	7	CDF	0.0539	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.99	2.59	0.5436	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	7.47962	7.47962	1	3.4	0.0866	Non-Significant Effect					
Error	30.8194	2.20139	14								
Total	38.299		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	16.5	8.89	0.0015	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.955	0.841	0.5806	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	-147.41%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 11-2255-1914		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME		A/B/5% (Lp Biochar 5%)							
Data Transform	Alt Hyp		Comparison Result					PMSD			
Untransformed	C < T		29632-009 passed offspring/surviving female					162.81%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-009	1.26	1.77	1.73	13	CDF	0.1141	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.03	2.55	0.4400	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	5.68308	5.68308	1	1.6	0.2283	Non-Significant Effect					
Error	46.2063	3.55433	13								
Total	51.8894		14								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.45	10.8	0.6650	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.876	0.833	0.0412	Normal Distribution					
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	0.00%
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	-116.25%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	4.75	0	0.75	1.11	0.818	0			
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-0131-7883		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-009 failed offspring/surviving female	335.58%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-009*	2.4	1.76	1.38	14	CDF	0.0156	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.88	2.59	0.7607	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	14.1771	14.1771	1	5.74	0.0311	Significant Effect					
Error	34.591	2.47078	14								
Total	48.7681		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.26	8.89	0.0437	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.892	0.841	0.0595	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.413	-0.33	1.16	0	0	2.5	0.314	215.45%	0.00%
29632-009		8	2.3	0.592	4	0	0	5.15	0.72	88.78%	-456.39%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0	2.5	0	0	0	0	0	0.8		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		

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Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 18-3888-1518		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C > T	29632-010 passed offspring/surviving female	82.06%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-009		29632-010	0.662	1.76	1.88	14	CDF	0.2593	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.54	2.59	0.0634	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.00489	2.00489	1	0.438	0.5187	Non-Significant Effect					
Error	64.0367	4.57405	14								
Total	66.0416		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.2	8.89	0.8132	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.847	0.841	0.0123	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	2.3	0.592	4	0	0	5.15	0.72	88.78%	0.00%
29632-010		8	1.59	-0.282	3.46	0	0	6.83	0.79	140.83%	30.85%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-0736-6817		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:33		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-001	14-5422-5411	10 Oct-17 11:40	10 Oct-17 11:40	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-001	Riverine Sediment	USDC Penobscot, Winterport ME	A/N/0% (Lp Mendall Marsh)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed offspring/surviving female	73.78%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29632-010	-1.3	1.76	2.57	14	CDF	0.8929	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.31	2.59	0.1801	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	14.4694	14.4694	1	1.69	0.2141	Non-Significant Effect					
Error	119.613	8.54381	14								
Total	134.083		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	2.42	8.89	0.2664	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.872	0.841	0.0293	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-001	N	8	3.49	0.582	6.4		0	10	1.23	99.66%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	54.51%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-001	N	0	6.83	3.86	10	2.89	1	3.33	0		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID:	18-9194-2591		Endpoint:	Offspring/Surviving Female			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 12:34		Analysis:	Nonparametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-002	20-3233-8827	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-002	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/3% (Lp Activated Car								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Untransformed	C < T	29632-010 passed offspring/surviving female					56.73%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-002		29632-010	90	n/a	0	14	Exact	0.9924	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.34	2.59	0.1559	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	16.2158	16.2158	1	3.01	0.1045	Non-Significant Effect					
Error	75.3275	5.38053	14								
Total	91.5433		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.15	8.89	0.8552	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.835	0.841	0.0082	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-002		8	3.6	1.59	5.61		1.25	8.29	0.849	66.68%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	55.92%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-002		3.25	5.4	1.67	4.33	8.29	1.33	1.25	3.29		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-9470-9616		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-003	06-8361-7845	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-003	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/5% (Lp Activated Car								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed offspring/surviving female	41.67%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-003		29632-010	92	n/a	0	14	Exact	0.9964	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.41	2.59	0.1143	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	40.1463	40.1463	1	7.93	0.0137	Significant Effect					
Error	70.8801	5.06287	14								
Total	111.026		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.03	8.89	0.9732	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.827	0.841	0.0063	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-003		8	4.76	2.86	6.65		2.3	9.25	0.801	47.63%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	66.62%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-003		6.2	2.3	4.4	5.75	3.6	3.88	9.25	2.67		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 13-1227-8425		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-004	06-2163-3603	10 Oct-17 10:20	10 Oct-17 10:20	14d 1h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-004	Treated Sediment	USDC Penobscot, Winterport ME	A/AC/10% (Lp Activated Ca								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed offspring/surviving female	42.47%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-004		29632-010	-2.85	1.76	2.16	14	CDF	0.9936	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.22	2.59	0.2521	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	48.6374	48.6374	1	8.12	0.0129	Significant Effect					
Error	83.8441	5.98886	14								
Total	132.482		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.4	8.89	0.6700	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.851	0.841	0.0140	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-004		8	5.07	2.87	7.28		1	10.2	0.934	52.07%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	68.72%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-004		10.2	5.91	4.27	6	5	4.89	1	3.27		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 20-8670-6904		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-005	02-3404-6897	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-005	Treated Sediment	USDC Penobscot, Winterport ME	A/S/3% (Lp SediMite 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed offspring/surviving female	30.71%								
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-005		29632-010	-4.39	1.76	2.08	14	CDF	0.9997	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.29	2.59	0.1880	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	108.109	108.109	1	19.3	6.1E-04	Significant Effect					
Error	78.3828	5.59877	14								
Total	186.492		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.24	8.89	0.7829	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.871	0.841	0.0287	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-005		8	6.79	4.7	8.87		2.67	10.4	0.88	36.70%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	76.61%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-005		5.9	6.89	2.67	10.4	5.7	5.86	10	6.85		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 11-5111-0619		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-006	19-6776-1429	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-006	Treated Sediment	USDC Penobscot, Winterport ME	A/S/5% (Lp SediMite 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result	PMSD								
Untransformed	C < T	29632-010 passed offspring/surviving female	153.77%								
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-006		29632-010	68.5	n/a	1	14	Exact	0.5305	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.35	2.59	4.9E-05	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.73962	1.73962	1	0.663	0.4291	Non-Significant Effect					
Error	36.7316	2.62369	14								
Total	38.4712		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	19.9	8.89	8.1E-04	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.712	0.841	2.3E-04	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-006		8	0.928	0.509	1.35		0	1.57	0.177	54.01%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	-71.09%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-006		1.57	1.33	0.6	0	0.833	1.33	0.75	1		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 16-1207-6963		Endpoint: Offspring/Surviving Female			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 12:34		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-007	09-8333-3219	10 Oct-17 10:45	10 Oct-17 10:45	14d 0h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29632-007	Treated Sediment	USDC Penobscot, Winterport ME		A/S/10% (Lp SediMite 10%							
29632-010	Treated Sediment	USDC Penobscot, Winterport ME		A/B/10% (Lp Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result					PMSD			
Untransformed	C < T		29632-010 passed offspring/surviving female					172.91%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-007		29632-010	56.5	n/a	1	13	Exact	0.2036	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		2.72	2.55	0.0182	Outlier Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	1.03224	1.03224	1	0.257	0.6204	Non-Significant Effect					
Error	52.1185	4.00912	13								
Total	53.1507		14								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.75	10.8	0.5130	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.702	0.833	2.6E-04	Non-Normal Distribution					
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-007		7	1.06	-0.502	2.62		0	4.75	0.639	159.27%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	-49.54%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-007		0	4.75	0	0.75	1.11	0.818	0			
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test										EnviroSystems, Inc.	
Analysis ID: 02-0663-9945		Endpoint: Offspring/Surviving Female				CETIS Version: CETISv1.9.3					
Analyzed: 08 Dec-17 12:34		Analysis: Nonparametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-008	20-9672-8709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-008	Treated Sediment	USDC Penobscot, Winterport ME	A/B/3% (Lp Biochar 3%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result						PMSD			
Untransformed	C < T	29632-010 failed offspring/surviving female						363.13%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29632-008		29632-010*	49	n/a	1	14	Exact	0.0186	Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	3.19	2.59	4.6E-04	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	5.51924	5.51924	1	1.91	0.1889	Non-Significant Effect					
Error	40.5032	2.89308	14								
Total	46.0224		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	6.33	8.89	0.0265	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.699	0.841	1.6E-04	Non-Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-008		8	0.413	-0.33	1.16		0	2.5	0.314	215.45%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	-284.76%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-008		0	2.5	0	0	0	0	0	0.8		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

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Report Date: 08 Dec-17 12:49 (p 105 of 105)
Test Code: 29632Lp | 20-0235-9323

Leptocheirus 28-d Survival, Growth and Reproduction Sediment Test							EnviroSystems, Inc.				
Analysis ID: 07-6259-5592	Endpoint: Offspring/Surviving Female		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 12:34	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29632-009	03-3906-3324	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h	Wood, PLC	Ecological Risk Assessm					
29632-010	01-6582-1709	10 Oct-17 12:20	10 Oct-17 12:20	13d 23h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29632-009	Treated Sediment	USDC Penobscot, Winterport ME	A/B/5% (Lp Biochar 5%)								
29632-010	Treated Sediment	USDC Penobscot, Winterport ME	A/B/10% (Lp Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Untransformed	C < T	29632-010 passed offspring/surviving female				82.06%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29632-009		29632-010	-0.662	1.76	1.88	14	CDF	0.7407	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.54	2.59	0.0634	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	2.00489	2.00489	1	0.438	0.5187	Non-Significant Effect					
Error	64.0367	4.57405	14								
Total	66.0416		15								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.2	8.89	0.8132	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.847	0.841	0.0123	Normal Distribution						
Offspring/Surviving Female Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29632-009		8	2.3	0.592	4		0	5.15	0.72	88.78%	0.00%
29632-010		8	1.59	-0.282	3.46		0	6.83	0.79	140.83%	30.85%
Offspring/Surviving Female Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8		
29632-009		1.8	0.8	0	1.29	3.88	0.571	5.15	4.88		
29632-010		6.83	1.1	0.333	0.889	0.333	0.875	2.33	0		

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Leptocheirus plumulosus* 28 Day Survival, Growth and Reproduction Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	24.0	7.2	95.0	7.8	32223.0	20.1
Minimum:	22.9	6.0	81.8	7.5	29928.0	18.5
Maximum:	25.1	7.9	105.9	8.0	34304.0	21.5

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
A/L/0%	Surrogate	00	10/24/2017 09:49:35	24.4	7.06	94	8.02	30836	19.15
A/N/0%	Surrogate	00	10/24/2017 09:49:53	24.5	7.19	95.8	8	30688	19.05
A/AC/3%	Surrogate	00	10/24/2017 09:50:14	24.5	7.23	96.4	7.92	30727	19.07
A/AC/5%	Surrogate	00	10/24/2017 09:50:32	24.4	7.1	94.5	7.84	30653	19.02
A/AC/10%	Surrogate	00	10/24/2017 09:51:12	24.4	7.24	96.5	7.87	31017	19.27
A/S/3%	Surrogate	00	10/24/2017 09:51:57	24.4	7.18	95.5	7.88	30650	19.02
A/S/5%	Surrogate	00	10/24/2017 09:52:42	24.4	7.24	96.4	7.9	30674	19.04
A/S/10%	Surrogate	00	10/24/2017 09:53:31	24.3	7.26	96.6	7.89	30855	19.16
A/B/3%	Surrogate	00	10/24/2017 09:54:07	24.4	7.2	96.1	7.96	31280	19.45
A/B/5%	Surrogate	00	10/24/2017 09:54:55	24.3	7.16	95.1	7.9	30652	19.03
A/B/10%	Surrogate	00	10/24/2017 09:56:03	24.4	7.14	95	7.87	30641	19.02
A/L/0%	Surrogate	01	10/25/2017 10:22:12	24.4	6.71	90.4	7.81	31133	19.35
A/N/0%	Surrogate	01	10/25/2017 10:22:36	24.5	6.94	93.6	7.85	31138	19.35
A/AC/3%	Surrogate	01	10/25/2017 10:22:50	24.4	6.96	93.8	7.81	31171	19.38
A/AC/5%	Surrogate	01	10/25/2017 10:23:08	24.4	6.8	91.6	7.74	31117	19.34
A/AC/10%	Surrogate	01	10/25/2017 10:23:24	24.4	7.07	95.3	7.81	31318	19.48
A/S/3%	Surrogate	01	10/25/2017 10:23:38	24.4	6.92	93.3	7.79	31284	19.46
A/S/5%	Surrogate	01	10/25/2017 10:23:51	24.5	6.98	94.1	7.81	31170	19.38
A/S/10%	Surrogate	01	10/25/2017 10:24:02	24.4	7.07	95.2	7.82	31277	19.45
A/B/3%	Surrogate	01	10/25/2017 10:24:14	24.4	7.05	95.1	7.89	31488	19.6
A/B/5%	Surrogate	01	10/25/2017 10:24:27	24.4	6.97	93.8	7.88	31223	19.42
A/B/10%	Surrogate	01	10/25/2017 10:24:39	24.4	6.96	94	7.84	31555	19.64
A/L/0%	Surrogate	02	10/26/2017 08:36:33	23.9	6.82	91.3	7.82	30657	19.04
A/N/0%	Surrogate	02	10/26/2017 08:36:55	24.2	6.9	92.6	7.82	30662	19.03
A/AC/3%	Surrogate	02	10/26/2017 08:37:19	24	6.81	91.2	7.77	30730	19.08
A/AC/5%	Surrogate	02	10/26/2017 08:37:41	24.1	6.77	90.8	7.69	30643	19.02
A/AC/10%	Surrogate	02	10/26/2017 08:38:03	24.1	6.84	91.8	7.75	30878	19.18
A/S/3%	Surrogate	02	10/26/2017 08:38:27	24.1	6.47	87	7.73	30901	19.2
A/S/5%	Surrogate	02	10/26/2017 08:38:50	24.2	6.93	93.2	7.76	30778	19.11
A/S/10%	Surrogate	02	10/26/2017 08:39:10	24.1	6.94	93.1	7.79	30938	19.22
A/B/3%	Surrogate	02	10/26/2017 08:39:33	24.1	7.01	94.1	7.87	31037	19.29
A/B/5%	Surrogate	02	10/26/2017 08:39:57	24	6.99	93.7	7.87	30997	19.27
A/B/10%	Surrogate	02	10/26/2017 08:40:21	24.1	6.92	92.8	7.83	30734	19.09
A/L/0%	Surrogate	03	10/27/2017 09:47:39	23.7	6.8	89.7	7.87	31008	19.28
A/N/0%	Surrogate	03	10/27/2017 09:48:06	23.8	7	92.4	7.89	31081	19.33
A/AC/3%	Surrogate	03	10/27/2017 09:48:30	23.7	7.1	93.6	7.85	31040	19.3
A/AC/5%	Surrogate	03	10/27/2017 09:48:50	23.7	7.09	93.5	7.8	31008	19.28
A/AC/10%	Surrogate	03	10/27/2017 09:49:19	23.7	7.05	93	7.83	31136	19.37
A/S/3%	Surrogate	03	10/27/2017 09:49:44	23.8	6.86	90.6	7.82	31052	19.31
A/S/5%	Surrogate	03	10/27/2017 09:50:02	23.8	7.08	93.1	7.84	29928	18.54
A/S/10%	Surrogate	03	10/27/2017 09:50:15	23.8	7.14	94.4	7.85	31029	19.29
A/B/3%	Surrogate	03	10/27/2017 09:50:47	23.7	7.1	93.6	7.86	31103	19.34
A/B/5%	Surrogate	03	10/27/2017 09:51:31	23.8	7.02	92.8	7.96	31281	19.46
A/B/10%	Surrogate	03	10/27/2017 09:52:43	23.7	7.12	93.9	7.89	31108	19.35

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	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	24.0	7.2	95.0	7.8	32223.0	20.1
Minimum:	22.9	6.0	81.8	7.5	29928.0	18.5
Maximum:	25.1	7.9	105.9	8.0	34304.0	21.5

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
A/L/0%	Surrogate	04	10/28/2017 10:26:57	23.4	6.87	90	7.78	32053	20
A/N/0%	Surrogate	04	10/28/2017 10:27:21	23.8	7.1	93.8	7.79	31999	19.96
A/AC/3%	Surrogate	04	10/28/2017 10:27:46	23.7	7.04	92.8	7.78	31935	19.91
A/AC/5%	Surrogate	04	10/28/2017 10:28:11	23.7	6.88	90.7	7.71	31895	19.89
A/AC/10%	Surrogate	04	10/28/2017 10:28:32	23.7	7	92.3	7.73	31971	19.94
A/S/3%	Surrogate	04	10/28/2017 10:28:54	23.7	6.94	91.5	7.76	32016	19.97
A/S/5%	Surrogate	04	10/28/2017 10:29:17	23.8	6.95	91.8	7.77	32007	19.96
A/S/10%	Surrogate	04	10/28/2017 10:29:42	23.7	7.18	94.6	7.78	32071	20.01
A/B/3%	Surrogate	04	10/28/2017 10:30:06	23.7	7.03	92.8	7.84	32350	20.2
A/B/5%	Surrogate	04	10/28/2017 10:30:34	23.6	7.09	93.4	7.85	32250	20.13
A/B/10%	Surrogate	04	10/28/2017 10:30:57	23.7	7.04	92.8	7.83	32153	20.06
A/L/0%	Surrogate	05	10/29/2017 12:08:51	23.8	7.42	99	7.89	33327	20.87
A/N/0%	Surrogate	05	10/29/2017 12:09:05	24.1	7.41	99.5	7.93	33406	20.92
A/AC/3%	Surrogate	05	10/29/2017 12:09:21	23.9	6.76	90.4	7.82	33202	20.78
A/AC/5%	Surrogate	05	10/29/2017 12:09:39	23.9	7.5	100.4	7.84	33310	20.86
A/AC/10%	Surrogate	05	10/29/2017 12:09:51	23.9	7.37	98.6	7.87	33269	20.83
A/S/3%	Surrogate	05	10/29/2017 12:10:04	23.9	7.3	97.9	7.91	33853	21.23
A/S/5%	Surrogate	05	10/29/2017 12:10:19	24	7.36	98.9	7.91	33897	21.26
A/S/10%	Surrogate	05	10/29/2017 12:10:33	23.9	7.24	97.1	7.92	33904	21.27
A/B/3%	Surrogate	05	10/29/2017 12:10:46	23.9	7.23	97.2	7.97	34237	21.5
A/B/5%	Surrogate	05	10/29/2017 12:11:03	23.8	7.27	97.5	7.96	34238	21.5
A/B/10%	Surrogate	05	10/29/2017 12:11:16	23.9	7.3	98	7.95	33831	21.22
A/L/0%	Surrogate	06	10/30/2017 12:25:16	24.2	7.07	97.3	7.86	32729	20.45
A/N/0%	Surrogate	06	10/30/2017 12:25:29	24.2	7.09	97.7	7.89	32852	20.54
A/AC/3%	Surrogate	06	10/30/2017 12:25:47	24.1	5.95	81.8	7.77	32587	20.36
A/AC/5%	Surrogate	06	10/30/2017 12:26:14	24.1	7.07	97.2	7.81	32752	20.47
A/AC/10%	Surrogate	06	10/30/2017 12:28:11	24	6.94	95.4	7.82	32792	20.5
A/S/3%	Surrogate	06	10/30/2017 12:28:24	24.1	6.94	95.8	7.87	33857	21.23
A/S/5%	Surrogate	06	10/30/2017 12:28:40	24.1	7	96.8	7.89	33933	21.28
A/S/10%	Surrogate	06	10/30/2017 12:29:02	24.1	6.99	96.6	7.89	33959	21.3
A/B/3%	Surrogate	06	10/30/2017 12:29:15	24.1	6.97	96.4	7.95	34304	21.54
A/B/5%	Surrogate	06	10/30/2017 12:29:31	24	6.97	96.2	7.93	34214	21.48
A/B/10%	Surrogate	06	10/30/2017 12:29:45	24.2	6.93	95.7	7.93	33205	20.78
A/L/0%	Surrogate	07	10/31/2017 09:06:32	23.6	7.11	94.3	7.63	32210	20.1
A/N/0%	Surrogate	07	10/31/2017 09:06:51	23.8	7.16	95.3	7.7	32435	20.26
A/AC/3%	Surrogate	07	10/31/2017 09:07:06	23.7	7.17	95	7.73	32186	20.09
A/AC/5%	Surrogate	07	10/31/2017 09:07:20	23.7	6.92	91.8	7.66	32365	20.21
A/AC/10%	Surrogate	07	10/31/2017 09:07:35	23.7	7.18	95.2	7.71	32130	20.05
A/S/3%	Surrogate	07	10/31/2017 09:07:49	23.6	7.16	94.8	7.76	32160	20.07
A/S/5%	Surrogate	07	10/31/2017 09:08:05	23.7	7.25	96.2	7.77	32376	20.22
A/S/10%	Surrogate	07	10/31/2017 09:08:19	23.6	7.27	96.3	7.78	32284	20.16
A/B/3%	Surrogate	07	10/31/2017 09:08:33	23.6	7.25	96.2	7.84	32838	20.54
A/B/5%	Surrogate	07	10/31/2017 09:08:47	23.5	7.26	96	7.85	32208	20.1

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ASSAY: *Leptocheirus plumulosus* 28 Day Survival, Growth and Reproduction Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	24.0	7.2	95.0	7.8	32223.0	20.1
Minimum:	22.9	6.0	81.8	7.5	29928.0	18.5
Maximum:	25.1	7.9	105.9	8.0	34304.0	21.5

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
A/B/10%	Surrogate	07	10/31/2017 09:08:59	23.6	7.26	96.2	7.83	32385	20.23
A/L/0%	Surrogate	08	11/1/2017 10:21:37	23.5	7.45	96.7	7.63	31525	19.63
A/N/0%	Surrogate	08	11/1/2017 10:21:54	23.6	7.38	96.3	7.64	32141	20.06
A/AC/3%	Surrogate	08	11/1/2017 10:22:17	23.5	7.51	97.5	7.71	31621	19.7
A/AC/5%	Surrogate	08	11/1/2017 10:22:32	23.5	7.34	95.4	7.66	31811	19.83
A/AC/10%	Surrogate	08	11/1/2017 10:22:46	23.5	7.42	96.3	7.66	31298	19.48
A/S/3%	Surrogate	08	11/1/2017 10:22:59	23.5	7.47	97	7.71	31747	19.79
A/S/5%	Surrogate	08	11/1/2017 10:23:17	23.6	7.46	97.1	7.71	31984	19.95
A/S/10%	Surrogate	08	11/1/2017 10:23:32	23.4	7.53	97.8	7.72	31742	19.78
A/B/3%	Surrogate	08	11/1/2017 10:23:45	23.5	7.46	97.2	7.75	32479	20.29
A/B/5%	Surrogate	08	11/1/2017 10:24:00	23.4	7.48	97	7.77	31928	19.91
A/B/10%	Surrogate	08	11/1/2017 10:24:14	23.5	7.45	97	7.77	32421	20.25
A/L/0%	Surrogate	09	11/2/2017 09:45:36	23.8	7.3	96	7.72	32937	20.6
A/N/0%	Surrogate	09	11/2/2017 09:45:51	24	7.39	97.6	7.79	33137	20.74
A/AC/3%	Surrogate	09	11/2/2017 09:46:05	23.8	7.5	98.7	7.82	32974	20.63
A/AC/5%	Surrogate	09	11/2/2017 09:46:21	23.9	7.18	94.5	7.72	32902	20.58
A/AC/10%	Surrogate	09	11/2/2017 09:46:44	23.9	7.37	97	7.8	32986	20.63
A/S/3%	Surrogate	09	11/2/2017 09:46:59	23.8	7.42	97.6	7.85	32657	20.41
A/S/5%	Surrogate	09	11/2/2017 09:47:15	24	7.42	97.9	7.87	32714	20.45
A/S/10%	Surrogate	09	11/2/2017 09:47:34	23.8	7.53	99	7.88	32715	20.45
A/B/3%	Surrogate	09	11/2/2017 09:47:46	23.8	7.51	99	7.93	33085	20.7
A/B/5%	Surrogate	09	11/2/2017 09:48:08	23.8	7.48	98.3	7.94	32937	20.6
A/B/10%	Surrogate	09	11/2/2017 09:48:27	23.8	7.47	98.4	7.93	33049	20.68
A/L/0%	Surrogate	10	11/3/2017 09:32:26	24.2	7.12	94.6	7.87	31232	19.42
A/N/0%	Surrogate	10	11/3/2017 09:32:53	24.3	6.95	92.6	7.86	31397	19.54
A/AC/3%	Surrogate	10	11/3/2017 09:33:17	24.2	7.02	93.3	7.9	31248	19.44
A/AC/5%	Surrogate	10	11/3/2017 09:33:35	24.1	7.13	94.7	7.83	31351	19.51
A/AC/10%	Surrogate	10	11/3/2017 09:33:53	24.1	7.1	94.1	7.84	31136	19.36
A/S/3%	Surrogate	10	11/3/2017 09:34:13	24.1	6.97	92.5	7.86	30972	19.25
A/S/5%	Surrogate	10	11/3/2017 09:34:30	24.2	7.12	94.7	7.88	31177	19.39
A/S/10%	Surrogate	10	11/3/2017 09:34:46	24.1	7.12	94.5	7.9	31071	19.32
A/B/3%	Surrogate	10	11/3/2017 09:35:10	24.2	7.07	94.1	7.94	31515	19.62
A/B/5%	Surrogate	10	11/3/2017 09:35:26	24.1	7.13	94.6	7.94	31197	19.4
A/B/10%	Surrogate	10	11/3/2017 09:35:47	24.2	7.1	94.6	7.93	31441	19.57
A/L/0%	Surrogate	11	11/4/2017 11:03:44	23.7	7.25	94.5	7.85	31404	19.55
A/N/0%	Surrogate	11	11/4/2017 11:04:17	23.7	7.13	93.1	7.84	31691	19.75
A/AC/3%	Surrogate	11	11/4/2017 11:04:42	23.6	7.37	95.8	7.87	31114	19.35
A/AC/5%	Surrogate	11	11/4/2017 11:05:02	23.6	7.36	95.8	7.83	31252	19.45
A/AC/10%	Surrogate	11	11/4/2017 11:05:21	23.6	7.3	94.9	7.82	31048	19.31
A/S/3%	Surrogate	11	11/4/2017 11:05:39	23.6	7.26	94.3	7.85	30795	19.13
A/S/5%	Surrogate	11	11/4/2017 11:06:02	23.8	7.27	94.9	7.86	31203	19.41
A/S/10%	Surrogate	11	11/4/2017 11:06:21	23.6	7.24	94.1	7.87	31062	19.32
A/B/3%	Surrogate	11	11/4/2017 11:06:43	23.6	7.19	93.7	7.92	31646	19.72

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Mean:	24.0	7.2	95.0	7.8	32223.0	20.1
Minimum:	22.9	6.0	81.8	7.5	29928.0	18.5
Maximum:	25.1	7.9	105.9	8.0	34304.0	21.5

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
A/B/5%	Surrogate	11	11/4/2017 11:07:00	23.5	7.21	93.6	7.92	31194	19.41
A/B/10%	Surrogate	11	11/4/2017 11:07:18	23.6	7.36	95.8	7.92	31260	19.45
A/L/0%	Surrogate	12	11/5/2017 12:32:28	23.8	7.88	103.5	7.91	32089	20.02
A/N/0%	Surrogate	12	11/5/2017 12:32:47	23.9	7.58	99.9	7.87	32431	20.25
A/AC/3%	Surrogate	12	11/5/2017 12:33:01	23.8	7.65	100.3	7.94	32214	20.1
A/AC/5%	Surrogate	12	11/5/2017 12:33:25	23.8	7.87	103.3	7.93	32297	20.16
A/AC/10%	Surrogate	12	11/5/2017 12:33:43	23.8	7.46	97.8	7.89	31918	19.9
A/S/3%	Surrogate	12	11/5/2017 12:33:59	23.8	7.49	98.2	7.94	31822	19.84
A/S/5%	Surrogate	12	11/5/2017 12:34:23	23.9	7.45	98	7.96	31959	19.93
A/S/10%	Surrogate	12	11/5/2017 12:34:40	23.8	7.43	97.4	7.95	31885	19.88
A/B/3%	Surrogate	12	11/5/2017 12:34:57	23.8	7.43	97.6	8	32394	20.23
A/B/5%	Surrogate	12	11/5/2017 12:35:13	23.7	7.41	97	7.98	31906	19.89
A/B/10%	Surrogate	12	11/5/2017 12:35:27	23.8	7.37	96.7	7.98	31740	19.78
A/L/0%	Surrogate	13	11/6/2017 09:38:52	24.3	7.24	97.2	7.86	32186	20.08
A/N/0%	Surrogate	13	11/6/2017 09:39:07	24.4	6.94	93.4	7.82	32352	20.19
A/AC/3%	Surrogate	13	11/6/2017 09:39:20	24.2	7.18	96.3	7.87	32162	20.06
A/AC/5%	Surrogate	13	11/6/2017 09:39:31	24.2	7.24	97.1	7.83	32271	20.14
A/AC/10%	Surrogate	13	11/6/2017 09:39:45	24.2	7.03	94.3	7.82	32089	20.01
A/S/3%	Surrogate	13	11/6/2017 09:39:58	24.3	7.1	95.5	7.85	32677	20.42
A/S/5%	Surrogate	13	11/6/2017 09:40:08	24.3	7.11	95.8	7.87	32668	20.41
A/S/10%	Surrogate	13	11/6/2017 09:40:19	24.2	7.1	95.4	7.88	32747	20.46
A/B/3%	Surrogate	13	11/6/2017 09:40:29	24.3	7.11	95.8	7.91	32943	20.6
A/B/5%	Surrogate	13	11/6/2017 09:40:52	24.2	7.1	95.5	7.92	32873	20.55
A/B/10%	Surrogate	13	11/6/2017 09:41:01	24.2	7.14	96	7.93	32684	20.42
A/L/0%	Surrogate	14	11/7/2017 09:20:37	23.7	7.49	98.1	7.69	31923	19.91
A/N/0%	Surrogate	14	11/7/2017 09:20:59	23.8	7.35	96.6	7.73	32081	20.01
A/AC/3%	Surrogate	14	11/7/2017 09:21:13	23.6	7.36	96.4	7.71	31886	19.88
A/AC/5%	Surrogate	14	11/7/2017 09:21:29	23.7	7.59	99.5	7.74	31970	19.94
A/AC/10%	Surrogate	14	11/7/2017 09:21:43	23.6	7.38	96.7	7.72	31821	19.84
A/S/3%	Surrogate	14	11/7/2017 09:21:57	23.6	7.48	98.1	7.77	32319	20.18
A/S/5%	Surrogate	14	11/7/2017 09:22:08	23.7	7.53	98.9	7.8	32247	20.13
A/S/10%	Surrogate	14	11/7/2017 09:22:22	23.6	7.44	97.4	7.79	32172	20.08
A/B/3%	Surrogate	14	11/7/2017 09:22:33	23.6	7.49	98.3	7.81	32612	20.38
A/B/5%	Surrogate	14	11/7/2017 09:22:48	23.6	7.43	97.3	7.84	32329	20.19
A/B/10%	Surrogate	14	11/7/2017 09:23:04	23.6	7.5	98.2	7.86	32124	20.05
A/L/0%	Surrogate	15	11/8/2017 10:52:27	23.5	7.55	98.6	7.74	32199	20.1
A/N/0%	Surrogate	15	11/8/2017 10:52:43	23.7	7.27	95.3	7.71	32506	20.31
A/AC/3%	Surrogate	15	11/8/2017 10:52:59	23.6	7.51	98.2	7.82	32246	20.13
A/AC/5%	Surrogate	15	11/8/2017 10:53:10	23.6	7.62	99.6	7.8	32284	20.16
A/AC/10%	Surrogate	15	11/8/2017 10:53:25	23.6	7.38	96.4	7.78	32098	20.03
A/S/3%	Surrogate	15	11/8/2017 10:55:07	23.5	7.39	96.6	7.83	32383	20.22
A/S/5%	Surrogate	15	11/8/2017 10:55:22	23.6	7.49	98.1	7.86	32424	20.25
A/S/10%	Surrogate	15	11/8/2017 10:55:32	23.5	7.43	97	7.86	32413	20.25

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Leptocheirus plumulosus* 28 Day Survival, Growth and Reproduction Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	24.0	7.2	95.0	7.8	32223.0	20.1
Minimum:	22.9	6.0	81.8	7.5	29928.0	18.5
Maximum:	25.1	7.9	105.9	8.0	34304.0	21.5

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
A/B/3%	Surrogate	15	11/8/2017 10:55:46	23.5	7.46	97.8	7.9	32928	20.6
A/B/5%	Surrogate	15	11/8/2017 10:56:00	23.5	7.38	96.5	7.89	32512	20.31
A/B/10%	Surrogate	15	11/8/2017 10:56:19	23.6	7.44	97.4	7.91	32588	20.36
A/L/0%	Surrogate	16	11/9/2017 10:48:36	23.5	7.52	98.5	7.68	32640	20.4
A/N/0%	Surrogate	16	11/9/2017 10:49:08	23.7	7.29	95.9	7.65	32909	20.58
A/AC/3%	Surrogate	16	11/9/2017 10:49:32	23.6	7.54	99	7.76	32696	20.44
A/AC/5%	Surrogate	16	11/9/2017 10:50:00	23.6	7.46	97.9	7.69	32700	20.44
A/AC/10%	Surrogate	16	11/9/2017 10:50:14	23.5	7.38	96.7	7.7	32548	20.34
A/S/3%	Surrogate	16	11/9/2017 10:50:28	23.6	7.39	96.9	7.75	32424	20.25
A/S/5%	Surrogate	16	11/9/2017 10:50:45	23.6	7.48	98.2	7.77	32537	20.33
A/S/10%	Surrogate	16	11/9/2017 10:50:58	23.5	7.47	97.9	7.78	32560	20.35
A/B/3%	Surrogate	16	11/9/2017 10:51:11	23.6	7.44	97.7	7.81	32896	20.58
A/B/5%	Surrogate	16	11/9/2017 10:51:25	23.5	7.42	97.2	7.8	32474	20.29
A/B/10%	Surrogate	16	11/9/2017 10:51:40	23.5	7.48	97.9	7.83	32061	20
A/L/0%	Surrogate	17	11/10/2017 11:04:13	23.2	7.51	98.1	7.84	31764	19.8
A/N/0%	Surrogate	17	11/10/2017 11:04:39	23.4	7.25	95.1	7.78	31902	19.9
A/AC/3%	Surrogate	17	11/10/2017 11:05:01	23.2	7.37	96.4	7.84	31758	19.8
A/AC/5%	Surrogate	17	11/10/2017 11:05:28	23.3	7.52	98.4	7.81	31746	19.79
A/AC/10%	Surrogate	17	11/10/2017 11:05:49	23.3	7.31	95.7	7.79	31594	19.69
A/S/3%	Surrogate	17	11/10/2017 11:06:19	23.3	7.35	96	7.82	31157	19.39
A/S/5%	Surrogate	17	11/10/2017 11:06:44	23.4	7.33	96	7.84	31243	19.44
A/S/10%	Surrogate	17	11/10/2017 11:07:17	23.3	7.29	95.4	7.83	31258	19.46
A/B/3%	Surrogate	17	11/10/2017 11:07:42	23.3	7.34	96.1	7.88	31574	19.67
A/B/5%	Surrogate	17	11/10/2017 11:08:06	23.2	7.28	95	7.86	31209	19.42
A/B/10%	Surrogate	17	11/10/2017 11:08:30	23.2	7.31	95.5	7.87	31482	19.61
A/L/0%	Surrogate	18	11/11/2017 09:20:57	22.9	7.29	93.6	7.71	32254	20.15
A/N/0%	Surrogate	18	11/11/2017 09:21:16	23.2	7.11	91.8	7.7	32378	20.23
A/AC/3%	Surrogate	18	11/11/2017 09:21:42	23	7.34	94.4	7.75	32213	20.11
A/AC/5%	Surrogate	18	11/11/2017 09:22:06	23.1	7.08	91.2	7.67	32260	20.15
A/AC/10%	Surrogate	18	11/11/2017 09:22:35	23	7.15	92	7.71	32102	20.04
A/S/3%	Surrogate	18	11/11/2017 09:23:02	23.1	7.25	93.1	7.73	31861	19.87
A/S/5%	Surrogate	18	11/11/2017 09:23:42	23.2	7.25	93.5	7.75	31955	19.93
A/S/10%	Surrogate	18	11/11/2017 09:24:02	23	7.31	93.9	7.75	32022	19.98
A/B/3%	Surrogate	18	11/11/2017 09:24:25	23.1	7.38	95.1	7.78	32248	20.14
A/B/5%	Surrogate	18	11/11/2017 09:25:11	23	7.09	91.1	7.76	31919	19.91
A/B/10%	Surrogate	18	11/11/2017 09:25:31	23	7.28	93.4	7.78	31876	19.88
A/L/0%	Surrogate	19	11/12/2017 11:15:48	24	7.18	94.4	7.67	33606	21.06
A/N/0%	Surrogate	19	11/12/2017 11:16:04	24.4	7.03	93.2	7.62	33511	20.99
A/AC/3%	Surrogate	19	11/12/2017 11:16:17	24.3	7.17	94.9	7.67	33615	21.06
A/AC/5%	Surrogate	19	11/12/2017 11:16:40	24.3	7.26	96.1	7.64	33445	20.94
A/AC/10%	Surrogate	19	11/12/2017 11:16:53	24.3	7.11	94.1	7.63	33473	20.96
A/S/3%	Surrogate	19	11/12/2017 11:19:05	24.2	7.02	92.4	7.67	32345	20.19
A/S/5%	Surrogate	19	11/12/2017 11:19:19	24.4	7.18	94.7	7.67	32415	20.23

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Leptocheirus plumulosus* 28 Day Survival, Growth and Reproduction Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	24.0	7.2	95.0	7.8	32223.0	20.1
Minimum:	22.9	6.0	81.8	7.5	29928.0	18.5
Maximum:	25.1	7.9	105.9	8.0	34304.0	21.5

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
A/S/10%	Surrogate	19	11/12/2017 11:19:35	24.2	7.14	94	7.66	32648	20.4
A/B/3%	Surrogate	19	11/12/2017 11:19:49	24.3	7.18	94.7	7.68	32851	20.53
A/B/5%	Surrogate	19	11/12/2017 11:20:04	24.2	7.08	93.2	7.66	32383	20.21
A/B/10%	Surrogate	19	11/12/2017 11:20:23	24.3	7.14	94.1	7.68	32205	20.09
A/L/0%	Surrogate	20	11/13/2017 10:05:59	24.2	7.41	97.9	7.76	32665	20.41
A/N/0%	Surrogate	20	11/13/2017 10:06:21	24.5	7.08	94	7.69	32857	20.54
A/AC/3%	Surrogate	20	11/13/2017 10:06:38	24.3	7.29	96.6	7.74	32957	20.61
A/AC/5%	Surrogate	20	11/13/2017 10:06:51	24.4	7.3	96.8	7.71	32851	20.53
A/AC/10%	Surrogate	20	11/13/2017 10:07:17	24.4	7.15	94.6	7.69	32433	20.25
A/S/3%	Surrogate	20	11/13/2017 10:07:30	24.3	7.23	95.5	7.71	32428	20.24
A/S/5%	Surrogate	20	11/13/2017 10:07:44	24.4	7.34	97.2	7.74	32531	20.31
A/S/10%	Surrogate	20	11/13/2017 10:07:59	24.3	7.2	95.2	7.72	32599	20.36
A/B/3%	Surrogate	20	11/13/2017 10:08:12	24.3	7.33	97.1	7.75	32984	20.63
A/B/5%	Surrogate	20	11/13/2017 10:08:26	24.2	7.15	94.5	7.72	32738	20.46
A/B/10%	Surrogate	20	11/13/2017 10:08:39	24.3	7.21	95.1	7.74	32141	20.05
A/L/0%	Surrogate	21	11/14/2017 12:41:30	24.4	6.63	87.8	7.54	31762	19.78
A/N/0%	Surrogate	21	11/14/2017 12:41:58	24.5	6.76	89.7	7.52	31891	19.87
A/AC/3%	Surrogate	21	11/14/2017 12:42:22	24.2	7.09	93.4	7.63	31867	19.86
A/AC/5%	Surrogate	21	11/14/2017 12:43:04	24.3	6.89	91	7.58	31860	19.85
A/AC/10%	Surrogate	21	11/14/2017 12:43:25	24.4	7.05	93.3	7.6	31776	19.79
A/S/3%	Surrogate	21	11/14/2017 12:43:46	24.3	6.94	91.4	7.63	31239	19.43
A/S/5%	Surrogate	21	11/14/2017 12:44:14	24.4	7.17	94.7	7.68	31382	19.52
A/S/10%	Surrogate	21	11/14/2017 12:44:41	24.3	7.14	94.1	7.7	31458	19.58
A/B/3%	Surrogate	21	11/14/2017 12:45:01	24.3	7.04	93	7.69	31828	19.83
A/B/5%	Surrogate	21	11/14/2017 12:45:21	24.2	6.9	91.1	7.68	32037	19.98
A/B/10%	Surrogate	21	11/14/2017 12:45:44	24.2	7.16	94.2	7.71	31222	19.42
A/L/0%	Surrogate	22	11/15/2017 10:26:55	24.3	7.2	95.5	7.63	32343	20.18
A/N/0%	Surrogate	22	11/15/2017 10:27:17	24.4	7.14	94.8	7.61	32659	20.4
A/AC/3%	Surrogate	22	11/15/2017 10:27:32	24.1	7.43	98.1	7.69	32460	20.27
A/AC/5%	Surrogate	22	11/15/2017 10:27:47	24.2	7.11	94.2	7.61	32516	20.3
A/AC/10%	Surrogate	22	11/15/2017 10:28:01	24.3	7.26	96.2	7.64	32644	20.39
A/S/3%	Surrogate	22	11/15/2017 10:28:20	24.2	7.21	95.1	7.67	31696	19.74
A/S/5%	Surrogate	22	11/15/2017 10:28:35	24.3	7.4	98	7.72	31938	19.91
A/S/10%	Surrogate	22	11/15/2017 10:28:51	24.2	7.39	97.5	7.73	31995	19.95
A/B/3%	Surrogate	22	11/15/2017 10:29:13	24.2	7.16	94.6	7.69	32453	20.26
A/B/5%	Surrogate	22	11/15/2017 10:29:33	24.2	6.87	91.1	7.65	33138	20.73
A/B/10%	Surrogate	22	11/15/2017 10:29:48	24.3	7.21	95.7	7.72	32879	20.55
A/L/0%	Surrogate	23	11/16/2017 10:37:15	24.3	7.22	97.4	7.67	33303	20.85
A/N/0%	Surrogate	23	11/16/2017 10:37:41	24.5	6.97	94.3	7.64	33368	20.89
A/AC/3%	Surrogate	23	11/16/2017 10:38:16	24.2	7.23	97.3	7.73	33311	20.85
A/AC/5%	Surrogate	23	11/16/2017 10:38:35	24.3	6.53	88.1	7.59	33248	20.81
A/AC/10%	Surrogate	23	11/16/2017 10:38:58	24.4	6.99	94.6	7.69	33665	21.09
A/S/3%	Surrogate	23	11/16/2017 10:39:15	24.3	7	94.5	7.7	33298	20.84

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Leptocheirus plumulosus* 28 Day Survival, Growth and Reproduction Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	24.0	7.2	95.0	7.8	32223.0	20.1
Minimum:	22.9	6.0	81.8	7.5	29928.0	18.5
Maximum:	25.1	7.9	105.9	8.0	34304.0	21.5

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
A/S/5%	Surrogate	23	11/16/2017 10:39:34	24.5	7.14	96.6	7.76	33360	20.88
A/S/10%	Surrogate	23	11/16/2017 10:39:50	24.3	7.18	97	7.78	33565	21.03
A/B/3%	Surrogate	23	11/16/2017 10:40:08	24.3	7.06	95.5	7.74	33642	21.08
A/B/5%	Surrogate	23	11/16/2017 10:40:29	24.3	6.32	85.5	7.64	34061	21.37
A/B/10%	Surrogate	23	11/16/2017 10:40:48	24.3	7.08	95.5	7.78	33279	20.83
A/L/0%	Surrogate	24	11/17/2017 08:55:21	24.2	6.95	93.1	7.7	31849	19.85
A/N/0%	Surrogate	24	11/17/2017 08:55:45	24.3	6.69	89.9	7.66	31948	19.91
A/AC/3%	Surrogate	24	11/17/2017 08:56:06	24	7.02	93.9	7.75	31810	19.82
A/AC/5%	Surrogate	24	11/17/2017 08:56:35	24.2	6.65	89.1	7.63	31877	19.87
A/AC/10%	Surrogate	24	11/17/2017 08:56:54	24.2	6.85	92	7.67	32060	19.99
A/S/3%	Surrogate	24	11/17/2017 08:57:21	24.1	6.66	89.2	7.67	31681	19.73
A/S/5%	Surrogate	24	11/17/2017 08:57:43	24.3	7	94	7.74	31861	19.85
A/S/10%	Surrogate	24	11/17/2017 08:58:20	24.1	6.91	92.6	7.78	31952	19.92
A/B/3%	Surrogate	24	11/17/2017 08:58:42	24.2	7	94	7.76	32275	20.14
A/B/5%	Surrogate	24	11/17/2017 08:59:06	24.1	6.71	90	7.73	32637	20.39
A/B/10%	Surrogate	24	11/17/2017 08:59:23	24.1	6.91	92.4	7.8	31687	19.74
A/L/0%	Surrogate	25	11/18/2017 09:01:46	24.3	7.27	97.2	7.58	31738	19.77
A/N/0%	Surrogate	25	11/18/2017 09:02:07	24.4	6.88	92.3	7.53	31857	19.85
A/AC/3%	Surrogate	25	11/18/2017 09:02:26	24.1	7.22	96.2	7.59	31747	19.78
A/AC/5%	Surrogate	25	11/18/2017 09:02:41	24.2	6.4	85.3	7.5	31433	19.56
A/AC/10%	Surrogate	25	11/18/2017 09:02:54	24.3	6.71	89.8	7.52	32009	19.96
A/S/3%	Surrogate	25	11/18/2017 09:03:15	24.2	6.81	90.9	7.53	31786	19.8
A/S/5%	Surrogate	25	11/18/2017 09:03:29	24.3	7.11	95.3	7.57	31948	19.91
A/S/10%	Surrogate	25	11/18/2017 09:03:48	24.2	7.12	95.2	7.6	32112	20.03
A/B/3%	Surrogate	25	11/18/2017 09:04:08	24.2	7.12	95.3	7.59	32398	20.22
A/B/5%	Surrogate	25	11/18/2017 09:04:25	24.2	6.72	90	7.58	32805	20.51
A/B/10%	Surrogate	25	11/18/2017 09:04:46	24.1	7.1	94.8	7.64	32326	20.18
A/L/0%	Surrogate	26	11/19/2017 10:50:54	24.8	7.06	98.5	7.85	33175	20.75
A/N/0%	Surrogate	26	11/19/2017 10:51:16	25.1	6.48	91.1	7.71	33386	20.89
A/AC/3%	Surrogate	26	11/19/2017 10:51:39	24.9	6.94	97.1	7.86	33375	20.89
A/AC/5%	Surrogate	26	11/19/2017 10:51:53	24.9	7	97.9	7.78	33315	20.84
A/AC/10%	Surrogate	26	11/19/2017 10:52:09	24.9	6.64	93.2	7.75	33723	21.13
A/S/3%	Surrogate	26	11/19/2017 10:52:23	24.9	6.59	92	7.73	32475	20.27
A/S/5%	Surrogate	26	11/19/2017 10:52:36	25.1	6.82	95.5	7.8	32667	20.39
A/S/10%	Surrogate	26	11/19/2017 10:52:55	25	6.77	94.7	7.81	32783	20.48
A/B/3%	Surrogate	26	11/19/2017 10:53:10	24.9	6.93	97	7.83	33184	20.75
A/B/5%	Surrogate	26	11/19/2017 10:53:32	24.9	6.51	91.3	7.75	33707	21.12
A/B/10%	Surrogate	26	11/19/2017 10:53:56	24.8	6.8	95.3	7.85	33980	21.31
A/L/0%	Surrogate	27	11/20/2017 11:50:19	24.2	7.78	104.7	7.93	33083	20.7
A/N/0%	Surrogate	27	11/20/2017 11:50:40	24.4	7.03	95	7.73	33220	20.79
A/AC/3%	Surrogate	27	11/20/2017 11:50:56	24	7.53	101.1	7.86	33098	20.71
A/AC/5%	Surrogate	27	11/20/2017 11:51:16	24.1	7.87	105.9	7.89	33336	20.87
A/AC/10%	Surrogate	27	11/20/2017 11:51:34	24.2	7.17	96.9	7.78	33734	21.15

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Leptocheirus plumulosus* 28 Day Survival, Growth and Reproduction Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	24.0	7.2	95.0	7.8	32223.0	20.1
Minimum:	22.9	6.0	81.8	7.5	29928.0	18.5
Maximum:	25.1	7.9	105.9	8.0	34304.0	21.5

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
A/S/3%	Surrogate	27	11/20/2017 11:51:56	24.2	7.08	95.2	7.76	32695	20.43
A/S/5%	Surrogate	27	11/20/2017 11:52:14	24.3	7.4	99.7	7.85	32847	20.53
A/S/10%	Surrogate	27	11/20/2017 11:52:29	24.2	7.26	97.8	7.84	32992	20.63
A/B/3%	Surrogate	27	11/20/2017 11:52:51	24.2	7.36	99.3	7.85	33351	20.88
A/B/5%	Surrogate	27	11/20/2017 11:53:10	24.1	6.94	93.7	7.77	33802	21.19
A/B/10%	Surrogate	27	11/20/2017 11:53:25	24.3	7.19	96.9	7.83	33039	20.66
A/L/0%	Surrogate	28	11/21/2017 08:42:38	24.1	7.18	95.7	7.7	32907	20.58
A/N/0%	Surrogate	28	11/21/2017 08:43:03	24.4	6.56	87.9	7.56	33044	20.67
A/AC/3%	Surrogate	28	11/21/2017 08:43:40	24.2	6.77	90.4	7.64	32910	20.58
A/AC/5%	Surrogate	28	11/21/2017 08:44:02	24.4	6.43	86.2	7.58	33101	20.71
A/AC/10%	Surrogate	28	11/21/2017 08:44:22	24.4	6.76	90.8	7.6	33325	20.86
A/S/3%	Surrogate	28	11/21/2017 08:44:47	24.4	6.52	87.2	7.57	32446	20.25
A/S/5%	Surrogate	28	11/21/2017 08:45:07	24.5	6.94	93	7.66	32646	20.39
A/S/10%	Surrogate	28	11/21/2017 08:45:28	24.4	7.02	94.1	7.67	32749	20.46
A/B/3%	Surrogate	28	11/21/2017 08:45:45	24.4	6.97	93.5	7.65	33107	20.71
A/B/5%	Surrogate	28	11/21/2017 08:46:05	24.3	6.44	86.4	7.6	33548	21.02
A/B/10%	Surrogate	28	11/21/2017 08:46:22	24.4	6.88	92	7.69	32767	20.48

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Leptocheirus plumulosus* 28 Day Survival, Growth and Reproduction Sediment Evaluation

TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample ID	Day	ESI Code	Ammonia			Units	Sampled	Analyzed
			Total	Unionized	QLimit			
A/L/0%	00	29632-100	ND	0.0027		0.1 mg/L as N	10/24/17 1100	10/30/17 1230
A/N/0%	00	29632-101	ND	0.0026		0.1 mg/L as N	10/24/17 1100	10/30/17 1230
A/AC/3%	00	29632-102	ND	0.0022		0.1 mg/L as N	10/24/17 1100	10/30/17 1230
A/AC/5%	00	29632-103	ND	0.0018		0.1 mg/L as N	10/24/17 1100	10/30/17 1230
A/AC/10%	00	29632-104	ND	0.0019		0.1 mg/L as N	10/24/17 1100	10/30/17 1230
A/S/3%	00	29632-105	ND	0.0020		0.1 mg/L as N	10/24/17 1100	10/30/17 1230
A/S/5%	00	29632-106	ND	0.0021		0.1 mg/L as N	10/24/17 1100	10/30/17 1230
A/S/10%	00	29632-107	ND	0.0020		0.1 mg/L as N	10/24/17 1100	10/30/17 1230
A/B/3%	00	29632-108	ND	0.0024		0.1 mg/L as N	10/24/17 1100	10/30/17 1230
A/B/5%	00	29632-109	ND	0.0021		0.1 mg/L as N	10/24/17 1100	10/30/17 1230
A/B/10%	00	29632-110	ND	0.0019		0.1 mg/L as N	10/24/17 1100	10/30/17 1230
A/L/0%	07	29632-200	ND	0.0011		0.1 mg/L as N	10/31/17 1300	11/06/17 1000
A/N/0%	07	29632-201	ND	0.0013		0.1 mg/L as N	10/31/17 1300	11/06/17 1000
A/AC/3%	07	29632-202	ND	0.0014		0.1 mg/L as N	10/31/17 1300	11/06/17 1000
A/AC/5%	07	29632-203	ND	0.0012		0.1 mg/L as N	10/31/17 1300	11/06/17 1000
A/AC/10%	07	29632-204	ND	0.0013		0.1 mg/L as N	10/31/17 1300	11/06/17 1000
A/S/3%	07	29632-205	ND	0.0014		0.1 mg/L as N	10/31/17 1300	11/06/17 1000
A/S/5%	07	29632-206	ND	0.0015		0.1 mg/L as N	10/31/17 1300	11/06/17 1000
A/S/10%	07	29632-207	ND	0.0015		0.1 mg/L as N	10/31/17 1300	11/06/17 1000
A/B/3%	07	29632-208	ND	0.0017		0.1 mg/L as N	10/31/17 1300	11/06/17 1000
A/B/5%	07	29632-209	ND	0.0017		0.1 mg/L as N	10/31/17 1300	11/06/17 1000
A/B/10%	07	29632-210	ND	0.0017		0.1 mg/L as N	10/31/17 1300	11/06/17 1000
A/L/0%	14	29632-300	ND	0.0012		0.1 mg/L as N	11/07/17 1040	11/20/17 1140
A/N/0%	14	29632-301	ND	0.0014		0.1 mg/L as N	11/07/17 1040	11/20/17 1140
A/AC/3%	14	29632-302	ND	0.0013		0.1 mg/L as N	11/07/17 1040	11/20/17 1140
A/AC/5%	14	29632-303	ND	0.0014		0.1 mg/L as N	11/07/17 1040	11/20/17 1140
A/AC/10%	14	29632-304	ND	0.0013		0.1 mg/L as N	11/07/17 1040	11/20/17 1140
A/S/3%	14	29632-305	ND	0.0015		0.1 mg/L as N	11/07/17 1040	11/20/17 1140
A/S/5%	14	29632-306	ND	0.0016		0.1 mg/L as N	11/07/17 1040	11/20/17 1140
A/S/10%	14	29632-307	ND	0.0015		0.1 mg/L as N	11/07/17 1040	11/20/17 1140
A/B/3%	14	29632-308	ND	0.0016		0.1 mg/L as N	11/07/17 1040	11/20/17 1140
A/B/5%	14	29632-309	ND	0.0017		0.1 mg/L as N	11/07/17 1040	11/20/17 1140
A/B/10%	14	29632-310	ND	0.0018		0.1 mg/L as N	11/07/17 1040	11/20/17 1140
A/L/0%	21	29632-400	ND	0.0009		0.1 mg/L as N	11/14/17 1600	11/20/17 1140
A/N/0%	21	29632-401	0.13	0.0023		0.1 mg/L as N	11/14/17 1600	11/20/17 1140
A/AC/3%	21	29632-402	ND	0.0011		0.1 mg/L as N	11/14/17 1600	11/20/17 1140
A/AC/5%	21	29632-403	ND	0.0010		0.1 mg/L as N	11/14/17 1600	11/20/17 1140
A/AC/10%	21	29632-404	ND	0.0011		0.1 mg/L as N	11/14/17 1600	11/20/17 1140
A/S/3%	21	29632-405	ND	0.0011		0.1 mg/L as N	11/14/17 1600	11/20/17 1140
A/S/5%	21	29632-406	ND	0.0013		0.1 mg/L as N	11/14/17 1600	11/20/17 1140
A/S/10%	21	29632-407	ND	0.0013		0.1 mg/L as N	11/14/17 1600	11/20/17 1140
A/B/3%	21	29632-408	ND	0.0013		0.1 mg/L as N	11/14/17 1600	11/20/17 1140
A/B/5%	21	29632-409	ND	0.0013		0.1 mg/L as N	11/14/17 1600	11/20/17 1140
A/B/10%	21	29632-410	ND	0.0013		0.1 mg/L as N	11/14/17 1600	11/20/17 1140
A/L/0%	28	29632-500	ND	0.0013		0.1 mg/L as N	11/21/17 0900	11/29/17 1052
A/N/0%	28	29632-501	0.11	0.0021		0.1 mg/L as N	11/21/17 0900	11/29/17 1052

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Leptocheirus plumulosus* 28 Day Survival, Growth and Reproduction Sediment Evaluation

TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample ID	Day	ESI Code	Ammonia			Units	Sampled	Analyzed
			Total	Unionized	QLimit			
A/AC/3%	28	29632-502	ND	0.0011	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/AC/5%	28	29632-503	ND	0.0010	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/AC/10%	28	29632-504	ND	0.0011	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/S/3%	28	29632-505	ND	0.0010	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/S/5%	28	29632-506	ND	0.0012	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/S/10%	28	29632-507	ND	0.0012	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/B/3%	28	29632-508	ND	0.0012	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/B/5%	28	29632-509	ND	0.0011	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/B/10%	28	29632-510	ND	0.0013	0.1	mg/L as N	11/21/17 0900	11/29/17 1052

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Leptocheirus plumulosus* 28 Day Survival, Growth and Reproduction Sediment Evaluation

TASK: Pore Water Ammonia Summary
METHOD: SM 4500-NH3 G

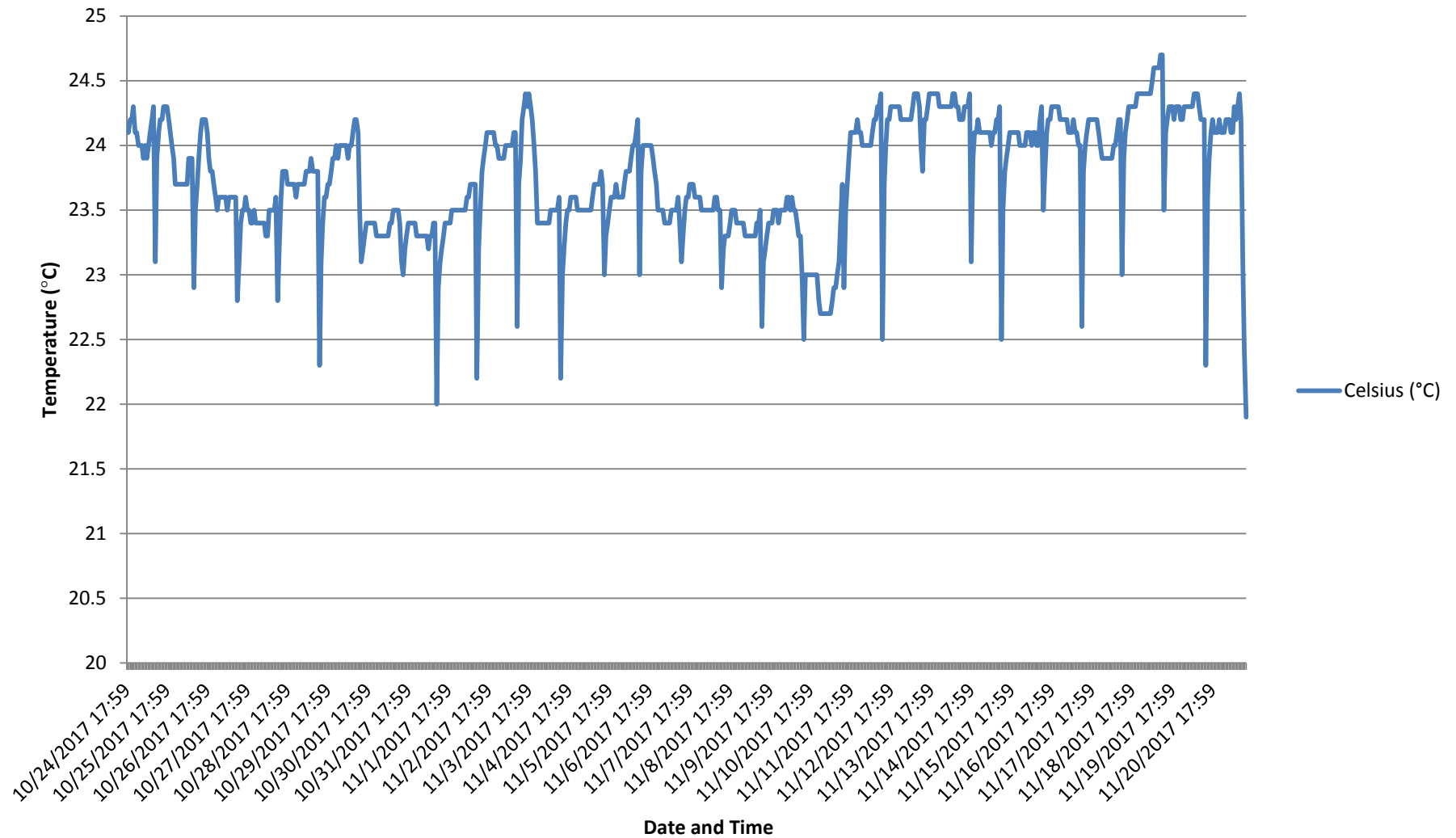
Sample ID	Day	ESI Code	Ammonia			Units	Sampled	Analyzed
			Total	Unionized	QLimit			
<u>Pre-Assay</u>								
A/L/0%	-04	29632-600	4.9	0.0315	0.1	mg/L as N	10/20/17 0930	10/24/17 0856
A/N/0%	-04	29632-601	0.53	0.0025	0.1	mg/L as N	10/20/17 0930	10/24/17 0856
A/AC/3%	-04	29632-602	0.31	0.0017	0.1	mg/L as N	10/20/17 0930	10/24/17 0856
A/AC/5%	-04	29632-603	0.53	0.0026	0.1	mg/L as N	10/20/17 0930	10/24/17 0856
A/AC/10%	-04	29632-604	1.1	0.0056	0.1	mg/L as N	10/20/17 0930	10/24/17 0856
A/S/3%	-04	29632-605	0.39	0.0028	0.1	mg/L as N	10/20/17 0930	10/24/17 0856
A/S/5%	-04	29632-606	0.69	0.0034	0.1	mg/L as N	10/20/17 0930	10/24/17 0856
A/S/10%	-04	29632-607	0.61	0.0048	0.1	mg/L as N	10/20/17 0930	10/24/17 0856
A/B/3%	-04	29632-608	1.8	0.0096	0.1	mg/L as N	10/20/17 0930	10/24/17 0856
A/B/5%	-04	29632-609	0.92	0.0066	0.1	mg/L as N	10/20/17 0930	10/24/17 0856
A/B/10%	-04	29632-610	1.8	0.0113	0.1	mg/L as N	10/20/17 0930	10/24/17 0856
<u>In-Life Assay</u>								
A/L/0%	00	29632-112	2.5	0.0089	0.1	mg/L as N	10/24/17 1100	10/30/17 1230
A/N/0%	00	29632-113	0.15	0.0011	0.1	mg/L as N	10/24/17 1100	10/30/17 1230
A/AC/3%	00	29632-114	0.12	0.0008	0.1	mg/L as N	10/24/17 1100	10/30/17 1230
A/AC/5%	00	29632-115	0.14	0.0013	0.1	mg/L as N	10/24/17 1100	10/30/17 1230
A/AC/10%	00	29632-116	0.18	0.0016	0.1	mg/L as N	10/24/17 1100	10/30/17 1230
A/S/3%	00	29632-117	0.68	0.0037	0.1	mg/L as N	10/24/17 1100	10/30/17 1230
A/S/5%	00	29632-118	0.17	0.0017	0.1	mg/L as N	10/24/17 1100	10/30/17 1230
A/S/10%	00	29632-119	0.51	0.0058	0.1	mg/L as N	10/24/17 1100	10/30/17 1230
A/B/3%	00	29632-120	1.25	0.0083	0.1	mg/L as N	10/24/17 1100	10/30/17 1230
A/B/5%	00	29632-121	1.4	0.0082	0.1	mg/L as N	10/24/17 1100	10/30/17 1230
A/B/10%	00	29632-122	1.1	0.0096	0.1	mg/L as N	10/24/17 1100	10/30/17 1230
A/L/0%	07	29632-212	1	0.0014	0.1	mg/L as N	10/31/17 1300	11/06/17 1000
A/N/0%	07	29632-213	ND	0.0003	0.1	mg/L as N	10/31/17 1300	11/06/17 1000
A/AC/3%	07	29632-214	ND	0.0004	0.1	mg/L as N	10/31/17 1300	11/06/17 1000
A/AC/5%	07	29632-215	0.11	0.0007	0.1	mg/L as N	10/31/17 1300	11/06/17 1000
A/AC/10%	07	29632-216	ND	0.0003	0.1	mg/L as N	10/31/17 1300	11/06/17 1000
A/S/3%	07	29632-217	0.31	0.0010	0.1	mg/L as N	10/31/17 1300	11/06/17 1000
A/S/5%	07	29632-218	ND	0.0005	0.1	mg/L as N	10/31/17 1300	11/06/17 1000
A/S/10%	07	29632-219	0.13	0.0018	0.1	mg/L as N	10/31/17 1300	11/06/17 1000
A/B/3%	07	29632-220	0.585	0.0019	0.1	mg/L as N	10/31/17 1300	11/06/17 1000
A/B/5%	07	29632-221	0.4	0.0022	0.1	mg/L as N	10/31/17 1300	11/06/17 1000
A/B/10%	07	29632-222	0.11	0.0009	0.1	mg/L as N	10/31/17 1300	11/06/17 1000
A/L/0%	14	29632-312	0.36	0.0007	0.1	mg/L as N	11/07/17 1040	11/20/17 1140
A/N/0%	14	29632-313	ND	0.0007	0.1	mg/L as N	11/07/17 1040	11/20/17 1140
A/AC/3%	14	29632-314	0.19	0.0008	0.1	mg/L as N	11/07/17 1040	11/20/17 1140
A/AC/5%	14	29632-315	0.13	0.0008	0.1	mg/L as N	11/07/17 1040	11/20/17 1140
A/AC/10%	14	29632-316	ND	0.0006	0.1	mg/L as N	11/07/17 1040	11/20/17 1140
A/S/3%	14	29632-317	0.31	0.0015	0.1	mg/L as N	11/07/17 1040	11/20/17 1140
A/S/5%	14	29632-318	ND	0.0008	0.1	mg/L as N	11/07/17 1040	11/20/17 1140
A/S/10%	14	29632-319	0.17	0.0016	0.1	mg/L as N	11/07/17 1040	11/20/17 1140
A/B/3%	14	29632-320	0.54	0.0032	0.1	mg/L as N	11/07/17 1040	11/20/17 1140
A/B/5%	14	29632-321	0.13	0.0029	0.1	mg/L as N	11/07/17 1040	11/20/17 1140
A/B/10%	14	29632-322	0.41	0.0049	0.1	mg/L as N	11/07/17 1040	11/20/17 1140

STUDY: 29632
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Leptocheirus plumulosus* 28 Day Survival, Growth and Reproduction Sediment Evaluation

TASK: Pore Water Ammonia Summary
METHOD: SM 4500-NH3 G

Sample ID	Day	ESI Code	Ammonia			Units	Sampled	Analyzed
			Total	Unionized	QLimit			
A/L/0%	21	29632-412	1.2	0.0042	0.1	mg/L as N	11/14/17 1600	11/20/17 1140
A/N/0%	21	29632-413	0.55	0.0043	0.1	mg/L as N	11/14/17 1600	11/20/17 1140
A/AC/3%	21	29632-414	0.24	0.0012	0.1	mg/L as N	11/14/17 1600	11/20/17 1140
A/AC/5%	21	29632-415	0.18	0.0017	0.1	mg/L as N	11/14/17 1600	11/20/17 1140
A/AC/10%	21	29632-416	0.16	0.0009	0.1	mg/L as N	11/14/17 1600	11/20/17 1140
A/S/3%	21	29632-417	0.28	0.0017	0.1	mg/L as N	11/14/17 1600	11/20/17 1140
A/S/5%	21	29632-418	0.25	0.0025	0.1	mg/L as N	11/14/17 1600	11/20/17 1140
A/S/10%	21	29632-419	0.19	0.0016	0.1	mg/L as N	11/14/17 1600	11/20/17 1140
A/B/3%	21	29632-420	0.48	0.0026	0.1	mg/L as N	11/14/17 1600	11/20/17 1140
A/B/5%	21	29632-421	0.25	0.0041	0.1	mg/L as N	11/14/17 1600	11/20/17 1140
A/B/10%	21	29632-422	0.4	0.0032	0.1	mg/L as N	11/14/17 1600	11/20/17 1140
A/L/0%	28	29632-512	1.1	0.0062	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/N/0%	28	29632-513	0.83	0.0104	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/AC/3%	28	29632-514	0.52	0.0054	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/AC/5%	28	29632-515	0.51	0.0049	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/AC/10%	28	29632-516	0.2	0.0016	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/S/3%	28	29632-517	0.37	0.0058	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/S/5%	28	29632-518	0.54	0.0069	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/S/10%	28	29632-519	0.27	0.0031	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/B/3%	28	29632-520	1	0.0180	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/B/5%	28	29632-521	0.34	0.0064	0.1	mg/L as N	11/21/17 0900	11/29/17 1052
A/B/10%	28	29632-522	0.62	0.0054	0.1	mg/L as N	11/21/17 0900	11/29/17 1052

29632 - USDC Penobscot , Winterport ME *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation



STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
1	10/24/2017 17:59	24.1
2	10/24/2017 18:59	24.1
3	10/24/2017 19:59	24.2
4	10/24/2017 20:59	24.2
5	10/24/2017 21:59	24.3
6	10/24/2017 22:59	24.1
7	10/24/2017 23:59	24.1
8	10/25/2017 0:59	24
9	10/25/2017 1:59	24
10	10/25/2017 2:59	24
11	10/25/2017 3:59	23.9
12	10/25/2017 4:59	24
13	10/25/2017 5:59	23.9
14	10/25/2017 6:59	24
15	10/25/2017 7:59	24.1
16	10/25/2017 8:59	24.2
17	10/25/2017 9:59	24.3
18	10/25/2017 10:59	23.1
19	10/25/2017 11:59	23.9
20	10/25/2017 12:59	24.1
21	10/25/2017 13:59	24.2
22	10/25/2017 14:59	24.2
23	10/25/2017 15:59	24.3
24	10/25/2017 16:59	24.3
25	10/25/2017 17:59	24.3
26	10/25/2017 18:59	24.2
27	10/25/2017 19:59	24.1
28	10/25/2017 20:59	24
29	10/25/2017 21:59	23.9
30	10/25/2017 22:59	23.7
31	10/25/2017 23:59	23.7
32	10/26/2017 0:59	23.7
33	10/26/2017 1:59	23.7
34	10/26/2017 2:59	23.7
35	10/26/2017 3:59	23.7

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
36	10/26/2017 4:59	23.7
37	10/26/2017 5:59	23.7
38	10/26/2017 6:59	23.9
39	10/26/2017 7:59	23.9
40	10/26/2017 8:59	23.9
41	10/26/2017 9:59	22.9
42	10/26/2017 10:59	23.5
43	10/26/2017 11:59	23.7
44	10/26/2017 12:59	23.9
45	10/26/2017 13:59	24.1
46	10/26/2017 14:59	24.2
47	10/26/2017 15:59	24.2
48	10/26/2017 16:59	24.2
49	10/26/2017 17:59	24.1
50	10/26/2017 18:59	23.9
51	10/26/2017 19:59	23.8
52	10/26/2017 20:59	23.8
53	10/26/2017 21:59	23.7
54	10/26/2017 22:59	23.6
55	10/26/2017 23:59	23.5
56	10/27/2017 0:59	23.6
57	10/27/2017 1:59	23.6
58	10/27/2017 2:59	23.6
59	10/27/2017 3:59	23.6
60	10/27/2017 4:59	23.6
61	10/27/2017 5:59	23.5
62	10/27/2017 6:59	23.6
63	10/27/2017 7:59	23.6
64	10/27/2017 8:59	23.6
65	10/27/2017 9:59	23.6
66	10/27/2017 10:59	23.6
67	10/27/2017 11:59	22.8
68	10/27/2017 12:59	23.1
69	10/27/2017 13:59	23.4
70	10/27/2017 14:59	23.5

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
71	10/27/2017 15:59	23.5
72	10/27/2017 16:59	23.6
73	10/27/2017 17:59	23.5
74	10/27/2017 18:59	23.5
75	10/27/2017 19:59	23.4
76	10/27/2017 20:59	23.4
77	10/27/2017 21:59	23.5
78	10/27/2017 22:59	23.4
79	10/27/2017 23:59	23.4
80	10/28/2017 0:59	23.4
81	10/28/2017 1:59	23.4
82	10/28/2017 2:59	23.4
83	10/28/2017 3:59	23.4
84	10/28/2017 4:59	23.3
85	10/28/2017 5:59	23.3
86	10/28/2017 6:59	23.5
87	10/28/2017 7:59	23.5
88	10/28/2017 8:59	23.5
89	10/28/2017 9:59	23.5
90	10/28/2017 10:59	23.6
91	10/28/2017 11:59	22.8
92	10/28/2017 12:59	23.2
93	10/28/2017 13:59	23.6
94	10/28/2017 14:59	23.8
95	10/28/2017 15:59	23.8
96	10/28/2017 16:59	23.8
97	10/28/2017 17:59	23.7
98	10/28/2017 18:59	23.7
99	10/28/2017 19:59	23.7
100	10/28/2017 20:59	23.7
101	10/28/2017 21:59	23.7
102	10/28/2017 22:59	23.6
103	10/28/2017 23:59	23.7
104	10/29/2017 0:59	23.7
105	10/29/2017 1:59	23.7

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
106	10/29/2017 2:59	23.7
107	10/29/2017 3:59	23.7
108	10/29/2017 4:59	23.8
109	10/29/2017 5:59	23.8
110	10/29/2017 6:59	23.8
111	10/29/2017 7:59	23.9
112	10/29/2017 8:59	23.8
113	10/29/2017 9:59	23.8
114	10/29/2017 10:59	23.8
115	10/29/2017 11:59	23.8
116	10/29/2017 12:59	22.3
117	10/29/2017 13:59	23.1
118	10/29/2017 14:59	23.4
119	10/29/2017 15:59	23.6
120	10/29/2017 16:59	23.6
121	10/29/2017 17:59	23.7
122	10/29/2017 18:59	23.7
123	10/29/2017 19:59	23.8
124	10/29/2017 20:59	23.9
125	10/29/2017 21:59	23.9
126	10/29/2017 22:59	24
127	10/29/2017 23:59	23.9
128	10/30/2017 0:59	24
129	10/30/2017 1:59	24
130	10/30/2017 2:59	24
131	10/30/2017 3:59	24
132	10/30/2017 4:59	24
133	10/30/2017 5:59	23.9
134	10/30/2017 6:59	24
135	10/30/2017 7:59	24
136	10/30/2017 8:59	24.1
137	10/30/2017 9:59	24.2
138	10/30/2017 10:59	24.2
139	10/30/2017 11:59	24.1
140	10/30/2017 12:59	23.5

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
141	10/30/2017 13:59	23.1
142	10/30/2017 14:59	23.2
143	10/30/2017 15:59	23.3
144	10/30/2017 16:59	23.4
145	10/30/2017 17:59	23.4
146	10/30/2017 18:59	23.4
147	10/30/2017 19:59	23.4
148	10/30/2017 20:59	23.4
149	10/30/2017 21:59	23.4
150	10/30/2017 22:59	23.3
151	10/30/2017 23:59	23.3
152	10/31/2017 0:59	23.3
153	10/31/2017 1:59	23.3
154	10/31/2017 2:59	23.3
155	10/31/2017 3:59	23.3
156	10/31/2017 4:59	23.3
157	10/31/2017 5:59	23.3
158	10/31/2017 6:59	23.4
159	10/31/2017 7:59	23.4
160	10/31/2017 8:59	23.5
161	10/31/2017 9:59	23.5
162	10/31/2017 10:59	23.5
163	10/31/2017 11:59	23.5
164	10/31/2017 12:59	23.4
165	10/31/2017 13:59	23.1
166	10/31/2017 14:59	23
167	10/31/2017 15:59	23.2
168	10/31/2017 16:59	23.3
169	10/31/2017 17:59	23.4
170	10/31/2017 18:59	23.4
171	10/31/2017 19:59	23.4
172	10/31/2017 20:59	23.4
173	10/31/2017 21:59	23.4
174	10/31/2017 22:59	23.3
175	10/31/2017 23:59	23.3

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
176	11/1/2017 0:59	23.3
177	11/1/2017 1:59	23.3
178	11/1/2017 2:59	23.3
179	11/1/2017 3:59	23.3
180	11/1/2017 4:59	23.3
181	11/1/2017 5:59	23.2
182	11/1/2017 6:59	23.3
183	11/1/2017 7:59	23.3
184	11/1/2017 8:59	23.4
185	11/1/2017 9:59	23.4
186	11/1/2017 10:59	22
187	11/1/2017 11:59	22.9
188	11/1/2017 12:59	23.1
189	11/1/2017 13:59	23.2
190	11/1/2017 14:59	23.3
191	11/1/2017 15:59	23.4
192	11/1/2017 16:59	23.4
193	11/1/2017 17:59	23.4
194	11/1/2017 18:59	23.4
195	11/1/2017 19:59	23.5
196	11/1/2017 20:59	23.5
197	11/1/2017 21:59	23.5
198	11/1/2017 22:59	23.5
199	11/1/2017 23:59	23.5
200	11/2/2017 0:59	23.5
201	11/2/2017 1:59	23.5
202	11/2/2017 2:59	23.5
203	11/2/2017 3:59	23.5
204	11/2/2017 4:59	23.6
205	11/2/2017 5:59	23.6
206	11/2/2017 6:59	23.7
207	11/2/2017 7:59	23.7
208	11/2/2017 8:59	23.7
209	11/2/2017 9:59	23.7
210	11/2/2017 10:59	22.2

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
211	11/2/2017 11:59	23.2
212	11/2/2017 12:59	23.5
213	11/2/2017 13:59	23.8
214	11/2/2017 14:59	23.9
215	11/2/2017 15:59	24
216	11/2/2017 16:59	24.1
217	11/2/2017 17:59	24.1
218	11/2/2017 18:59	24.1
219	11/2/2017 19:59	24.1
220	11/2/2017 20:59	24.1
221	11/2/2017 21:59	24
222	11/2/2017 22:59	24
223	11/2/2017 23:59	23.9
224	11/3/2017 0:59	23.9
225	11/3/2017 1:59	23.9
226	11/3/2017 2:59	23.9
227	11/3/2017 3:59	24
228	11/3/2017 4:59	24
229	11/3/2017 5:59	24
230	11/3/2017 6:59	24
231	11/3/2017 7:59	24
232	11/3/2017 8:59	24.1
233	11/3/2017 9:59	24.1
234	11/3/2017 10:59	22.6
235	11/3/2017 11:59	23.7
236	11/3/2017 12:59	23.9
237	11/3/2017 13:59	24.2
238	11/3/2017 14:59	24.3
239	11/3/2017 15:59	24.4
240	11/3/2017 16:59	24.3
241	11/3/2017 17:59	24.4
242	11/3/2017 18:59	24.3
243	11/3/2017 19:59	24.2
244	11/3/2017 20:59	24
245	11/3/2017 21:59	23.8

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
246	11/3/2017 22:59	23.4
247	11/3/2017 23:59	23.4
248	11/4/2017 0:59	23.4
249	11/4/2017 1:59	23.4
250	11/4/2017 2:59	23.4
251	11/4/2017 3:59	23.4
252	11/4/2017 4:59	23.4
253	11/4/2017 5:59	23.4
254	11/4/2017 6:59	23.5
255	11/4/2017 7:59	23.5
256	11/4/2017 8:59	23.5
257	11/4/2017 9:59	23.5
258	11/4/2017 10:59	23.5
259	11/4/2017 11:59	23.6
260	11/4/2017 12:59	22.2
261	11/4/2017 13:59	23
262	11/4/2017 14:59	23.2
263	11/4/2017 15:59	23.4
264	11/4/2017 16:59	23.5
265	11/4/2017 17:59	23.5
266	11/4/2017 18:59	23.6
267	11/4/2017 19:59	23.6
268	11/4/2017 20:59	23.6
269	11/4/2017 21:59	23.6
270	11/4/2017 22:59	23.5
271	11/4/2017 23:59	23.5
272	11/5/2017 0:59	23.5
273	11/5/2017 1:59	23.5
274	11/5/2017 2:59	23.5
275	11/5/2017 3:59	23.5
276	11/5/2017 4:59	23.5
277	11/5/2017 5:59	23.5
278	11/5/2017 6:59	23.5
279	11/5/2017 7:59	23.6
280	11/5/2017 8:59	23.7

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
281	11/5/2017 9:59	23.7
282	11/5/2017 10:59	23.7
283	11/5/2017 11:59	23.7
284	11/5/2017 12:59	23.8
285	11/5/2017 13:59	23.7
286	11/5/2017 14:59	23
287	11/5/2017 15:59	23.3
288	11/5/2017 16:59	23.4
289	11/5/2017 17:59	23.5
290	11/5/2017 18:59	23.6
291	11/5/2017 19:59	23.6
292	11/5/2017 20:59	23.6
293	11/5/2017 21:59	23.7
294	11/5/2017 22:59	23.6
295	11/5/2017 23:59	23.6
296	11/6/2017 0:59	23.6
297	11/6/2017 1:59	23.6
298	11/6/2017 2:59	23.7
299	11/6/2017 3:59	23.8
300	11/6/2017 4:59	23.8
301	11/6/2017 5:59	23.8
302	11/6/2017 6:59	23.9
303	11/6/2017 7:59	24
304	11/6/2017 8:59	24
305	11/6/2017 9:59	24.1
306	11/6/2017 10:59	24.2
307	11/6/2017 11:59	23
308	11/6/2017 12:59	23.8
309	11/6/2017 13:59	24
310	11/6/2017 14:59	24
311	11/6/2017 15:59	24
312	11/6/2017 16:59	24
313	11/6/2017 17:59	24
314	11/6/2017 18:59	24
315	11/6/2017 19:59	23.9

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
316	11/6/2017 20:59	23.8
317	11/6/2017 21:59	23.7
318	11/6/2017 22:59	23.5
319	11/6/2017 23:59	23.5
320	11/7/2017 0:59	23.5
321	11/7/2017 1:59	23.5
322	11/7/2017 2:59	23.4
323	11/7/2017 3:59	23.4
324	11/7/2017 4:59	23.4
325	11/7/2017 5:59	23.4
326	11/7/2017 6:59	23.5
327	11/7/2017 7:59	23.5
328	11/7/2017 8:59	23.5
329	11/7/2017 9:59	23.5
330	11/7/2017 10:59	23.6
331	11/7/2017 11:59	23.4
332	11/7/2017 12:59	23.1
333	11/7/2017 13:59	23.3
334	11/7/2017 14:59	23.5
335	11/7/2017 15:59	23.6
336	11/7/2017 16:59	23.6
337	11/7/2017 17:59	23.7
338	11/7/2017 18:59	23.7
339	11/7/2017 19:59	23.7
340	11/7/2017 20:59	23.6
341	11/7/2017 21:59	23.6
342	11/7/2017 22:59	23.6
343	11/7/2017 23:59	23.6
344	11/8/2017 0:59	23.5
345	11/8/2017 1:59	23.5
346	11/8/2017 2:59	23.5
347	11/8/2017 3:59	23.5
348	11/8/2017 4:59	23.5
349	11/8/2017 5:59	23.5
350	11/8/2017 6:59	23.5

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
351	11/8/2017 7:59	23.5
352	11/8/2017 8:59	23.6
353	11/8/2017 9:59	23.6
354	11/8/2017 10:59	23.5
355	11/8/2017 11:59	23.5
356	11/8/2017 12:59	22.9
357	11/8/2017 13:59	23.2
358	11/8/2017 14:59	23.3
359	11/8/2017 15:59	23.3
360	11/8/2017 16:59	23.3
361	11/8/2017 17:59	23.4
362	11/8/2017 18:59	23.5
363	11/8/2017 19:59	23.5
364	11/8/2017 20:59	23.5
365	11/8/2017 21:59	23.4
366	11/8/2017 22:59	23.4
367	11/8/2017 23:59	23.4
368	11/9/2017 0:59	23.4
369	11/9/2017 1:59	23.4
370	11/9/2017 2:59	23.3
371	11/9/2017 3:59	23.3
372	11/9/2017 4:59	23.3
373	11/9/2017 5:59	23.3
374	11/9/2017 6:59	23.3
375	11/9/2017 7:59	23.3
376	11/9/2017 8:59	23.3
377	11/9/2017 9:59	23.4
378	11/9/2017 10:59	23.4
379	11/9/2017 11:59	23.5
380	11/9/2017 12:59	22.6
381	11/9/2017 13:59	23.1
382	11/9/2017 14:59	23.2
383	11/9/2017 15:59	23.3
384	11/9/2017 16:59	23.4
385	11/9/2017 17:59	23.4

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
386	11/9/2017 18:59	23.4
387	11/9/2017 19:59	23.5
388	11/9/2017 20:59	23.5
389	11/9/2017 21:59	23.5
390	11/9/2017 22:59	23.4
391	11/9/2017 23:59	23.5
392	11/10/2017 0:59	23.5
393	11/10/2017 1:59	23.5
394	11/10/2017 2:59	23.5
395	11/10/2017 3:59	23.6
396	11/10/2017 4:59	23.6
397	11/10/2017 5:59	23.5
398	11/10/2017 6:59	23.6
399	11/10/2017 7:59	23.5
400	11/10/2017 8:59	23.5
401	11/10/2017 9:59	23.4
402	11/10/2017 10:59	23.3
403	11/10/2017 11:59	23.3
404	11/10/2017 12:59	23
405	11/10/2017 13:59	22.5
406	11/10/2017 14:59	23
407	11/10/2017 15:59	23
408	11/10/2017 16:59	23
409	11/10/2017 17:59	23
410	11/10/2017 18:59	23
411	11/10/2017 19:59	23
412	11/10/2017 20:59	23
413	11/10/2017 21:59	23
414	11/10/2017 22:59	22.8
415	11/10/2017 23:59	22.7
416	11/11/2017 0:59	22.7
417	11/11/2017 1:59	22.7
418	11/11/2017 2:59	22.7
419	11/11/2017 3:59	22.7
420	11/11/2017 4:59	22.7

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CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
421	11/11/2017 5:59	22.7
422	11/11/2017 6:59	22.8
423	11/11/2017 7:59	22.9
424	11/11/2017 8:59	22.9
425	11/11/2017 9:59	23
426	11/11/2017 10:59	23.1
427	11/11/2017 11:59	23.4
428	11/11/2017 12:59	23.7
429	11/11/2017 13:59	22.9
430	11/11/2017 14:59	23.5
431	11/11/2017 15:59	23.7
432	11/11/2017 16:59	23.9
433	11/11/2017 17:59	24.1
434	11/11/2017 18:59	24.1
435	11/11/2017 19:59	24.1
436	11/11/2017 20:59	24.1
437	11/11/2017 21:59	24.2
438	11/11/2017 22:59	24.1
439	11/11/2017 23:59	24.1
440	11/12/2017 0:59	24
441	11/12/2017 1:59	24
442	11/12/2017 2:59	24
443	11/12/2017 3:59	24
444	11/12/2017 4:59	24
445	11/12/2017 5:59	24
446	11/12/2017 6:59	24.1
447	11/12/2017 7:59	24.2
448	11/12/2017 8:59	24.2
449	11/12/2017 9:59	24.3
450	11/12/2017 10:59	24.3
451	11/12/2017 11:59	24.4
452	11/12/2017 12:59	22.5
453	11/12/2017 13:59	23.7
454	11/12/2017 14:59	24
455	11/12/2017 15:59	24.2

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CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
456	11/12/2017 16:59	24.2
457	11/12/2017 17:59	24.3
458	11/12/2017 18:59	24.3
459	11/12/2017 19:59	24.3
460	11/12/2017 20:59	24.3
461	11/12/2017 21:59	24.3
462	11/12/2017 22:59	24.3
463	11/12/2017 23:59	24.2
464	11/13/2017 0:59	24.2
465	11/13/2017 1:59	24.2
466	11/13/2017 2:59	24.2
467	11/13/2017 3:59	24.2
468	11/13/2017 4:59	24.2
469	11/13/2017 5:59	24.2
470	11/13/2017 6:59	24.3
471	11/13/2017 7:59	24.4
472	11/13/2017 8:59	24.4
473	11/13/2017 9:59	24.4
474	11/13/2017 10:59	24.3
475	11/13/2017 11:59	24
476	11/13/2017 12:59	23.8
477	11/13/2017 13:59	24.2
478	11/13/2017 14:59	24.2
479	11/13/2017 15:59	24.3
480	11/13/2017 16:59	24.4
481	11/13/2017 17:59	24.4
482	11/13/2017 18:59	24.4
483	11/13/2017 19:59	24.4
484	11/13/2017 20:59	24.4
485	11/13/2017 21:59	24.4
486	11/13/2017 22:59	24.3
487	11/13/2017 23:59	24.3
488	11/14/2017 0:59	24.3
489	11/14/2017 1:59	24.3
490	11/14/2017 2:59	24.3

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
491	11/14/2017 3:59	24.3
492	11/14/2017 4:59	24.3
493	11/14/2017 5:59	24.3
494	11/14/2017 6:59	24.4
495	11/14/2017 7:59	24.4
496	11/14/2017 8:59	24.3
497	11/14/2017 9:59	24.3
498	11/14/2017 10:59	24.2
499	11/14/2017 11:59	24.2
500	11/14/2017 12:59	24.2
501	11/14/2017 13:59	24.3
502	11/14/2017 14:59	24.3
503	11/14/2017 15:59	24.3
504	11/14/2017 16:59	24.4
505	11/14/2017 17:59	23.1
506	11/14/2017 18:59	23.9
507	11/14/2017 19:59	24.1
508	11/14/2017 20:59	24.1
509	11/14/2017 21:59	24.2
510	11/14/2017 22:59	24.1
511	11/14/2017 23:59	24.1
512	11/15/2017 0:59	24.1
513	11/15/2017 1:59	24.1
514	11/15/2017 2:59	24.1
515	11/15/2017 3:59	24.1
516	11/15/2017 4:59	24.1
517	11/15/2017 5:59	24
518	11/15/2017 6:59	24.1
519	11/15/2017 7:59	24.1
520	11/15/2017 8:59	24.2
521	11/15/2017 9:59	24.2
522	11/15/2017 10:59	24.3
523	11/15/2017 11:59	22.5
524	11/15/2017 12:59	23.5
525	11/15/2017 13:59	23.8

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
526	11/15/2017 14:59	23.9
527	11/15/2017 15:59	24
528	11/15/2017 16:59	24.1
529	11/15/2017 17:59	24.1
530	11/15/2017 18:59	24.1
531	11/15/2017 19:59	24.1
532	11/15/2017 20:59	24.1
533	11/15/2017 21:59	24.1
534	11/15/2017 22:59	24
535	11/15/2017 23:59	24
536	11/16/2017 0:59	24
537	11/16/2017 1:59	24
538	11/16/2017 2:59	24.1
539	11/16/2017 3:59	24.1
540	11/16/2017 4:59	24.1
541	11/16/2017 5:59	24
542	11/16/2017 6:59	24.1
543	11/16/2017 7:59	24.1
544	11/16/2017 8:59	24
545	11/16/2017 9:59	24
546	11/16/2017 10:59	24.2
547	11/16/2017 11:59	24.3
548	11/16/2017 12:59	23.5
549	11/16/2017 13:59	23.8
550	11/16/2017 14:59	24.1
551	11/16/2017 15:59	24.2
552	11/16/2017 16:59	24.2
553	11/16/2017 17:59	24.3
554	11/16/2017 18:59	24.3
555	11/16/2017 19:59	24.3
556	11/16/2017 20:59	24.3
557	11/16/2017 21:59	24.3
558	11/16/2017 22:59	24.2
559	11/16/2017 23:59	24.2
560	11/17/2017 0:59	24.2

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
561	11/17/2017 1:59	24.2
562	11/17/2017 2:59	24.2
563	11/17/2017 3:59	24.1
564	11/17/2017 4:59	24.1
565	11/17/2017 5:59	24.1
566	11/17/2017 6:59	24.2
567	11/17/2017 7:59	24.1
568	11/17/2017 8:59	24.1
569	11/17/2017 9:59	24
570	11/17/2017 10:59	24
571	11/17/2017 11:59	22.6
572	11/17/2017 12:59	23.8
573	11/17/2017 13:59	24
574	11/17/2017 14:59	24.1
575	11/17/2017 15:59	24.2
576	11/17/2017 16:59	24.2
577	11/17/2017 17:59	24.2
578	11/17/2017 18:59	24.2
579	11/17/2017 19:59	24.2
580	11/17/2017 20:59	24.2
581	11/17/2017 21:59	24.1
582	11/17/2017 22:59	24
583	11/17/2017 23:59	23.9
584	11/18/2017 0:59	23.9
585	11/18/2017 1:59	23.9
586	11/18/2017 2:59	23.9
587	11/18/2017 3:59	23.9
588	11/18/2017 4:59	23.9
589	11/18/2017 5:59	23.9
590	11/18/2017 6:59	24
591	11/18/2017 7:59	24
592	11/18/2017 8:59	24.1
593	11/18/2017 9:59	24.2
594	11/18/2017 10:59	24.2
595	11/18/2017 11:59	23

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
596	11/18/2017 12:59	23.9
597	11/18/2017 13:59	24.1
598	11/18/2017 14:59	24.2
599	11/18/2017 15:59	24.3
600	11/18/2017 16:59	24.3
601	11/18/2017 17:59	24.3
602	11/18/2017 18:59	24.3
603	11/18/2017 19:59	24.3
604	11/18/2017 20:59	24.4
605	11/18/2017 21:59	24.4
606	11/18/2017 22:59	24.4
607	11/18/2017 23:59	24.4
608	11/19/2017 0:59	24.4
609	11/19/2017 1:59	24.4
610	11/19/2017 2:59	24.4
611	11/19/2017 3:59	24.4
612	11/19/2017 4:59	24.4
613	11/19/2017 5:59	24.5
614	11/19/2017 6:59	24.6
615	11/19/2017 7:59	24.6
616	11/19/2017 8:59	24.6
617	11/19/2017 9:59	24.6
618	11/19/2017 10:59	24.7
619	11/19/2017 11:59	24.7
620	11/19/2017 12:59	23.5
621	11/19/2017 13:59	24.1
622	11/19/2017 14:59	24.2
623	11/19/2017 15:59	24.3
624	11/19/2017 16:59	24.3
625	11/19/2017 17:59	24.3
626	11/19/2017 18:59	24.2
627	11/19/2017 19:59	24.3
628	11/19/2017 20:59	24.3
629	11/19/2017 21:59	24.3
630	11/19/2017 22:59	24.2

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
631	11/19/2017 23:59	24.2
632	11/20/2017 0:59	24.3
633	11/20/2017 1:59	24.3
634	11/20/2017 2:59	24.3
635	11/20/2017 3:59	24.3
636	11/20/2017 4:59	24.3
637	11/20/2017 5:59	24.3
638	11/20/2017 6:59	24.4
639	11/20/2017 7:59	24.4
640	11/20/2017 8:59	24.4
641	11/20/2017 9:59	24.3
642	11/20/2017 10:59	24.2
643	11/20/2017 11:59	24.2
644	11/20/2017 12:59	24.2
645	11/20/2017 13:59	22.3
646	11/20/2017 14:59	23.6
647	11/20/2017 15:59	23.9
648	11/20/2017 16:59	24.1
649	11/20/2017 17:59	24.2
650	11/20/2017 18:59	24.1
651	11/20/2017 19:59	24.1
652	11/20/2017 20:59	24.1
653	11/20/2017 21:59	24.2
654	11/20/2017 22:59	24.1
655	11/20/2017 23:59	24.1
656	11/21/2017 0:59	24.1
657	11/21/2017 1:59	24.2
658	11/21/2017 2:59	24.2
659	11/21/2017 3:59	24.2
660	11/21/2017 4:59	24.1
661	11/21/2017 5:59	24.1
662	11/21/2017 6:59	24.3
663	11/21/2017 7:59	24.2
664	11/21/2017 8:59	24.3
665	11/21/2017 9:59	24.4

STUDY: 29632

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *L. plumulosus* 28 Day Survival, Growth and Reproduction Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10015860

Mean: 23.8 °C
Minimum: 21.9 °C
Maximum: 24.7 °C

Reading	Time	Celsius (°C)
666	11/21/2017 10:59	24.2
667	11/21/2017 11:59	23.1
668	11/21/2017 12:59	22.4
669	11/21/2017 13:59	21.9

Amendment Addition Documentation

N. virens

Project Number: 29633 Balance ID: Mettler PJ4000
 Project Name: Penobscot Tier III Prepared Date: 10/10/17
 Amendment Added: None Prepared Time: 1400
 Protocol: ESI SOP: QA-1442 R0 Initials: JTP/DD
 Image Obtained? Yes

These amended samples were prepared according to protocols cited using the samples and amounts listed below:

Concentration	Final ID	ESI Sample ID	Total Amendment Added per Treatment (g)	Final Volume (G)	# Of Test Replicates	Volume Added per Test Replicate (L)
Laboratory Control	P/L/0%	29633-000	0	NA	5	6
Mendall Marsh Control	P/N/0%	29633-001	0	NA	5	6
NOTES						
Samples were thoroughly homogenized prior to amendment addition.						
9oz jars were filled with a representative aliquot of the amended sample.						
G = Gallons, g = grams						

Amendment Addition Documentation

N. virens

Project Number: 29633 Balance ID: Mettler PJ4000
 Project Name: Penobscot Tier III Prepared Date: 10/10/17
 Amendment Added: Activated Carbon (A-4814) Prepared Time: 1300
 Protocol: ESI SOP: QA-1442 R0 Initials: BG/ JTP/ DD
 Image Obtained? Yes

These amended samples were prepared according to protocols cited using the samples and amounts listed below:

Concentration (%)	Final ID	ESI Sample ID	Total Amendment Added per Treatment (g)	Final Volume (G)	# Of Test Replicates	Volume Added per Test Replicate (L)
3	P/AC/3%	29633-002	417	8	5	6
5	P/AC/5%	29633-003	696	8	5	6
10	P/AC/10%	29633-004	1391	8	5	6
NOTES						
Samples were thoroughly homogenized prior to amendment addition.						
9oz jars were filled with a representative aliquot of the amended sample.						
G = Gallons, g = grams						

Amendment Addition Documentation

N. virens

Project Number: 29633 Balance ID: Mettler PJ4000
 Project Name: Penobscot Tier III Prepared Date: 10/10/17
 Amendment Added: SediMite (A-4786) Prepared Time: 1400
 Protocol: ESI SOP: QA-1442 R0 Initials: DB/JTP
 Image Obtained? Yes

These amended samples were prepared according to protocols cited using the samples and amounts listed below:

Concentration (%)	Final ID	ESI Sample ID	Total Amendment Added per Treatment (g)	Final Volume (G)	# Of Test Replicates	Volume Added per Test Replicate (L)
3	P/S/3%	29633-005	835	8	5	6
5	P/S/5%	29633-006	1391	8	5	6
10	P/S/10%	29633-007	2782	8	5	6
NOTES						
Samples were thoroughly homogenized prior to amendment addition.						
9oz jars were filled with a representative aliquot of the amended sample.						
G = Gallons, g = grams						

Amendment Addition Documentation

N. virens

Project Number: 29633 Balance ID: Mettler PJ4000
 Project Name: Penobscot Tier III Prepared Date: 10/10/17
 Amendment Added: Biochar (A-4796) Prepared Time: 1510
 Protocol: ESI SOP: QA-1442 R0 Initials: BG/JTP
 Image Obtained? Yes

These amended samples were prepared according to protocols cited using the samples and amounts listed below:

Concentration (%)	Final ID	ESI Sample ID	Total Amendment Added per Treatment (g)	Final Volume (G)	# Of Test Replicates	Volume Added per Test Replicate (L)
3	P/B/3%	29633-008	491	8	5	6
5	P/B/5%	29633-009	818	8	5	6
10	P/B/10%	29633-010	1636	8	5	6



NOTES

Samples were thoroughly homogenized prior to amendment addition.

9oz jars were filled with a representative aliquot of the amended sample.

G = Gallons, g = grams

Pre-Assay Monitoring
Nereis virens
 ACUTE EXPOSURE SEDIMENT ASSAY

STUDY #: 29633 WATER BATH ID: TCR 102
 CLIENT: AMEC - Penobscot PROJECT: Penobscot Tier III

Day	Flow Rate Checked		Comments	Date	Initial
	FIRST	SECOND			
sediment loaded to vessels				10/10/17	DD
1	✓	✓	test aerated	10/11/17	DD
2	✓	✓		10/12/17	BG
3	✓	✓		10/13/17	BG
4	✓	✓		10/14/17	BG
5	✓	✓		10/15/17	DD
6	✓	✓		10/16/17	BG
7	✓	✓		10/17/17	DD
8	✓	✓		10/18/17	DD
9	✓	✓		10/19/17	BG
10	✓	✓		10/20/17	BG
11	✓	✓		10/21/17	BG
12	✓	✓		10/22/17	BG
13	✓	✓		10/23/17	DD
14					



Aquatic Research Organisms

99NVAR0102317

DATA SHEET/ CUSTODY CHAIN

I. Organism History

Species Neanthes (Neries) virens

Source: Lab reared _____ Hatchery reared _____ Field collected X

Hatch date Mixed aged adults Receipt date 10/23/17

Lot number 102317MV Strain Wild

Brood origination: Damariscotta River, Boothbay Harbor, Maine

II. Water Quality

Temperature 13 °C Salinity 28-32 ppt D.O. Saturated ppm

pH 8.0-8.4 su Hardness N.A. ppm Alkalinity N.A. ppm

III. Culture Conditions

Freshwater _____ Saltwater X Other _____

Recirculating _____ Flow through _____ Static _____

DIET: Flake food _____ Phytoplankton _____ Trout chow _____

Artemia _____ Rotifers _____ YCT _____ Other Not fed

Prophylactic treatments: _____

Comments: Held at 4C on moist seaweed. Shipped with gel ice packs to keep cool

IV. Shipping Information

Client: ESI # of Organisms 1500+

Carrier: PICK UP Date shipped 10/23/17

Tracking # _____ # of boxes 12

Released by: [Signature] Date: 10/23/17 Time: 16:30

Received by: _____ Date: _____ Time: _____

Initiation Record for *Nereis virens*- 28 Day

STUDY #: 29633 WATER BATH ID: 102
 CLIENT: Wood PROJECT: Penobscot Tier III

INITIATION RECORD			
CONTROL: Laboratory Control			
Treatment:	Control	Counted by:	GRS
Organism Lot ID:	99N _v AR0102317	Added by:	GRS
Number of Organisms added to each vessel:	20	Temp Data Logger No:	010016267
CONTROL: Mendall Marsh Control			
Organism Lot ID:	99N _v AR0102317	Counted by:	GRS
Number of Organisms added to each vessel:	20	Added by:	GRS

AMENDMENT: Activated Carbon			
Organism Lot ID:	99N _v AR0102317	Counted by:	MS
Number of Organisms added to each vessel:	20	Added by:	GRS
AMENDMENT: SediMite			
Organism Lot ID:	99N _v AR0102317	Counted by:	MS
Number of Organisms added to each vessel:	20	Added by:	GRS
AMENDMENT: Biochar			
Organism Lot ID:	99N _v AR0102317	Counted by:	MS
Number of Organisms added to each vessel:	20	Added by:	GRS

Data Summary for Nereis virens - 28 Day

STUDY #: 29633 WATER BATH ID: TCR102
 CLIENT: Wood PROJECT: Penobscot

DAILY LOG						
Day	Flow Rate Checked		Daily Water Quality Performed	Comments	Date	Initial
	FIRST	SECOND				
0	✓	✓	✓		10/24/17	DD
1	✓	✓	✓		10/25/17	DD
2	✓	✓	✓		10/26/17	BG
3	✓	✓	✓		10/27/17	BG
4	✓	✓	✓		10/28/17	BG
5	✓	✓	✓		10/29/17	DD
6	✓	✓	✓		10/30/17	DD
7	✓	✓	✓		10/31/17	BG
8	✓	✓	✓		11/01/17	BG
9	✓	✓	✓		11/02/17	DD
10	✓	✓	✓		11/03/17	BG
11	✓	✓	✓		11/04/17	BG
12	✓	✓	✓		11/05/17	DD
13	✓	✓	✓		11/06/17	DD
14	✓	✓	✓		11/07/17	DD
15	✓	✓	✓		11/08/17	DD
16	✓	✓	✓		11/09/17	DD
17	✓	✓	✓		11/10/17	BG
18	✓	✓	✓		11/11/17	BG
19	✓	✓	✓		11/12/17	DD
20	✓	✓	✓		11/13/17	DD
21	✓	✓	✓		11/14/17	BG
22	✓	✓	✓		11/15/17	DD
23	✓	✓	✓		11/16/17	DD
24	✓	✓	✓		11/17/17	BG
25	✓	✓	✓		11/18/17	DD
26	✓	✓	✓		11/19/17	DD
27	✓	✓	✓		11/20/17	DD
28	✓	✓	✓		11/21/17	DD

Daily Observations for *Nereis virens* - 28 Day

STUDY #: 29633

Cold Room ID: TCR 102

CLIENT: Wood PLC

PROJECT: Penobscot

Day	Laboratory Control					Reference					Date & Initial
	A	B	C	D	E	A	B	C	D	E	
0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/25/17 BG
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/26/17 BG <small>10/25/17</small>
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/26/17 BG
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/27/17 BG
4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/28/17 BC
5	IS	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/29/17 DD
6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/30/17 DD
7	✓	✓	IS	✓	✓	✓	✓	✓	✓	✓	10/31/17 BG
8	IS	✓	IS	✓	✓	✓	IS	✓	✓	✓	11/01/17 BG
9	✓	✓	IS	✓	✓	✓	✓	✓	✓	✓	11/02/17 DD
10	✓	✓	IS	✓	✓	✓	✓	✓	✓	✓	11/03/17 BG
11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/04/17 BG
12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/05/17 DD
13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/06/17 DD
14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/07/17 DD
15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/08/17 DD
16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/09/17 BG
17	IS	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/10/17 BG
18	✓	✓	✓	✓	IS	✓	✓	✓	✓	✓	11/11/17 BG
19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/12/17 DD
20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/13/17 DD
21	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/14/17 BG
22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/15/17 DD
23	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/16/17 DD
24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/17/17 BG
25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/18/17 DD
26	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/19/17 DD
27	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/20/17 DD

Observation Codes:

- R animals replaced during the first 24 hours
- S animals observed on the surface
- D dead animals
- ✓ tank checked and no animals were on the surface or dead

10/25/17

Lab D and Lab E have a yellowish tint in the mucus.

Daily Observations for *Nereis virens* - 28 Day

STUDY #: 29633 WATER BATH ID: TCR 10Z
 CLIENT: Wood PROJECT: Penobscot

AMENDMENT: <u>Sediment</u>																
Day	3%					5%					10%					Date & Initial
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	
0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/25/17 ^{4 @ 10-11/25} BG
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/25/17 BG
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/26/17 BG
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/27/17 BG
4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/28/17 BG
5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/29/17 DD
6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/30/17 DD
7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/31/17 BG
8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/01/17 BG
9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/02/17 DD
10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/03/17 BG
11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/04/17 BG
12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/05/17 DD
13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/06/17 DD
14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/07/17 DD
15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/08/17 DD
16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/09/17 BG
17	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/10/17 BG
18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/11/17 BG
19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/12/17 DD
20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/13/17 DD
21	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/14/17 BG
22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/15/17 DD
23	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/16/17 DD
24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/17/17 BG
25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/18/17 DD
26	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/19/17 DD
27	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/20/17 DD

Observation Codes:

- R** animals replaced during the first 24 hours
- S** animals observed on the surface
- D** dead animals
- ✓** tank checked and no animals were on the surface or dead

Daily Observations for *Nereis virens* - 28 Day

STUDY #: 29633 WATER BATH ID: TCR 102
 CLIENT: Wood PLC PROJECT: Penobscot

AMENDMENT: BioChar

Day	3%					5%					10%					Date & Initial
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	
0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/23/17 ⁴ BSG
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/25/17 BSG
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/26/17 BSG
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/27/17 BSG
4	✓	✓	✓	✓	✓	✓	✓	✓	✓	IS	✓	✓	✓	✓	✓	10/28/17 BSG
5	✓	✓	✓	✓	✓	✓	✓	✓	✓	ID	✓	✓	✓	✓	✓	10/29/17 DD
6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/30/17 DD
7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/31/17 BSG
8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/01/17 BSG
9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/02/17 DD
10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/03/17 BSG
11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/04/17 BSG
12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/05/17 DD
13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/06/17 DD
14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/07/17 DD
15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/08/17 DD
16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/09/17 BSG
17	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/10/17 BSG
18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/11/17 BSG
19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/12/17 DD
20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/13/17 DD
21	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/14/17 BSG
22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/15/17 DD
23	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/16/17 DD
24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/17/17 BSG
25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/18/17 DD
26	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/19/17 DD
27	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/20/17 DD

- Observation Codes:
- R animals replaced during the first 24 hours
 - S animals observed on the surface
 - D dead animals
 - ✓ tank checked and no animals were on the surface or dead

Daily Observations for *Nereis virens* - 28 Day

STUDY #: 29633

WATER BATH ID: TCR102

CLIENT: Wood

PROJECT: Penobscot

AMENDMENT: Activated Carbon

Day	3%					5%					10%					Date & Initial
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	
0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/25/17 ^{4 836-10/15} BG
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/28/17 BG
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/26/17 BG
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/27/17 BG
4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/28/17 BG
5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/29/17 DD
6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/30/17 DD
7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10/31/17 BG
8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/01/17 BG
9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/02/17 DD
10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/03/17 BG
11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/04/17 BG
12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/05/17 DD
13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/06/17 DD
14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/07/17 DD
15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/08/17 DD
16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/09/17 BG
17	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/09/17 BG
18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/11/17 BG
19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/12/17 DD
20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/13/17 DD
21	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/14/17 BG
22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/15/17 DD
23	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/16/17 DD
24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/17/17 BG
25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/18/17 DD
26	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/19/17 DD
27	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11/20/17 DD

Observation Codes:

- R animals replaced during the first 24 hours
- S animals observed on the surface
- D dead animals
- ✓ tank checked and no animals were on the surface or dead

Nereis virens Day 28 Recovery Record

DATE: 11/21/17

ESI STUDY: 29633

CLIENT: Wood Group (AMEC FW)

PROJECT: Penobscot

SAMPLE ID	REP	# LIVE / INITIALS	SAMPLE ID	REP	# LIVE / INITIALS
Laboratory Control Sediment (P/L/0%)	A	20 DD	Activated Carbon (P/AC/5%)	A	19 DD
Laboratory Control Sediment (P/L/0%)	B	19 DD	Activated Carbon (P/AC/5%)	B	20 GRS
Laboratory Control Sediment (P/L/0%)	C	19 GRS	Activated Carbon (P/AC/5%)	C	20 MS
Laboratory Control Sediment (P/L/0%)	D	19 GRS	Activated Carbon (P/AC/5%)	D	21 GRS
Laboratory Control Sediment (P/L/0%)	E	19 DD	Activated Carbon (P/AC/5%)	E	20 DD
Mendall Marsh Control (A/N/0%) ^{E3 11/28}	A	18 GRS	Activated Carbon (P/AC/10%)	A	19 MS
Mendall Marsh Control (A/N/0%) ^{E3 11/28}	B	19 DD	Activated Carbon (P/AC/10%)	B	21 GRS
Mendall Marsh Control (A/N/0%) ^{E3 11/28}	C	14 MS	Activated Carbon (P/AC/10%)	C	20 DD
Mendall Marsh Control (A/N/0%) ^{E3 11/28}	D	19 GRS	Activated Carbon (P/AC/10%)	D	17 MS ^{E3 MS 11/21}
Mendall Marsh Control (A/N/0%) ^{E3 11/28}	E	19 DD	Activated Carbon (P/AC/10%)	E	19 DD
Activated Carbon (P/AC/3%)	A	19 GRS	SediMite (P/S/3%)	A	20 MS
Activated Carbon (P/AC/3%)	B	19 GRS	SediMite (P/S/3%)	B	20 DD
Activated Carbon (P/AC/3%)	C	20 MS	SediMite (P/S/3%)	C	21 GRS
Activated Carbon (P/AC/3%)	D	19 DD	SediMite (P/S/3%)	D	20 GRS
Activated Carbon (P/AC/3%)	E	17 GRS	SediMite (P/S/3%)	E	20 ^{E3 MS 11/21} & MS

Nereis virens Day 28 Recovery Record

DATE: 11/21/17

ESI STUDY: 29633

CLIENT: Wood Group (AMEC FW)

PROJECT: Penobscot

SAMPLE ID	REP	# LIVE / INITIALS	SAMPLE ID	REP	# LIVE / INITIALS
SediMite (P/S/5%)	A	19 GRS	Biochar & Iron (P/B/5%)	A	20 MS
SediMite (P/S/5%)	B	20 MS	Biochar & Iron (P/B/5%)	B	20 GRS 218 GRS
SediMite (P/S/5%)	C	20 DU	Biochar & Iron (P/B/5%)	C	20 BG
SediMite (P/S/5%)	D	20 GRS	Biochar & Iron (P/B/5%)	D	20 JTP
SediMite (P/S/5%)	E	21 JTP	Biochar & Iron (P/B/5%)	E	19 DD 18 GRS (E) BG INCL
SediMite (P/S/10%)	A	20 GRS	Biochar & Iron (P/B/10%)	A	20 MS
SediMite (P/S/10%)	B	21 JTP	Biochar & Iron (P/B/10%)	B	20 JTP
SediMite (P/S/10%)	C	20 JTP	Biochar & Iron (P/B/10%)	C	20 DD
SediMite (P/S/10%)	D	18 BG	Biochar & Iron (P/B/10%)	D	18 JTP
SediMite (P/S/10%)	E	20 GRS	Biochar & Iron (P/B/10%)	E	20 GRS
Biochar & Iron (P/B/3%)	A	19 JTP			
Biochar & Iron (P/B/3%)	B	20 GRS			
Biochar & Iron (P/B/3%)	C	19 JTP			
Biochar & Iron (P/B/3%)	D	19 JTP			
Biochar & Iron (P/B/3%)	E	19 DD			

28 day *Nereis virens*
Survival Sediment Evaluation
CETIS™ Data Worksheet

CETIS Test Data Worksheet

Report Date: 07 Dec-17 13:43 (p 1 of 2)
Test Code/ID: 08-6945-1216/29633Nv

Polychaete Survival and Growth Test				EnviroSystems, Inc.			
Start Date: 24 Oct-17 12:00	Species: Nereis virens	Sample Code: 29633-000					
End Date: 21 Nov-17 12:00	Protocol: EC/EPS 1/RM/41	Sample Source: USDC Penobscot, Winterport ME					
Sample Date: 10 Oct-17 14:00	Material: Laboratory Control Sediment	Sample Station: P/L/0% (Nv Lab)					

Sample	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Tare Weight-mg	Pan Count	Mean Length-mm
29633-000	1	9	20	20		0		
29633-000	2	16	20	19		0		
29633-000	3	29	20	19		0		
29633-000	4	38	20	19		0		
29633-000	5	48	20	19		0		
29633-001	1	10	20	18		0		
29633-001	2	19	20	19		0		
29633-001	3	33	20	19		0		
29633-001	4	43	20	19		0		
29633-001	5	53	20	19		0		
29633-002	1	2	20	19		0		
29633-002	2	22	20	19		0		
29633-002	3	32	20	20		0		
29633-002	4	42	20	19		0		
29633-002	5	51	20	17		0		
29633-003	1	11	20	19		0		
29633-003	2	18	20	20		0		
29633-003	3	25	20	20		0		
29633-003	4	44	21	21		0		
29633-003	5	55	20	20		0		
29633-004	1	8	20	19		0		
29633-004	2	20	21	21		0		
29633-004	3	27	20	20		0		
29633-004	4	39	20	17		0		
29633-004	5	46	20	19		0		
29633-005	1	6	20	20		0		
29633-005	2	17	20	20		0		
29633-005	3	30	21	21		0		
29633-005	4	35	20	20		0		
29633-005	5	49	20	20		0		
29633-006	1	1	20	19		0		
29633-006	2	15	20	20		0		
29633-006	3	26	20	20		0		
29633-006	4	40	20	20		0		
29633-006	5	50	21	21		0		
29633-007	1	7	20	20		0		
29633-007	2	12	21	21		0		
29633-007	3	28	20	20		0		
29633-007	4	36	20	18		0		
29633-007	5	52	20	20		0		
29633-008	1	5	20	19		0		
29633-008	2	14	20	20		0		
29633-008	3	24	20	19		0		
29633-008	4	41	20	19		0		
29633-008	5	45	20	19		0		

CETIS Test Data Worksheet

Report Date: 07 Dec-17 13:43 (p 2 of 2)
Test Code/ID: 08-6945-1216/29633Nv

Sample	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Tare Weight-mg	Pan Count	Mean Length-mm
29633-009	1	3	20	20		0		
29633-009	2	13	20	18		0		
29633-009	3	31	20	20		0		
29633-009	4	34	20	20		0		
29633-009	5	54	20	18		0		
29633-010	1	4	20	20		0		
29633-010	2	21	20	20		0		
29633-010	3	23	20	20		0		
29633-010	4	37	20	18		0		
29633-010	5	47	20	20		0		

28 day *Nereis virens*
Survival Sediment Evaluation

CETIS™ Summary, Ad Hoc Query and
Analytical Reports

Survival Statistical Analysis

CETIS Summary Report

Report Date: 08 Dec-17 13:11 (p 1 of 4)
Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test	EnviroSystems, Inc.
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Batch ID: 21-1383-7138	Test Type: Survival-Growth	Analyst: Nancy Roka
Start Date: 24 Oct-17 12:00	Protocol: EC/EPS 1/RM/41	Diluent: Not Applicable
Ending Date: 21 Nov-17 12:00	Species: Nereis virens	Brine: Not Applicable
Duration: 28d 0h	Source: ARO - Aquatic Research Organisms, NH	Age:

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h		
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h		
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h		
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h		
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h		
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h		
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h		
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h		
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h		
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	P/L/0% (Nv Lab)	
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME	P/N/0% (Nv Mendall Marsh)	
29633-002	Treated Sediment	USDC Penobscot, Winterport ME	P/AC/3% (Nv Activated Car	
29633-003	Treated Sediment	USDC Penobscot, Winterport ME	P/AC/5% (Nv Activated Car	
29633-004	Treated Sediment	USDC Penobscot, Winterport ME	P/AC/10% (Nv Activated Ca	
29633-005	Treated Sediment	USDC Penobscot, Winterport ME	P/S/3% (Nv SediMite 3%)	
29633-006	Treated Sediment	USDC Penobscot, Winterport ME	P/S/5% (Nv SediMite 5%)	
29633-007	Treated Sediment	USDC Penobscot, Winterport ME	P/S/10% (Nv SediMite 10%)	
29633-008	Treated Sediment	USDC Penobscot, Winterport ME	P/B/3% (Nv Biochar 3%)	
29633-009	Treated Sediment	USDC Penobscot, Winterport ME	P/B/5% (Nv Biochar 5%)	
29633-010	Treated Sediment	USDC Penobscot, Winterport ME	P/B/10% (Nv Biochar 10%)	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
12-6851-4377	Proportion Survived	Equal Variance t Two-Sample Test	0.0982	29633-001 passed proportion survived
03-6841-8820	Proportion Survived	Equal Variance t Two-Sample Test	0.2595	29633-002 passed proportion survived
15-7939-5553	Proportion Survived	Equal Variance t Two-Sample Test	0.5582	29633-002 passed proportion survived
18-4505-9184	Proportion Survived	Equal Variance t Two-Sample Test	0.4418	29633-002 passed proportion survived
01-8668-2951	Proportion Survived	Equal Variance t Two-Sample Test	0.0393	29633-003 failed proportion survived
03-1641-9329	Proportion Survived	Equal Variance t Two-Sample Test	0.9672	29633-003 passed proportion survived
06-9367-1589	Proportion Survived	Equal Variance t Two-Sample Test	0.9607	29633-003 passed proportion survived
06-0192-1718	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-003 passed proportion survived
14-6276-0190	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0198	29633-003 failed proportion survived
03-9000-0014	Proportion Survived	Equal Variance t Two-Sample Test	0.7009	29633-004 passed proportion survived
04-4719-0584	Proportion Survived	Equal Variance t Two-Sample Test	0.2991	29633-004 passed proportion survived
04-6418-4355	Proportion Survived	Equal Variance t Two-Sample Test	0.3737	29633-004 passed proportion survived
05-6431-8209	Proportion Survived	Equal Variance t Two-Sample Test	0.8993	29633-004 passed proportion survived
05-8472-6679	Proportion Survived	Equal Variance t Two-Sample Test	0.1007	29633-004 passed proportion survived
07-1657-4597	Proportion Survived	Equal Variance t Two-Sample Test	0.4250	29633-004 passed proportion survived
15-1709-8625	Proportion Survived	Equal Variance t Two-Sample Test	0.6263	29633-004 passed proportion survived
03-3773-0775	Proportion Survived	Unequal Variance t Two-Sample Test	0.9068	29633-005 passed proportion survived
06-0324-5172	Proportion Survived	Unequal Variance t Two-Sample Test	0.0932	29633-005 passed proportion survived
00-2586-7901	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0476	29633-005 failed proportion survived
02-7025-7828	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0238	29633-005 failed proportion survived
03-0294-1530	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0833	29633-005 passed proportion survived
04-4769-9709	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0079	29633-005 failed proportion survived
05-6762-7503	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-005 passed proportion survived

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test					EnviroSystems, Inc.
Single Comparison Summary					
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	
07-6812-0704	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-005 passed proportion survived	
09-6521-3891	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0040	29633-005 failed proportion survived	
16-4534-6132	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-005 passed proportion survived	
17-7277-4646	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-005 passed proportion survived	
18-0266-9784	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-005 passed proportion survived	
19-4057-8991	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-005 passed proportion survived	
19-9222-6677	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-005 passed proportion survived	
20-2460-9940	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-005 passed proportion survived	
20-2862-3243	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	29633-005 passed proportion survived	
21-2837-2667	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-005 passed proportion survived	
02-8111-7539	Proportion Survived	Equal Variance t Two-Sample Test	0.9672	29633-006 passed proportion survived	
03-7713-8716	Proportion Survived	Equal Variance t Two-Sample Test	0.1007	29633-006 passed proportion survived	
06-7761-2092	Proportion Survived	Equal Variance t Two-Sample Test	0.0393	29633-006 failed proportion survived	
08-0019-0841	Proportion Survived	Equal Variance t Two-Sample Test	0.8993	29633-006 passed proportion survived	
09-4521-8720	Proportion Survived	Equal Variance t Two-Sample Test	0.9607	29633-006 passed proportion survived	
00-2253-7446	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-006 passed proportion survived	
00-5814-2325	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0198	29633-006 failed proportion survived	
01-6320-8952	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-006 passed proportion survived	
02-3326-0519	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-006 passed proportion survived	
02-8270-8103	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	29633-006 passed proportion survived	
08-4628-4143	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.7778	29633-006 passed proportion survived	
11-0458-4003	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.7778	29633-006 passed proportion survived	
18-1184-9292	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-006 passed proportion survived	
01-0788-1155	Proportion Survived	Equal Variance t Two-Sample Test	0.8928	29633-007 passed proportion survived	
05-8133-3090	Proportion Survived	Equal Variance t Two-Sample Test	0.8341	29633-007 passed proportion survived	
11-1580-9797	Proportion Survived	Equal Variance t Two-Sample Test	0.8026	29633-007 passed proportion survived	
15-1136-3287	Proportion Survived	Equal Variance t Two-Sample Test	0.1072	29633-007 passed proportion survived	
18-4197-1397	Proportion Survived	Equal Variance t Two-Sample Test	0.1974	29633-007 passed proportion survived	
00-7300-2707	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.7778	29633-007 passed proportion survived	
02-0636-6367	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.7778	29633-007 passed proportion survived	
03-7088-0520	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-007 passed proportion survived	
04-6082-5710	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0079	29633-007 failed proportion survived	
07-1989-9470	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	29633-007 passed proportion survived	
08-4471-5206	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.9921	29633-007 passed proportion survived	
09-9902-5764	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5556	29633-007 passed proportion survived	
11-8355-7133	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-007 passed proportion survived	
12-8478-2073	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	29633-007 passed proportion survived	
13-6185-8392	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	29633-007 passed proportion survived	
14-3960-8328	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5556	29633-007 passed proportion survived	
14-6935-2760	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.9841	29633-007 passed proportion survived	
17-5982-1190	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0238	29633-007 failed proportion survived	
19-8448-3056	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-007 passed proportion survived	
20-4169-9799	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-007 passed proportion survived	
20-8347-4559	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5556	29633-007 passed proportion survived	
21-0130-9819	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5556	29633-007 passed proportion survived	
00-8816-0537	Proportion Survived	Equal Variance t Two-Sample Test	0.2595	29633-008 passed proportion survived	
04-4321-5148	Proportion Survived	Equal Variance t Two-Sample Test	0.9672	29633-008 passed proportion survived	
06-8691-3785	Proportion Survived	Equal Variance t Two-Sample Test	0.0328	29633-008 failed proportion survived	
08-8276-8852	Proportion Survived	Equal Variance t Two-Sample Test	0.9672	29633-008 passed proportion survived	
10-3363-5829	Proportion Survived	Equal Variance t Two-Sample Test	0.8341	29633-008 passed proportion survived	
11-0754-2982	Proportion Survived	Equal Variance t Two-Sample Test	0.4250	29633-008 passed proportion survived	
15-9631-6092	Proportion Survived	Equal Variance t Two-Sample Test	0.9018	29633-008 passed proportion survived	
17-2376-4468	Proportion Survived	Equal Variance t Two-Sample Test	0.5750	29633-008 passed proportion survived	

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Polychaete Survival and Growth Test				EnviroSystems, Inc.
Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
17-9336-8090	Proportion Survived	Equal Variance t Two-Sample Test	0.7405	29633-008 passed proportion survived
19-7843-0972	Proportion Survived	Equal Variance t Two-Sample Test	0.1659	29633-008 passed proportion survived
20-6419-6718	Proportion Survived	Equal Variance t Two-Sample Test	0.0982	29633-008 passed proportion survived
21-0616-4426	Proportion Survived	Equal Variance t Two-Sample Test	0.0328	29633-008 failed proportion survived
04-4919-0862	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-008 passed proportion survived
06-3516-0471	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.7778	29633-008 passed proportion survived
07-7757-4303	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0079	29633-008 failed proportion survived
08-5930-3946	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-008 passed proportion survived
10-3661-3436	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0238	29633-008 failed proportion survived
10-7729-8851	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-008 passed proportion survived
12-0513-2981	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0079	29633-008 failed proportion survived
00-9937-2102	Proportion Survived	Equal Variance t Two-Sample Test	0.1996	29633-009 passed proportion survived
03-6214-2196	Proportion Survived	Equal Variance t Two-Sample Test	0.8479	29633-009 passed proportion survived
06-7510-9179	Proportion Survived	Equal Variance t Two-Sample Test	0.1521	29633-009 passed proportion survived
07-5639-0675	Proportion Survived	Equal Variance t Two-Sample Test	0.5473	29633-009 passed proportion survived
07-6107-1303	Proportion Survived	Equal Variance t Two-Sample Test	0.1521	29633-009 passed proportion survived
10-6597-7548	Proportion Survived	Equal Variance t Two-Sample Test	0.5473	29633-009 passed proportion survived
10-8014-8227	Proportion Survived	Equal Variance t Two-Sample Test	0.4059	29633-009 passed proportion survived
13-0387-2095	Proportion Survived	Equal Variance t Two-Sample Test	0.2823	29633-009 passed proportion survived
16-0485-0240	Proportion Survived	Equal Variance t Two-Sample Test	0.4527	29633-009 passed proportion survived
17-6191-5514	Proportion Survived	Equal Variance t Two-Sample Test	0.5941	29633-009 passed proportion survived
19-8087-7512	Proportion Survived	Equal Variance t Two-Sample Test	0.8479	29633-009 passed proportion survived
20-3095-3286	Proportion Survived	Equal Variance t Two-Sample Test	0.8004	29633-009 passed proportion survived
20-6511-1842	Proportion Survived	Equal Variance t Two-Sample Test	0.7177	29633-009 passed proportion survived
01-7046-0216	Proportion Survived	Unequal Variance t Two-Sample Test	0.0878	29633-009 passed proportion survived
01-8526-2458	Proportion Survived	Unequal Variance t Two-Sample Test	0.9122	29633-009 passed proportion survived
02-9239-0997	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	29633-009 passed proportion survived
20-9565-5506	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.9167	29633-009 passed proportion survived
01-8040-2092	Proportion Survived	Equal Variance t Two-Sample Test	0.1991	29633-010 passed proportion survived
03-1630-0637	Proportion Survived	Equal Variance t Two-Sample Test	0.1679	29633-010 passed proportion survived
03-6905-2226	Proportion Survived	Equal Variance t Two-Sample Test	0.8009	29633-010 passed proportion survived
08-1746-4520	Proportion Survived	Equal Variance t Two-Sample Test	0.8321	29633-010 passed proportion survived
11-9674-1573	Proportion Survived	Equal Variance t Two-Sample Test	0.8321	29633-010 passed proportion survived
00-7124-5003	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-010 passed proportion survived
00-9842-7699	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-010 passed proportion survived
01-2021-9044	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0397	29633-010 failed proportion survived
01-8117-2543	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0238	29633-010 failed proportion survived
02-2697-3167	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5556	29633-010 passed proportion survived
03-3802-9234	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-010 passed proportion survived
03-3849-0510	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.7778	29633-010 passed proportion survived
04-4715-0584	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.9841	29633-010 passed proportion survived
05-6822-9554	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	29633-010 passed proportion survived
08-4102-1813	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.9921	29633-010 passed proportion survived
11-1166-3146	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	1.0000	29633-010 passed proportion survived
13-0766-1720	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.7778	29633-010 passed proportion survived
15-2761-1271	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.9167	29633-010 passed proportion survived
15-3973-3790	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.9365	29633-010 passed proportion survived
15-4974-4069	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.0079	29633-010 failed proportion survived
15-9762-0686	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	29633-010 passed proportion survived
17-3935-1547	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.9921	29633-010 passed proportion survived
17-4697-7219	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.7778	29633-010 passed proportion survived
17-5241-2598	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5000	29633-010 passed proportion survived
17-5686-3717	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test	0.5556	29633-010 passed proportion survived

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Polychaete Survival and Growth Test											EnviroSystems, Inc.	
Single Comparison Summary												
Analysis ID	Endpoint	Comparison Method					P-Value	Comparison Result				
18-1169-9521	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test					0.5000	29633-010 passed proportion survived				
18-6558-8858	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test					0.7778	29633-010 passed proportion survived				
18-7236-8683	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test					0.0833	29633-010 passed proportion survived				
19-4903-7867	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test					0.5556	29633-010 passed proportion survived				
20-5281-1114	Proportion Survived	Wilcoxon Rank Sum Two-Sample Test					0.5556	29633-010 passed proportion survived				
Proportion Survived Summary												
Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
29633-000	LC	5	0.960	0.932	0.988	0.950	1.000	0.010	0.022	2.33%	0.00%	
29633-001	N	5	0.940	0.912	0.968	0.900	0.950	0.010	0.022	2.38%	2.08%	
29633-002		5	0.940	0.872	1.000	0.850	1.000	0.025	0.055	5.83%	2.08%	
29633-003		5	0.990	0.962	1.000	0.950	1.000	0.010	0.022	2.26%	-3.13%	
29633-004		5	0.950	0.874	1.000	0.850	1.000	0.027	0.061	6.45%	1.04%	
29633-005		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%	
29633-006		5	0.990	0.962	1.000	0.950	1.000	0.010	0.022	2.26%	-3.13%	
29633-007		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	-2.08%	
29633-008		5	0.960	0.932	0.988	0.950	1.000	0.010	0.022	2.33%	0.00%	
29633-009		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	0.00%	
29633-010		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	-2.08%	
Proportion Survived Detail												
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
29633-000	LC	1.000	0.950	0.950	0.950	0.950						
29633-001	N	0.900	0.950	0.950	0.950	0.950						
29633-002		0.950	0.950	1.000	0.950	0.850						
29633-003		0.950	1.000	1.000	1.000	1.000						
29633-004		0.950	1.000	1.000	0.850	0.950						
29633-005		1.000	1.000	1.000	1.000	1.000						
29633-006		0.950	1.000	1.000	1.000	1.000						
29633-007		1.000	1.000	1.000	0.900	1.000						
29633-008		0.950	1.000	0.950	0.950	0.950						
29633-009		1.000	0.900	1.000	1.000	0.900						
29633-010		1.000	1.000	1.000	0.900	1.000						

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

Endpoint: Survival

Analysis ID	Station	Method	Sample Code	Code 1	Tails	Sample Code	Code 2	Statistic	Critical	P Level	Alpha	Reject Null	MSD	DF	Ties	P-Type
2041699799	P/S/10% (Nv SediMite 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-005		C > T	29633-007		20		1	0.05	FALSE		7	1	E
1036613436	P/B/3% (Nv Biochar 3%)	Wilcoxon Rank Sum Two-Sample Test	29633-005		C > T	29633-008		17.5		0.02380952	0.05	TRUE		8	1	E
1205132981	P/B/3% (Nv Biochar 3%)	Wilcoxon Rank Sum Two-Sample Test	29633-005		C > T	29633-008		10		0.007936508	0.05	TRUE		7	0	E
170460216	P/B/5% (Nv Biochar 5%)	Unequal Variance t Two-Sample Test	29633-005		C > T	29633-009		1.643457	2.131847	0.0878167	0.05	FALSE	0.1095169	4		C
71245003	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-005		C > T	29633-010		20		1	0.05	FALSE		7	1	E
1811699521	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-005		C > T	29633-010		25		0.5	0.05	FALSE		8	1	E
73002707	P/S/10% (Nv SediMite 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-006		C < T	29633-007		28		0.7777778	0.05	FALSE		8	1	E
2101309819	P/S/10% (Nv SediMite 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-006		C < T	29633-007		18		0.5555556	0.05	FALSE		7	1	E
443215148	P/B/3% (Nv Biochar 3%)	Equal Variance t Two-Sample Test	29633-006		C < T	29633-008		-2.131554	1.859548	0.9671831	0.05	FALSE	0.05987013	8		C
362142196	P/B/5% (Nv Biochar 5%)	Equal Variance t Two-Sample Test	29633-006		C < T	29633-009		-1.098117	1.859548	0.8479494	0.05	FALSE	0.1045372	8		C
1307661720	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-006		C < T	29633-010		28		0.7777778	0.05	FALSE		8	1	E
2052811114	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-006		C < T	29633-010		18		0.5555556	0.05	FALSE		7	1	E
719899470	P/S/10% (Nv SediMite 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-006		C > T	29633-007		27		0.5	0.05	FALSE		8	1	E
999025764	P/S/10% (Nv SediMite 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-006		C > T	29633-007		22		0.5555556	0.05	FALSE		7	1	E
686913785	P/B/3% (Nv Biochar 3%)	Equal Variance t Two-Sample Test	29633-006		C > T	29633-008		2.131554	1.859548	0.03281697	0.05	TRUE	0.05987013	8		C
675109179	P/B/5% (Nv Biochar 5%)	Equal Variance t Two-Sample Test	29633-006		C > T	29633-009		1.098117	1.859548	0.1520506	0.05	FALSE	0.1045372	8		C
1752412598	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-006		C > T	29633-010		27		0.5	0.05	FALSE		8	1	E
1756863717	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-006		C > T	29633-010		22		0.5555556	0.05	FALSE		7	1	E
1033635829	P/B/3% (Nv Biochar 3%)	Equal Variance t Two-Sample Test	29633-007		C < T	29633-008		-1.032816	1.859548	0.8340503	0.05	FALSE	0.0889073	8		C
1077298851	P/B/3% (Nv Biochar 3%)	Wilcoxon Rank Sum Two-Sample Test	29633-007		C < T	29633-008		33		1	0.05	FALSE		7	1	E
2095655506	P/B/5% (Nv Biochar 5%)	Wilcoxon Rank Sum Two-Sample Test	29633-007		C < T	29633-009		30		0.9166667	0.05	FALSE		8	2	E
1865588858	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-007		C < T	29633-010		27.5		0.7777778	0.05	FALSE		8	2	E
777574303	P/B/3% (Nv Biochar 3%)	Wilcoxon Rank Sum Two-Sample Test	29633-007		C > T	29633-008		17		0.007936508	0.05	TRUE		7	1	E
1978430972	P/B/3% (Nv Biochar 3%)	Equal Variance t Two-Sample Test	29633-007		C > T	29633-008		1.032816	1.859548	0.1659497	0.05	FALSE	0.0889073	8		C
292390997	P/B/5% (Nv Biochar 5%)	Wilcoxon Rank Sum Two-Sample Test	29633-007		C > T	29633-009		25		0.5	0.05	FALSE		8	2	E
1746977219	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-007		C > T	29633-010		27.5		0.7777778	0.05	FALSE		8	2	E
1604850240	P/B/5% (Nv Biochar 5%)	Equal Variance t Two-Sample Test	29633-008		C < T	29633-009		0.1227842	1.859548	0.4526533	0.05	FALSE	0.1044305	8		C
120219044	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-008		C < T	29633-010		12		0.03968254	0.05	TRUE		7	1	E
316300637	P/B/10% (Nv Biochar 10%)	Equal Variance t Two-Sample Test	29633-008		C < T	29633-010		1.024092	1.859548	0.1678791	0.05	FALSE	0.08868017	8		C
1065977548	P/B/5% (Nv Biochar 5%)	Equal Variance t Two-Sample Test	29633-008		C > T	29633-009		-0.1227842	1.859548	0.5473467	0.05	FALSE	0.1044305	8		C
817464520	P/B/10% (Nv Biochar 10%)	Equal Variance t Two-Sample Test	29633-008		C > T	29633-010		-1.024092	1.859548	0.8321208	0.05	FALSE	0.08868017	8		C
841021813	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-008		C > T	29633-010		28		0.9920635	0.05	FALSE		7	1	E
1597620686	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-009		C < T	29633-010		25		0.5	0.05	FALSE		8	2	E
1527611271	P/B/10% (Nv Biochar 10%)	Wilcoxon Rank Sum Two-Sample Test	29633-009		C > T	29633-010		30		0.9166667	0.05	FALSE		8	2	E

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 12-6851-4377		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:09		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		P/L/0% (Nv Lab)							
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-001 passed proportion survived				2.62%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		Negative Control	1.41	1.86	0.055	8	CDF	0.0982	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1910	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.004398		0.004398	1	1.99	0.1964	Non-Significant Effect				
Error	0.0177107		0.0022138	8							
Total	0.0221086			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.39	23.2	0.7572	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.895	0.741	0.1909	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	2.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	3.07%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.000	0.950	0.950	0.950	0.950					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.46	1.35	1.35	1.35	1.35					
29633-001	N	1.25	1.35	1.35	1.35	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 03-6841-8820		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:09		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		P/L/0% (Nv Lab)							
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car)							
Data Transform	Alt Hyp			Comparison Result						PMSD	
Angular (Corrected)	C > T			29633-002 passed proportion survived						4.80%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29633-002	0.674	1.86	0.095	8	CDF	0.2595	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.11	2.29	0.1427	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0029648		0.0029648	1	0.455	0.5190	Non-Significant Effect				
Error	0.0521368		0.0065171	8							
Total	0.0551016			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.06	23.2	0.2034	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.88	0.741	0.1308	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	2.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	2.52%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.000	0.950	0.950	0.950	0.950					
29633-002		0.950	0.950	1.000	0.950	0.850					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.46	1.35	1.35	1.35	1.35					
29633-002		1.35	1.35	1.46	1.35	1.17					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 03-1641-9329		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:09		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		P/L/0% (Nv Lab)							
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car)							
Data Transform	Alt Hyp			Comparison Result						PMSD	
Angular (Corrected)	C > T			29633-003 passed proportion survived						2.86%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29633-003	-2.13	1.86	0.06	8	CDF	0.9672	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.29	0.3456	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0117744		0.0117744	1	4.54	0.0656	Non-Significant Effect				
Error	0.0207317		0.0025915	8							
Total	0.0325061			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.01	23.2	0.9907	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.906	0.741	0.2536	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-3.13%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-5.02%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.000	0.950	0.950	0.950	0.950					
29633-003		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.46	1.35	1.35	1.35	1.35					
29633-003		1.35	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 07-1657-4597		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:09		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		P/L/0% (Nv Lab)							
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29633-004 passed proportion survived					5.49%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29633-004	0.195	1.86	0.107	8	CDF	0.4250	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.15	2.29	0.1149	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0003136		0.0003136	1	0.0382	0.8499	Non-Significant Effect				
Error	0.0656648		0.0082081	8							
Total	0.0659784			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.37	23.2	0.1322	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.824	0.741	0.0283	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	1.04%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.82%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.000	0.950	0.950	0.950	0.950					
29633-004		0.950	1.000	1.000	0.850	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.46	1.35	1.35	1.35	1.35					
29633-004		1.35	1.46	1.46	1.17	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 17-7277-4646		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:09		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		P/L/0% (Nv Lab)							
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-005 passed proportion survived				1.96%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29633-005	37.5	n/a	1	8	Exact	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	4.4E-04	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0208496		0.0208496	1	16.2	0.0038	Significant Effect				
Error	0.0103073		0.0012884	8							
Total	0.0311569			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1750	23.2	2.0E-06	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.633	0.741	1.4E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-4.17%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	-6.68%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.000	0.950	0.950	0.950	0.950					
29633-005		1.000	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.46	1.35	1.35	1.35	1.35					
29633-005		1.46	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 02-8111-7539		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:09		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		P/L/0% (Nv Lab)							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
Data Transform	Alt Hyp			Comparison Result						PMSD	
Angular (Corrected)	C > T			29633-006 passed proportion survived						2.86%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29633-006	-2.13	1.86	0.06	8	CDF	0.9672	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.29	0.3456	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0117744		0.0117744	1	4.54	0.0656	Non-Significant Effect				
Error	0.0207317		0.0025915	8							
Total	0.0325061			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.01	23.2	0.9907	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.906	0.741	0.2536	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-3.13%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-5.02%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.000	0.950	0.950	0.950	0.950					
29633-006		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.46	1.35	1.35	1.35	1.35					
29633-006		1.35	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 05-8133-3090		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:09		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		P/L/0% (Nv Lab)							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-007 passed proportion survived				4.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29633-007	-1.03	1.86	0.089	8	CDF	0.8341	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.36	2.29	0.0298	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0060960		0.0060960		1	1.07	0.3319	Non-Significant Effect			
Error	0.0457183		0.0057148		8						
Total	0.0518143				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.44	23.2	0.2589	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.83	0.741	0.0335	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-2.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	-3.61%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.000	0.950	0.950	0.950	0.950					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.46	1.35	1.35	1.35	1.35					
29633-007		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 06-3516-0471		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:10		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		P/L/0% (Nv Lab)							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-008 passed proportion survived				2.85%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29633-008	27.5	n/a	2	8	Exact	0.7778	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.29	0.3527	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0	0	1	0	1.0000	Non-Significant Effect					
Error	0.0206028	0.0025754	8								
Total	0.0206028		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1	23.2	1.0000	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.509	0.741	4.7E-06	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.000	0.950	0.950	0.950	0.950					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.46	1.35	1.35	1.35	1.35					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 07-5639-0675	Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 06 Dec-17 15:10	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME	P/L/0% (Nv Lab)								
29633-009	Treated Sediment	USDC Penobscot, Winterport ME	P/B/5% (Nv Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Angular (Corrected)	C > T	29633-009 passed proportion survived			5.36%						
Equal Variance t Two-Sample Test											
Sample I	vs Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)			
Lab Control Sedime	29633-009	-0.123	1.86	0.104	8	CDF	0.5473	Non-Significant Effect			
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.5	2.29	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0001189	0.0001189	1	0.0151	0.9053	Non-Significant Effect					
Error	0.0630768	0.0078846	8								
Total	0.0631957		9								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.12	23.2	0.1426	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.833	0.741	0.0361	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	-0.50%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.000	0.950	0.950	0.950	0.950					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.46	1.35	1.35	1.35	1.35					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 11-9674-1573		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:10		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		P/L/0% (Nv Lab)							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-010 passed proportion survived				4.44%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29633-010	-1.02	1.86	0.089	8	CDF	0.8321	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.36	2.29	0.0301	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0059629		0.0059629		1	1.05	0.3358	Non-Significant Effect			
Error	0.045485		0.0056856		8						
Total	0.0514479				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.42	23.2	0.2613	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.827	0.741	0.0310	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-2.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	-3.57%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.000	0.950	0.950	0.950	0.950					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.46	1.35	1.35	1.35	1.35					
29633-010		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID:	17-3935-1547		Endpoint:	Proportion Survived		CETIS Version:	CETISv1.9.3				
Analyzed:	06 Dec-17 15:10		Analysis:	Nonparametric-Two Sample		Official Results:	Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-000	00-7803-9122	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-000	Laboratory Control Sediment	USDC Penobscot, Winterport ME		P/L/0% (Nv Lab)							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Angular (Corrected)		C > T		29633-010 passed proportion survived				2.29%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Lab Control Sedime		29633-010	28	n/a	1	7	Exact	0.9921	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0183136	0.0183136	1	12.4	0.0096	Significant Effect					
Error	0.0103014	0.0014716	7								
Total	0.028615		8								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Levene Equality of Variance Test		5.53	12.2	0.0510	Equal Variances					
Variances	Mod Levene Equality of Variance Test		1	13.7	0.3559	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.634	0.701	2.4E-04	Non-Normal Distribution					
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-010		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-4.17%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-000	LC	5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-010		4	1.46	1.46	1.46	1.46	1.46	1.46	0	0.00%	-6.64%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.000	0.950	0.950	0.950	0.950					
29633-010		1.000	1.000	1.000	Outlier	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-000	LC	1.46	1.35	1.35	1.35	1.35					
29633-010		1.46	1.46	1.46	1.46						

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 15-7939-5553		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:10		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-002 passed proportion survived				5.25%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-002	-0.151	1.86	0.092	8	CDF	0.5582	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.17	2.29	0.1039	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0001408		0.0001408	1	0.0229	0.8835	Non-Significant Effect				
Error	0.0492447		0.0061556	8							
Total	0.0493855			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.65	23.2	0.1222	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.799	0.741	0.0142	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	-0.57%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-002		0.950	0.950	1.000	0.950	0.850					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-002		1.35	1.35	1.46	1.35	1.17					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 06-0192-1718		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:10		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Angular (Corrected)	C > T		29633-003 passed proportion survived				2.93%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-003	38	n/a	1	8	Exact	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test		2.05	2.29	0.1869		No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0305644		0.0305644	1	13.7	0.0060	Significant Effect				
Error	0.0178396		0.00223	8							
Total	0.0484041			9							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value		Decision(α:1%)				
Variances	Variance Ratio F Test		1.41	23.2	0.7484		Equal Variances				
Distribution	Shapiro-Wilk W Normality Test		0.563	0.741	2.0E-05		Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-5.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-8.34%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-003		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-003		1.35	1.46	1.46	1.46	1.46					

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 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 03-9000-0014		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:10		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Angular (Corrected)	C > T		29633-004 passed proportion survived				6.05%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-004	-0.549	1.86	0.104	8	CDF	0.7009	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.2	2.29	0.0877	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0023628		0.0023628	1	0.301	0.5982	Non-Significant Effect				
Error	0.0627727		0.0078466	8							
Total	0.0651355			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			7.47	23.2	0.0770	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.877	0.741	0.1218	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	-1.06%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	-2.32%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-004		0.950	1.000	1.000	0.850	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-004		1.35	1.46	1.46	1.17	1.35					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID:	20-2460-9940		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	06 Dec-17 15:10		Analysis:	Nonparametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME	P/N/0% (Nv Mendall Marsh)								
29633-005	Treated Sediment	USDC Penobscot, Winterport ME	P/S/3% (Nv SediMite 3%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C > T	29633-005 passed proportion survived					0.05%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-005	35	n/a	0	7	Exact	1.0000	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0288891	0.0288891	1	34400	<1.0E-37	Significant Effect					
Error	5.88E-06	8.4E-07	7								
Total	0.028895		8								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Levene Equality of Variance Test	5.53	12.2	0.0510	Equal Variances						
Variances	Mod Levene Equality of Variance Test	1	13.7	0.3559	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.634	0.701	2.4E-04	Non-Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	4	0.950	0.950	0.950	0.950	0.950	0.950	0.000	0.00%	0.00%
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-5.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	4	1.35	1.34	1.35	1.35	1.35	1.35	0	0.00%	0.00%
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	-8.48%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	Outlier	0.950	0.950	0.950	0.950					
29633-005		1.000	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.35	1.35	1.35	1.35						
29633-005		1.46	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 00-2253-7446		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:10		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-006 passed proportion survived				2.93%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-006	38	n/a	1	8	Exact	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1869	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0305644		0.0305644	1	13.7	0.0060	Significant Effect				
Error	0.0178396		0.00223	8							
Total	0.0484041			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.41	23.2	0.7484	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.563	0.741	2.0E-05	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-5.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-8.34%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-006		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-006		1.35	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 14-6935-2760		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:10		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-007 passed proportion survived				4.84%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-007	35.5	n/a	1	8	Exact	0.9841	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.44	2.29	0.0152	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0208496		0.0208496	1	3.89	0.0839	Non-Significant Effect				
Error	0.0428262		0.0053533	8							
Total	0.0636758			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.78	23.2	0.1589	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.661	0.741	3.0E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-4.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	-6.89%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-007		1.46	1.46	1.46	1.25	1.46					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 15-9631-6092		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:10		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-008 passed proportion survived				2.91%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-008	-1.41	1.86	0.055	8	CDF	0.9018	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1910	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.004398		0.004398	1	1.99	0.1964	Non-Significant Effect				
Error	0.0177107		0.0022138	8							
Total	0.0221086			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.39	23.2	0.7572	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.895	0.741	0.1909	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	-2.13%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	-3.16%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-008		1.35	1.46	1.35	1.35	1.35					

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 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 20-3095-3286		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:10		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-009 passed proportion survived				5.90%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-009	-0.89	1.86	0.102	8	CDF	0.8004	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0059629		0.0059629		1	0.793	0.3993	Non-Significant Effect			
Error	0.0601847		0.0075231		8						
Total	0.0661476				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			7.12	23.2	0.0835	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.832	0.741	0.0355	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	-2.13%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	-3.68%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 04-4715-0584		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:10		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-010 passed proportion survived				4.83%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-010	35.5	n/a	1	8	Exact	0.9841	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.44	2.29	0.0154	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0206028		0.0206028	1	3.87	0.0847	Non-Significant Effect				
Error	0.0425929		0.0053241	8							
Total	0.0631957			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.75	23.2	0.1605	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.656	0.741	2.6E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-4.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	-6.85%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-010		1.46	1.46	1.46	1.25	1.46					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 00-9842-7699		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 06 Dec-17 15:10		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-010 passed proportion survived				2.09%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-010	30	n/a	0	7	Exact	1.0000	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0391454		0.0391454	1	37	5.0E-04	Significant Effect				
Error	0.0074093		0.0010585	7							
Total	0.0465547			8							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Levene Equality of Variance Test			5.53	12.2	0.0510	Equal Variances				
Variances	Mod Levene Equality of Variance Test			1	13.7	0.3559	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.634	0.701	2.4E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-010		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-6.38%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-010		4	1.46	1.46	1.46	1.46	1.46	1.46	0	0.00%	-10.01%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-010		1.000	1.000	1.000	Outlier	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-010		1.46	1.46	1.46	1.46						

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Report Date: 08 Dec-17 13:09 (p 22 of 104)
 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 18-4505-9184		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:00		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-002 passed proportion survived				3.93%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-002	0.151	1.86	0.092	8	CDF	0.4418	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.17	2.29	0.1039	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0001408		0.0001408	1	0.0229	0.8835	Non-Significant Effect				
Error	0.0492447		0.0061556	8							
Total	0.0493855			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.65	23.2	0.1222	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.799	0.741	0.0142	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	-0.57%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-002		0.950	0.950	1.000	0.950	0.850					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-002		1.35	1.35	1.46	1.35	1.17					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 06-9367-1589		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:00		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-003 passed proportion survived				4.94%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-003	-2.02	1.86	0.095	8	CDF	0.9607	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.11	2.29	0.1445	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0265559		0.0265559	1	4.06	0.0785	Non-Significant Effect				
Error	0.0522657		0.0065332	8							
Total	0.0788216			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.01	23.2	0.2072	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.812	0.741	0.0204	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-5.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-7.73%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-003		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-003		1.35	1.46	1.46	1.46	1.46					

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Report Date: 08 Dec-17 13:09 (p 24 of 104)
Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 15-1709-8625		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:00		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-004 passed proportion survived				7.31%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-004	-0.333	1.86	0.13	8	CDF	0.6263	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5533	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0013499		0.0013499	1	0.111	0.7475	Non-Significant Effect				
Error	0.0971988		0.0121499	8							
Total	0.0985488			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.32	23.2	0.7926	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.875	0.741	0.1140	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	-1.06%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	-1.74%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-004		0.950	1.000	1.000	0.850	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-004		1.35	1.46	1.46	1.17	1.35					

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Report Date: 08 Dec-17 13:09 (p 25 of 104)
Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 19-9222-6677		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:00		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-005 passed proportion survived				4.29%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-005	37.5	n/a	1	8	Exact	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.35	2.29	0.0318	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.039539	0.039539	1	7.56	0.0251	Significant Effect					
Error	0.0418413	0.0052302	8								
Total	0.0813802		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			7120	23.2	<1.0E-37	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.709	0.741	0.0011	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-6.38%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	-9.43%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-005		1.000	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-005		1.46	1.46	1.46	1.46	1.46					

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Report Date: 08 Dec-17 13:09 (p 26 of 104)
Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 09-4521-8720		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:00		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-006 passed proportion survived				4.94%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-006	-2.02	1.86	0.095	8	CDF	0.9607	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.11	2.29	0.1445	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0265559		0.0265559	1	4.06	0.0785	Non-Significant Effect				
Error	0.0522657		0.0065332	8							
Total	0.0788216			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.01	23.2	0.2072	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.812	0.741	0.0204	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-5.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-7.73%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-006		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-006		1.35	1.46	1.46	1.46	1.46					

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Report Date: 08 Dec-17 13:09 (p 27 of 104)
Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 01-0788-1155		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:00		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-007 passed proportion survived				6.32%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-007	-1.35	1.86	0.116	8	CDF	0.8928	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.82	2.29	0.4702	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0175634		0.0175634	1	1.82	0.2144	Non-Significant Effect				
Error	0.0772523		0.0096565	8							
Total	0.0948157			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.18	23.2	0.8757	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.789	0.741	0.0107	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-4.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	-6.29%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-007		1.46	1.46	1.46	1.25	1.46					

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 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 17-9336-8090		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-008 passed proportion survived				4.93%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-008	-0.674	1.86	0.095	8	CDF	0.7405	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.11	2.29	0.1427	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0029648		0.0029648	1	0.455	0.5190	Non-Significant Effect				
Error	0.0521368		0.0065171	8							
Total	0.0551016			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.06	23.2	0.2034	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.88	0.741	0.1308	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	-2.13%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	-2.58%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 20-6511-1842		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-009 passed proportion survived				7.18%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-009	-0.601	1.86	0.128	8	CDF	0.7177	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	0.9964	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.004271		0.004271	1	0.361	0.5645	Non-Significant Effect				
Error	0.0946108		0.0118263	8							
Total	0.0988818			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.26	23.2	0.8273	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.869	0.741	0.0966	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	-2.13%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	-3.10%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-009		1.46	1.25	1.46	1.46	1.25					

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 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 15-3973-3790		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Angular (Corrected)	C > T		29633-010 passed proportion survived				6.31%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-010	34	n/a	1	8	Exact	0.9365	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.81	2.29	0.4751	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0173369	0.0173369	1	1.8	0.2165	Non-Significant Effect					
Error	0.077019	0.0096274	8								
Total	0.0943559		9								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.19	23.2	0.8708	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.786	0.741	0.0098	Non-Normal Distribution					
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-4.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	-6.24%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-010		1.46	1.46	1.46	1.25	1.46					

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 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 14-6276-0190		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-003 failed proportion survived				2.62%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-003*	17	n/a	1	8	Exact	0.0198	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1869	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0305644		0.0305644	1	13.7	0.0060	Significant Effect				
Error	0.0178396		0.00223	8							
Total	0.0484041			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.41	23.2	0.7484	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.563	0.741	2.0E-05	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-5.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-8.34%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-003		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-003		1.35	1.46	1.46	1.46	1.46					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 01-8668-2951		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29633-003 failed proportion survived			4.25%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-003*	2.02	1.86	0.095	8	CDF	0.0393	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.11	2.29	0.1445	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0265559		0.0265559	1	4.06	0.0785	Non-Significant Effect				
Error	0.0522657		0.0065332	8							
Total	0.0788216			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.01	23.2	0.2072	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.812	0.741	0.0204	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-5.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-7.73%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-003		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-003		1.35	1.46	1.46	1.46	1.46					

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 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 05-8472-6679		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29633-004 passed proportion survived					4.74%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-004	1.39	1.86	0.107	8	CDF	0.1007	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.15	2.29	0.1161	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0159311		0.0159311	1	1.94	0.2015	Non-Significant Effect				
Error	0.0657938		0.0082242	8							
Total	0.0817248			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.31	23.2	0.1349	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.882	0.741	0.1393	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	4.04%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	5.56%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-004		0.950	1.000	1.000	0.850	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-004		1.35	1.46	1.46	1.17	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 18-0266-9784		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-005 passed proportion survived				2.11%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-005	30	n/a	1	8	Exact	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	4.5E-04	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0012877		0.0012877	1	0.987	0.3496	Non-Significant Effect				
Error	0.0104362		0.0013045	8							
Total	0.0117239			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1770	23.2	1.9E-06	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.642	0.741	1.8E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-1.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	-1.58%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-005		1.000	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-005		1.46	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 08-4628-4143		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-006 passed proportion survived				2.75%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-006	27.5	n/a	2	8	Exact	0.7778	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.29	0.3533	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0	0	1	0	1.0000	Non-Significant Effect					
Error	0.0208607	0.0026076	8								
Total	0.0208607		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1	23.2	1.0000	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.527	0.741	7.6E-06	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-006		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-006		1.35	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 12-8478-2073		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29633-007 passed proportion survived					3.94%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-007	27	n/a	1	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.36	2.29	0.0305	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0009262	0.0009262	1	0.162	0.6982	Non-Significant Effect					
Error	0.0458472	0.0057309	8								
Total	0.0467734		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.4	23.2	0.2634	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.646	0.741	2.0E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	1.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	1.34%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-007		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 20-8347-4559		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-007 passed proportion survived				2.34%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-007	22	n/a	1	7	Exact	0.5556	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0011583		0.0011583	1	0.777	0.4073	Non-Significant Effect				
Error	0.0104358		0.0014908	7							
Total	0.0115942			8							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1420	46.2	6.1E-05	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.652	0.701	3.9E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-007		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-1.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-007		4	1.46	1.46	1.46	1.46	1.46	1.46	0.000658	0.09%	-1.59%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-007		1.000	1.000	1.000	Outlier	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-007		1.46	1.46	1.46	1.46						

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 21-0616-4426		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29633-008 failed proportion survived			2.75%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-008*	2.13	1.86	0.06	8	CDF	0.0328	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.29	0.3456	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0117744		0.0117744	1	4.54	0.0656	Non-Significant Effect				
Error	0.0207317		0.0025915	8							
Total	0.0325061			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.01	23.2	0.9907	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.906	0.741	0.2536	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	3.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	4.78%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 07-6107-1303		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result						PMSD	
Angular (Corrected)	C > T			29633-009 passed proportion survived						4.64%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-009	1.1	1.86	0.105	8	CDF	0.1521	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0095272		0.0095272	1	1.21	0.3041	Non-Significant Effect				
Error	0.0632057		0.0079007	8							
Total	0.0727329			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.06	23.2	0.1454	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.817	0.741	0.0231	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	3.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	4.30%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 05-6822-9554		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:01		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-010 passed proportion survived				3.93%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-010	27	n/a	1	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.36	2.29	0.0309	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0009791		0.0009791	1	0.172	0.6895	Non-Significant Effect				
Error	0.0456139		0.0057017	8							
Total	0.046593			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.37	23.2	0.2659	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.641	0.741	1.7E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	1.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	1.38%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-010		1.46	1.46	1.46	1.25	1.46					

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 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 04-4719-0584		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:02		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-004 passed proportion survived				4.29%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-004	0.549	1.86	0.104	8	CDF	0.2991	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.2	2.29	0.0877	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0023628		0.0023628	1	0.301	0.5982	Non-Significant Effect				
Error	0.0627727		0.0078466	8							
Total	0.0651355			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			7.47	23.2	0.0770	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.877	0.741	0.1218	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	-1.06%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	-2.32%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-004		0.950	1.000	1.000	0.850	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-004		1.35	1.46	1.46	1.17	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 04-6418-4355		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:02		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C < T			29633-004 passed proportion survived					5.16%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-004	0.333	1.86	0.13	8	CDF	0.3737	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.77	2.29	0.5533	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0013499		0.0013499	1	0.111	0.7475	Non-Significant Effect				
Error	0.0971988		0.0121499	8							
Total	0.0985488			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.32	23.2	0.7926	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.875	0.741	0.1140	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	-1.06%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	-1.74%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-004		0.950	1.000	1.000	0.850	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-004		1.35	1.46	1.46	1.17	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 05-6431-8209		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:02		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
Data Transform	Alt Hyp			Comparison Result						PMSD	
Angular (Corrected)	C < T			29633-004 passed proportion survived						0.93%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-004	-1.39	1.86	0.107	8	CDF	0.8993	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.15	2.29	0.1161	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0159311		0.0159311	1	1.94	0.2015	Non-Significant Effect				
Error	0.0657938		0.0082242	8							
Total	0.0817248			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.31	23.2	0.1349	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.882	0.741	0.1393	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	4.04%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	5.56%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-004		0.950	1.000	1.000	0.850	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-004		1.35	1.46	1.46	1.17	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 05-6762-7503		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:02		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29633-005 passed proportion survived					4.65%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-005	35	n/a	2	8	Exact	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.34	2.29	0.0346	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0262772	0.0262772	1	3.8	0.0872	Non-Significant Effect					
Error	0.0553693	0.0069212	8								
Total	0.0816466		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			9420	23.2	<1.0E-37	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.764	0.741	0.0053	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-5.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	-7.56%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-005		1.000	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-005		1.46	1.46	1.46	1.46	1.46					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 08-0019-0841	Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 13:02	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
Data Transform		Alt Hyp		Comparison Result		PMSD					
Angular (Corrected)		C > T		29633-006 passed proportion survived		5.20%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-006	-1.39	1.86	0.107	8	CDF	0.8993	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.15	2.29	0.1161	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0159311	0.0159311	1	1.94	0.2015	Non-Significant Effect					
Error	0.0657938	0.0082242	8								
Total	0.0817248		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.31	23.2	0.1349	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.882	0.741	0.1393	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-4.21%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-5.88%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-006		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-006		1.35	1.46	1.46	1.46	1.46					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 11-1580-9797		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:02		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29633-007 passed proportion survived					6.40%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-007	-0.899	1.86	0.125	8	CDF	0.8026	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.83	2.29	0.4509	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0091749		0.0091749	1	0.809	0.3948	Non-Significant Effect				
Error	0.0907803		0.0113475	8							
Total	0.0999552			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.56	23.2	0.6757	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.82	0.741	0.0251	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-3.16%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	-4.46%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-007		1.46	1.46	1.46	1.25	1.46					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID:	17-2376-4468	Endpoint:	Proportion Survived		CETIS Version:	CETISv1.9.3					
Analyzed:	08 Dec-17 13:02	Analysis:	Parametric-Two Sample		Official Results:	Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform	Alt Hyp		Comparison Result			PMSD					
Angular (Corrected)	C > T		29633-008 passed proportion survived			5.19%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-008	-0.195	1.86	0.107	8	CDF	0.5750	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.15	2.29	0.1149	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0003136	0.0003136	1	0.0382	0.8499	Non-Significant Effect					
Error	0.0656648	0.0082081	8								
Total	0.0659784		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.37	23.2	0.1322	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.824	0.741	0.0283	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	-1.05%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	-0.83%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 17-6191-5514		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:02		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-009 passed proportion survived				7.16%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-009	-0.246	1.86	0.137	8	CDF	0.5941	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.68	2.29	0.7333	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0008186		0.0008186	1	0.0606	0.8118	Non-Significant Effect				
Error	0.108139		0.0135174	8							
Total	0.108957			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.05	23.2	0.9641	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.837	0.741	0.0407	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	-1.05%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	-1.33%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 03-6905-2226		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:02		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29633-010 passed proportion survived					6.39%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-010	-0.892	1.86	0.125	8	CDF	0.8009	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.83	2.29	0.4472	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0090114		0.0090114	1	0.796	0.3983	Non-Significant Effect				
Error	0.090547		0.0113184	8							
Total	0.0995584			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.57	23.2	0.6712	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.818	0.741	0.0242	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-3.16%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	-4.43%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-010		1.46	1.46	1.46	1.25	1.46					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 04-4769-9709		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:02		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-005 failed proportion survived				0.05%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-005*	15	n/a	0	7	Exact	0.0079	Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0288891		0.0288891	1	34400	<1.0E-37	Significant Effect				
Error	5.88E-06		8.4E-07	7							
Total	0.028895			8							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Levene Equality of Variance Test			5.53	12.2	0.0510	Equal Variances				
Variances	Mod Levene Equality of Variance Test			1	13.7	0.3559	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.634	0.701	2.4E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	4	0.950	0.950	0.950	0.950	0.950	0.950	0.000	0.00%	0.00%
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-5.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	4	1.35	1.34	1.35	1.35	1.35	1.35	0	0.00%	0.00%
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	-8.48%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	Outlier	0.950	0.950	0.950	0.950					
29633-005		1.000	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.35	1.35	1.35	1.35						
29633-005		1.46	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 02-7025-7828		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:03		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-005 failed proportion survived				3.94%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-005*	17.5	n/a	1	8	Exact	0.0238	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.35	2.29	0.0318	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.039539	0.039539	1	7.56	0.0251	Significant Effect					
Error	0.0418413	0.0052302	8								
Total	0.0813802		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			7120	23.2	<1.0E-37	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.709	0.741	0.0011	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-6.38%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	-9.43%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-005		1.000	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-005		1.46	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 20-2862-3243		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:03		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-005 passed proportion survived				0.16%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-005	25	n/a	1	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	4.5E-04	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0012877		0.0012877	1	0.987	0.3496	Non-Significant Effect				
Error	0.0104362		0.0013045	8							
Total	0.0117239			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1770	23.2	1.9E-06	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.642	0.741	1.8E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-1.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	-1.58%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-005		1.000	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-005		1.46	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 03-0294-1530		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:03		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-005 passed proportion survived				3.85%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-005	20	n/a	2	8	Exact	0.0833	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.34	2.29	0.0346	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0262772		0.0262772	1	3.8	0.0872	Non-Significant Effect				
Error	0.0553693		0.0069212	8							
Total	0.0816466			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			9420	23.2	<1.0E-37	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.764	0.741	0.0053	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-5.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	-7.56%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-005		1.000	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-005		1.46	1.46	1.46	1.46	1.46					

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 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 02-8270-8103		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:03		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-006 passed proportion survived				2.35%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-005		29633-006	25	n/a	1	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	4.5E-04	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0012877		0.0012877	1	0.987	0.3496	Non-Significant Effect				
Error	0.0104362		0.0013045	8							
Total	0.0117239			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1770	23.2	1.9E-06	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.642	0.741	1.8E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	1.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	0.00%
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	1.56%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.000	1.000	1.000	1.000	1.000					
29633-006		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.46	1.46	1.46	1.46	1.46					
29633-006		1.35	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 02-3326-0519		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:03		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29633-005	Treated Sediment	USDC Penobscot, Winterport ME	P/S/3% (Nv SediMite 3%)								
29633-006	Treated Sediment	USDC Penobscot, Winterport ME	P/S/5% (Nv SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result					PMSD				
Angular (Corrected)	C > T	29633-006 passed proportion survived					1.27%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-005		29633-006	20	n/a	1	7	Exact	1.0000	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	4.083E-08	4.083E-08	1	0.0251	0.8786	Non-Significant Effect					
Error	1.139E-05	1.627E-06	7								
Total	1.143E-05		8								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	1.25	24.3	0.8057	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.585	0.701	6.4E-05	Non-Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-006		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	0.00%
29633-006		4	1.46	1.46	1.46	1.46	1.46	1.46	0.000658	0.09%	-0.01%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.000	1.000	1.000	1.000	1.000					
29633-006		Outlier	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.46	1.46	1.46	1.46	1.46					
29633-006		1.46	1.46	1.46	1.46						

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 20-4169-9799		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:03		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-007 passed proportion survived				1.27%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-005		29633-007	20	n/a	1	7	Exact	1.0000	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	4.083E-08		4.083E-08	1	0.0251	0.8786	Non-Significant Effect				
Error	1.139E-05		1.627E-06	7							
Total	1.143E-05			8							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.25	24.3	0.8057	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.585	0.701	6.4E-05	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-007		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	0.00%
29633-007		4	1.46	1.46	1.46	1.46	1.46	1.46	0.000658	0.09%	-0.01%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.000	1.000	1.000	1.000	1.000					
29633-007		1.000	1.000	1.000	Outlier	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.46	1.46	1.46	1.46	1.46					
29633-007		1.46	1.46	1.46	1.46						

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 10-3661-3436		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:03		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29633-008 failed proportion survived			2.34%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-005		29633-008*	17.5	n/a	1	8	Exact	0.0238	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	4.4E-04	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0208496		0.0208496	1	16.2	0.0038	Significant Effect				
Error	0.0103073		0.0012884	8							
Total	0.0311569			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1750	23.2	2.0E-06	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.633	0.741	1.4E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	4.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	6.26%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.000	1.000	1.000	1.000	1.000					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.46	1.46	1.46	1.46	1.46					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 01-7046-0216		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:03		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C > T			29633-009 passed proportion survived					4.81%		
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-005		29633-009	1.64	2.13	0.11	4	CDF	0.0878	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.64	2.29	0.8054	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.01782		0.01782	1	2.7	0.1389	Non-Significant Effect				
Error	0.0527813		0.0065977	8							
Total	0.0706012			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			8980	23.2	<1.0E-37	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.818	0.741	0.0237	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	4.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	5.79%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.000	1.000	1.000	1.000	1.000					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.46	1.46	1.46	1.46	1.46					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID:	18-1169-9521		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 13:03		Analysis:	Nonparametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29633-005	Treated Sediment	USDC Penobscot, Winterport ME	P/S/3% (Nv SediMite 3%)								
29633-010	Treated Sediment	USDC Penobscot, Winterport ME	P/B/10% (Nv Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C > T	29633-010 passed proportion survived				3.55%					
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-005		29633-010	25	n/a	1	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.68	2.29	4.4E-04	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0045124	0.0045124	1	1.03	0.3408	Non-Significant Effect					
Error	0.0351895	0.0043987	8								
Total	0.0397019		9								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5980	23.2	<1.0E-37	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.629	0.741	1.2E-04	Non-Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	2.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	2.91%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.000	1.000	1.000	1.000	1.000					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.46	1.46	1.46	1.46	1.46					
29633-010		1.46	1.46	1.46	1.25	1.46					

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 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 00-5814-2325		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:03		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-006 failed proportion survived				2.62%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-006*	17	n/a	1	8	Exact	0.0198	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1869	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0305644	0.0305644	1	13.7	0.0060	Significant Effect					
Error	0.0178396	0.00223	8								
Total	0.0484041		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.41	23.2	0.7484	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.563	0.741	2.0E-05	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-5.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-8.34%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-006		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-006		1.35	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 06-7761-2092	Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 13:04	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
Data Transform		Alt Hyp		Comparison Result		PMSD					
Angular (Corrected)		C < T		29633-006 failed proportion survived		4.25%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-006*	2.02	1.86	0.095	8	CDF	0.0393	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.11	2.29	0.1445	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0265559	0.0265559	1	4.06	0.0785	Non-Significant Effect					
Error	0.0522657	0.0065332	8								
Total	0.0788216		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.01	23.2	0.2072	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.812	0.741	0.0204	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-5.32%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-7.73%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-006		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-006		1.35	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 11-0458-4003		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:04		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-006 passed proportion survived				0.46%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-006	27.5	n/a	2	8	Exact	0.7778	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.29	0.3533	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0	0	1	0	1.0000	Non-Significant Effect					
Error	0.0208607	0.0026076	8								
Total	0.0208607		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1	23.2	1.0000	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.527	0.741	7.6E-06	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-006		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-006		1.35	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 03-7713-8716	Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 13:04	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29633-004	Treated Sediment	USDC Penobscot, Winterport ME	P/AC/10% (Nv Activated Ca								
29633-006	Treated Sediment	USDC Penobscot, Winterport ME	P/S/5% (Nv SediMite 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Angular (Corrected)	C < T	29633-006 passed proportion survived			4.05%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-006	1.39	1.86	0.107	8	CDF	0.1007	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.15	2.29	0.1161	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0159311	0.0159311	1	1.94	0.2015	Non-Significant Effect					
Error	0.0657938	0.0082242	8								
Total	0.0817248		9								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.31	23.2	0.1349	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.882	0.741	0.1393	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	-4.21%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	-5.88%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-006		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-006		1.35	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 01-6320-8952		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:04		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-006 passed proportion survived				0.48%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-005		29633-006	30	n/a	1	8	Exact	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	4.5E-04	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0012877	0.0012877	1	0.987	0.3496	Non-Significant Effect					
Error	0.0104362	0.0013045	8								
Total	0.0117239		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1770	23.2	1.9E-06	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.642	0.741	1.8E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	1.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	0.00%
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	1.56%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.000	1.000	1.000	1.000	1.000					
29633-006		0.950	1.000	1.000	1.000	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.46	1.46	1.46	1.46	1.46					
29633-006		1.35	1.46	1.46	1.46	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 07-1989-9470		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:04		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-007 passed proportion survived				3.94%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-006		29633-007	27	n/a	1	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.36	2.29	0.0305	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0009262		0.0009262	1	0.162	0.6982	Non-Significant Effect				
Error	0.0458472		0.0057309	8							
Total	0.0467734			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.4	23.2	0.2634	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.646	0.741	2.0E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	1.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	1.34%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		0.950	1.000	1.000	1.000	1.000					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		1.35	1.46	1.46	1.46	1.46					
29633-007		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 06-8691-3785		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:04		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C > T			29633-008 failed proportion survived			2.75%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-006		29633-008*	2.13	1.86	0.06	8	CDF	0.0328	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.29	0.3456	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0117744		0.0117744	1	4.54	0.0656	Non-Significant Effect				
Error	0.0207317		0.0025915	8							
Total	0.0325061			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.01	23.2	0.9907	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.906	0.741	0.2536	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	3.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	4.78%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		0.950	1.000	1.000	1.000	1.000					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		1.35	1.46	1.46	1.46	1.46					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 06-7510-9179		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:04		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-009 passed proportion survived				4.64%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-006		29633-009	1.1	1.86	0.105	8	CDF	0.1521	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0095272		0.0095272	1	1.21	0.3041	Non-Significant Effect				
Error	0.0632057		0.0079007	8							
Total	0.0727329			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.06	23.2	0.1454	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.817	0.741	0.0231	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	3.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	4.30%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		0.950	1.000	1.000	1.000	1.000					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		1.35	1.46	1.46	1.46	1.46					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 17-5686-3717		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:04		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-010 passed proportion survived				2.34%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-006		29633-010	22	n/a	1	7	Exact	0.5556	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0010906		0.0010906	1	0.732	0.4206	Non-Significant Effect				
Error	0.0104303		0.0014901	7							
Total	0.0115209			8							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Levene Equality of Variance Test			5.52	12.2	0.0511	Equal Variances				
Variances	Mod Levene Equality of Variance Test			1.06	13.7	0.3419	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.646	0.701	3.3E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-010		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-1.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-010		4	1.46	1.46	1.46	1.46	1.46	1.46	0	0.00%	-1.54%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		0.950	1.000	1.000	1.000	1.000					
29633-010		1.000	1.000	1.000	Outlier	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		1.35	1.46	1.46	1.46	1.46					
29633-010		1.46	1.46	1.46	1.46						

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 17-5982-1190		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:04		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-007 failed proportion survived				3.73%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-007*	19.5	n/a	1	8	Exact	0.0238	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.44	2.29	0.0152	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0208496		0.0208496	1	3.89	0.0839	Non-Significant Effect				
Error	0.0428262		0.0053533	8							
Total	0.0636758			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.78	23.2	0.1589	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.661	0.741	3.0E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-4.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	-6.89%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-007		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 15-1136-3287		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:05		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
Data Transform	Alt Hyp			Comparison Result						PMSD	
Angular (Corrected)	C < T			29633-007 passed proportion survived						4.82%	
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-007	1.35	1.86	0.116	8	CDF	0.1072	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.82	2.29	0.4702	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0175634		0.0175634	1	1.82	0.2144	Non-Significant Effect				
Error	0.0772523		0.0096565	8							
Total	0.0948157			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.18	23.2	0.8757	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.789	0.741	0.0107	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-4.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	-6.29%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-007		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 02-0636-6367		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:05		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C < T			29633-007 passed proportion survived					0.80%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-007	28	n/a	1	8	Exact	0.7778	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.36	2.29	0.0305	Outlier Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0009262	0.0009262	1	0.162	0.6982	Non-Significant Effect					
Error	0.0458472	0.0057309	8								
Total	0.0467734		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.4	23.2	0.2634	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.646	0.741	2.0E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	1.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	1.34%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-007		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID:	18-4197-1397	Endpoint:	Proportion Survived		CETIS Version:	CETISv1.9.3					
Analyzed:	08 Dec-17 13:05	Analysis:	Parametric-Two Sample		Official Results:	Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
Data Transform	Alt Hyp		Comparison Result			PMSD					
Angular (Corrected)	C < T		29633-007 passed proportion survived			4.44%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-007	0.899	1.86	0.125	8	CDF	0.1974	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.83	2.29	0.4509	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0091749	0.0091749	1	0.809	0.3948	Non-Significant Effect					
Error	0.0907803	0.0113475	8								
Total	0.0999552		9								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.56	23.2	0.6757	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.82	0.741	0.0251	Normal Distribution					
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-3.16%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	-4.46%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-007		1.46	1.46	1.46	1.25	1.46					

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 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 11-8355-7133		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:05		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-007 passed proportion survived				0.11%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-005		29633-007	30	n/a	1	8	Exact	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	4.4E-04	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.004398		0.004398	1	0.993	0.3481	Non-Significant Effect				
Error	0.0354228		0.0044279	8							
Total	0.0398207			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			6020	23.2	<1.0E-37	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.634	0.741	1.4E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	2.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	2.87%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.000	1.000	1.000	1.000	1.000					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.46	1.46	1.46	1.46	1.46					
29633-007		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 00-7300-2707		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:05		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-007 passed proportion survived				0.80%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-006		29633-007	28	n/a	1	8	Exact	0.7778	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.36	2.29	0.0305	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0009262		0.0009262	1	0.162	0.6982	Non-Significant Effect				
Error	0.0458472		0.0057309	8							
Total	0.0467734			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.4	23.2	0.2634	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.646	0.741	2.0E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	1.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	1.34%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		0.950	1.000	1.000	1.000	1.000					
29633-007		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		1.35	1.46	1.46	1.46	1.46					
29633-007		1.46	1.46	1.46	1.25	1.46					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 19-7843-0972		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:05		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-008 passed proportion survived				3.84%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-007		29633-008	1.03	1.86	0.089	8	CDF	0.1659	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.36	2.29	0.0298	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0060960		0.0060960	1	1.07	0.3319	Non-Significant Effect				
Error	0.0457183		0.0057148	8							
Total	0.0518143			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.44	23.2	0.2589	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.83	0.741	0.0335	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	2.04%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	3.48%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.000	1.000	1.000	0.900	1.000					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.46	1.46	1.46	1.25	1.46					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 02-9239-0997		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:05		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-009 passed proportion survived				5.59%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-007		29633-009	25	n/a	2	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.7	2.29	0.6818	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0045124	0.0045124	1	0.409	0.5402	Non-Significant Effect					
Error	0.0881923	0.011024	8								
Total	0.0927047		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.49	23.2	0.7086	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.76	0.741	0.0048	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	2.04%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	3.00%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.000	1.000	1.000	0.900	1.000					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.46	1.46	1.46	1.25	1.46					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 17-4697-7219		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:05		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-010 passed proportion survived				4.90%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-007		29633-010	27.5	n/a	2	8	Exact	0.7778	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.29	0.3487	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	7.35E-07		7.35E-07	1	8.33E-05	0.9929	Non-Significant Effect				
Error	0.0706005		0.0088251	8							
Total	0.0706012			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.01	23.2	0.9950	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.517	0.741	5.8E-06	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	0.04%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.000	1.000	1.000	0.900	1.000					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.46	1.46	1.46	1.25	1.46					
29633-010		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 20-6419-6718		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:05		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-008 passed proportion survived				2.61%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-008	1.41	1.86	0.055	8	CDF	0.0982	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.05	2.29	0.1910	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.004398		0.004398	1	1.99	0.1964	Non-Significant Effect				
Error	0.0177107		0.0022138	8							
Total	0.0221086			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.39	23.2	0.7572	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.895	0.741	0.1909	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	-2.13%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	-3.16%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 00-8816-0537		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:05		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-008 passed proportion survived				4.24%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-008	0.674	1.86	0.095	8	CDF	0.2595	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.11	2.29	0.1427	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0029648		0.0029648	1	0.455	0.5190	Non-Significant Effect				
Error	0.0521368		0.0065171	8							
Total	0.0551016			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.06	23.2	0.2034	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.88	0.741	0.1308	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	-2.13%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	-2.58%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 08-8276-8852		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:05		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-008 passed proportion survived				0.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-008	-2.13	1.86	0.06	8	CDF	0.9672	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.29	0.3456	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0117744		0.0117744	1	4.54	0.0656	Non-Significant Effect				
Error	0.0207317		0.0025915	8							
Total	0.0325061			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.01	23.2	0.9907	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.906	0.741	0.2536	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	3.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	4.78%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 11-0754-2982		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:06		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-008 passed proportion survived				4.05%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-008	0.195	1.86	0.107	8	CDF	0.4250	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.15	2.29	0.1149	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0003136		0.0003136	1	0.0382	0.8499	Non-Significant Effect				
Error	0.0656648		0.0082081	8							
Total	0.0659784			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.37	23.2	0.1322	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.824	0.741	0.0283	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	-1.05%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	-0.83%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 04-4919-0862		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:06		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-008 passed proportion survived				0.48%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-005		29633-008	37.5	n/a	1	8	Exact	1.0000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.68	2.29	4.4E-04	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0208496		0.0208496	1	16.2	0.0038	Significant Effect				
Error	0.0103073		0.0012884	8							
Total	0.0311569			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1750	23.2	2.0E-06	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.633	0.741	1.4E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	4.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	6.26%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.000	1.000	1.000	1.000	1.000					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.46	1.46	1.46	1.46	1.46					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 04-4321-5148		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:06		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-006	Treated Sediment	USDC Penobscot, Winterport ME		P/S/5% (Nv SediMite 5%)							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-008 passed proportion survived				0.45%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-006		29633-008	-2.13	1.86	0.06	8	CDF	0.9672	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.29	0.3456	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0117744		0.0117744	1	4.54	0.0656	Non-Significant Effect				
Error	0.0207317		0.0025915	8							
Total	0.0325061			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.01	23.2	0.9907	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.906	0.741	0.2536	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	3.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	4.78%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		0.950	1.000	1.000	1.000	1.000					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		1.35	1.46	1.46	1.46	1.46					
29633-008		1.35	1.46	1.35	1.35	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 10-7729-8851		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:06		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-008 passed proportion survived				0.39%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-007		29633-008	33	n/a	1	7	Exact	1.0000	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0185881		0.0185881	1	12.6	0.0093	Significant Effect				
Error	0.0103069		0.0014724	7							
Total	0.028895			8							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1400	46.2	6.2E-05	Unequal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.641	0.701	2.9E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	4.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		4	1.46	1.46	1.46	1.46	1.46	1.46	0.000658	0.09%	0.00%
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	6.27%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.000	1.000	1.000	Outlier	1.000					
29633-008		0.950	1.000	0.950	0.950	0.950					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.46	1.46	1.46	1.46						
29633-008		1.35	1.46	1.35	1.35	1.35					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 10-6597-7548		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:06		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-009 passed proportion survived				5.36%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-008		29633-009	-0.123	1.86	0.104	8	CDF	0.5473	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0001189		0.0001189	1	0.0151	0.9053	Non-Significant Effect				
Error	0.0630768		0.0078846	8							
Total	0.0631957			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.12	23.2	0.1426	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.833	0.741	0.0361	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	-0.50%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-008		0.950	1.000	0.950	0.950	0.950					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-008		1.35	1.46	1.35	1.35	1.35					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 08-4102-1813		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:06		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C > T			29633-010 passed proportion survived				2.29%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-008		29633-010	28	n/a	1	7	Exact	0.9921	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0183136		0.0183136	1	12.4	0.0096	Significant Effect				
Error	0.0103014		0.0014716	7							
Total	0.028615			8							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Levene Equality of Variance Test			5.53	12.2	0.0510	Equal Variances				
Variances	Mod Levene Equality of Variance Test			1	13.7	0.3559	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.634	0.701	2.4E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-010		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-4.17%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-010		4	1.46	1.46	1.46	1.46	1.46	1.46	0	0.00%	-6.64%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-008		0.950	1.000	0.950	0.950	0.950					
29633-010		1.000	1.000	1.000	Outlier	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-008		1.35	1.46	1.35	1.35	1.35					
29633-010		1.46	1.46	1.46	1.46						

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 00-9937-2102		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:06		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-009 passed proportion survived				4.23%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-009	0.89	1.86	0.102	8	CDF	0.1996	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.54	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0059629		0.0059629	1	0.793	0.3993	Non-Significant Effect				
Error	0.0601847		0.0075231	8							
Total	0.0661476			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			7.12	23.2	0.0835	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.832	0.741	0.0355	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	-2.13%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	-3.68%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 13-0387-2095		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:06		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-009 passed proportion survived				5.12%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-009	0.601	1.86	0.128	8	CDF	0.2823	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.56	2.29	0.9964	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.004271		0.004271	1	0.361	0.5645	Non-Significant Effect				
Error	0.0946108		0.0118263	8							
Total	0.0988818			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.26	23.2	0.8273	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.869	0.741	0.0966	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	-2.13%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	-3.10%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 19-8087-7512		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:06		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-009 passed proportion survived				0.92%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-009	-1.1	1.86	0.105	8	CDF	0.8479	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.5	2.29	1.0000	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0095272		0.0095272	1	1.21	0.3041	Non-Significant Effect				
Error	0.0632057		0.0079007	8							
Total	0.0727329			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			5.06	23.2	0.1454	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.817	0.741	0.0231	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	3.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	4.30%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 10-8014-8227		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:06		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform		Alt Hyp		Comparison Result				PMSD			
Angular (Corrected)		C < T		29633-009 passed proportion survived				4.64%			
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-009	0.246	1.86	0.137	8	CDF	0.4059	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.68	2.29	0.7333	No Outliers Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0008186		0.0008186	1	0.0606	0.8118	Non-Significant Effect				
Error	0.108139		0.0135174	8							
Total	0.108957			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.05	23.2	0.9641	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.837	0.741	0.0407	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	-1.05%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	-1.33%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID:	01-8526-2458		Endpoint:	Proportion Survived		CETIS Version:	CETISv1.9.3				
Analyzed:	08 Dec-17 13:07		Analysis:	Parametric-Two Sample		Official Results:	Yes				
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29633-005	Treated Sediment	USDC Penobscot, Winterport ME	P/S/3% (Nv SediMite 3%)								
29633-009	Treated Sediment	USDC Penobscot, Winterport ME	P/B/5% (Nv Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29633-009 passed proportion survived				0.00%					
Unequal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-005		29633-009	-1.64	2.13	0.11	4	CDF	0.9122	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.64	2.29	0.8054	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.01782	0.01782	1	2.7	0.1389	Non-Significant Effect					
Error	0.0527813	0.0065977	8								
Total	0.0706012		9								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	8980	23.2	<1.0E-37	Unequal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.818	0.741	0.0237	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	4.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	5.79%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.000	1.000	1.000	1.000	1.000					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.46	1.46	1.46	1.46	1.46					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 03-6214-2196	Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 13:07	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME	P/S/5% (Nv SediMite 5%)								
29633-009	Treated Sediment	USDC Penobscot, Winterport ME	P/B/5% (Nv Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result			PMSD						
Angular (Corrected)	C < T	29633-009 passed proportion survived			0.92%						
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-006		29633-009	-1.1	1.86	0.105	8	CDF	0.8479	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.5	2.29	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0095272	0.0095272	1	1.21	0.3041	Non-Significant Effect					
Error	0.0632057	0.0079007	8								
Total	0.0727329		9								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.06	23.2	0.1454	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.817	0.741	0.0231	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	3.03%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	4.30%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		0.950	1.000	1.000	1.000	1.000					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		1.35	1.46	1.46	1.46	1.46					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test										EnviroSystems, Inc.	
Analysis ID: 20-9565-5506		Endpoint: Proportion Survived				CETIS Version: CETISv1.9.3					
Analyzed: 08 Dec-17 13:07		Analysis: Nonparametric-Two Sample				Official Results: Yes					
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
Data Transform		Alt Hyp			Comparison Result						PMSD
Angular (Corrected)		C < T			29633-009 passed proportion survived						1.95%
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-007		29633-009	30	n/a	2	8	Exact	0.9167	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.7	2.29	0.6818	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0045124	0.0045124	1	0.409	0.5402	Non-Significant Effect					
Error	0.0881923	0.011024	8								
Total	0.0927047		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.49	23.2	0.7086	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.76	0.741	0.0048	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	2.04%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	3.00%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.000	1.000	1.000	0.900	1.000					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.46	1.46	1.46	1.25	1.46					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 16-0485-0240	Endpoint: Proportion Survived		CETIS Version: CETISv1.9.3								
Analyzed: 08 Dec-17 13:07	Analysis: Parametric-Two Sample		Official Results: Yes								
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h	Wood, PLC	Ecological Risk Assessm					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29633-008	Treated Sediment	USDC Penobscot, Winterport ME	P/B/3% (Nv Biochar 3%)								
29633-009	Treated Sediment	USDC Penobscot, Winterport ME	P/B/5% (Nv Biochar 5%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29633-009 passed proportion survived				3.16%					
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-008		29633-009	0.123	1.86	0.104	8	CDF	0.4527	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	1.5	2.29	1.0000	No Outliers Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0001189	0.0001189	1	0.0151	0.9053	Non-Significant Effect					
Error	0.0630768	0.0078846	8								
Total	0.0631957		9								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	5.12	23.2	0.1426	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.833	0.741	0.0361	Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	-0.50%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-008		0.950	1.000	0.950	0.950	0.950					
29633-009		1.000	0.900	1.000	1.000	0.900					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-008		1.35	1.46	1.35	1.35	1.35					
29633-009		1.46	1.25	1.46	1.46	1.25					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 15-2761-1271		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:07		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Angular (Corrected)	C > T		29633-010 passed proportion survived				6.09%				
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-009		29633-010	30	n/a	2	8	Exact	0.9167	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.7	2.29	0.6884	No Outliers Detected					
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.004398	0.004398	1	0.4	0.5447	Non-Significant Effect					
Error	0.087959	0.0109949	8								
Total	0.092357		9								
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.5	23.2	0.7040	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.759	0.741	0.0045	Non-Normal Distribution					
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-2.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	-3.05%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-009		1.000	0.900	1.000	1.000	0.900					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-009		1.46	1.25	1.46	1.46	1.25					
29633-010		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 01-8117-2543		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:07		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-001	20-5605-7173	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-001	Riverine Sediment	USDC Penobscot, Winterport ME		P/N/0% (Nv Mendall Marsh)							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29633-010 failed proportion survived			3.72%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
Negative Control		29633-010*	19.5	n/a	1	8	Exact	0.0238	Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.44	2.29	0.0154	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0206028		0.0206028	1	3.87	0.0847	Non-Significant Effect				
Error	0.0425929		0.0053241	8							
Total	0.0631957			9							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			4.75	23.2	0.1605	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.656	0.741	2.6E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	0.940	0.912	0.968	0.950	0.900	0.950	0.010	2.38%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-4.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-001	N	5	1.33	1.27	1.38	1.35	1.25	1.35	0.0192	3.25%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	-6.85%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	0.900	0.950	0.950	0.950	0.950					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-001	N	1.25	1.35	1.35	1.35	1.35					
29633-010		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 18-7236-8683		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:07		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-002	11-1407-3606	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-002	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/3% (Nv Activated Car							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform	Alt Hyp			Comparison Result					PMSD		
Angular (Corrected)	C < T			29633-010 passed proportion survived					4.81%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-002		29633-010	21	n/a	1	8	Exact	0.0833	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.81	2.29	0.4751	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0173369	0.0173369	1	1.8	0.2165	Non-Significant Effect					
Error	0.077019	0.0096274	8								
Total	0.0943559		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.19	23.2	0.8708	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.786	0.741	0.0098	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	0.940	0.872	1.000	0.950	0.850	1.000	0.025	5.83%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-4.26%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-002		5	1.33	1.21	1.46	1.35	1.17	1.46	0.0457	7.67%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	-6.24%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		0.950	0.950	1.000	0.950	0.850					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-002		1.35	1.35	1.46	1.35	1.17					
29633-010		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 02-2697-3167		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:07		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-003	10-4416-2050	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-003	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/5% (Nv Activated Car							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-010 passed proportion survived				0.28%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-003		29633-010	18	n/a	1	7	Exact	0.5556	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0010906		0.0010906		1	0.732	0.4206	Non-Significant Effect			
Error	0.0104303		0.0014901		7						
Total	0.0115209				8						
Distributional Tests											
Attribute	Test				Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Levene Equality of Variance Test				5.52	12.2	0.0511	Equal Variances			
Variances	Mod Levene Equality of Variance Test				1.06	13.7	0.3419	Equal Variances			
Distribution	Shapiro-Wilk W Normality Test				0.646	0.701	3.3E-04	Non-Normal Distribution			
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-010		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-1.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-003		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-010		4	1.46	1.46	1.46	1.46	1.46	1.46	0	0.00%	-1.54%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		0.950	1.000	1.000	1.000	1.000					
29633-010		1.000	1.000	1.000	Outlier	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-003		1.35	1.46	1.46	1.46	1.46					
29633-010		1.46	1.46	1.46	1.46						

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 01-8040-2092		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:07		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-004	08-2798-8084	10 Oct-17 13:00	10 Oct-17 13:00	13d 23h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-004	Treated Sediment	USDC Penobscot, Winterport ME		P/AC/10% (Nv Activated Ca							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform	Alt Hyp		Comparison Result				PMSD				
Angular (Corrected)	C < T		29633-010 passed proportion survived				4.43%				
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-004		29633-010	0.892	1.86	0.125	8	CDF	0.1991	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:5%)					
Extreme Value	Grubbs Extreme Value Test		1.83	2.29	0.4472	No Outliers Detected					
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	0.0090114		0.0090114	1	0.796	0.3983	Non-Significant Effect				
Error	0.090547		0.0113184	8							
Total	0.0995584			9							
Distributional Tests											
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)					
Variances	Variance Ratio F Test		1.57	23.2	0.6712	Equal Variances					
Distribution	Shapiro-Wilk W Normality Test		0.818	0.741	0.0242	Normal Distribution					
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	0.950	0.874	1.000	0.950	0.850	1.000	0.027	6.45%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-3.16%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-004		5	1.36	1.21	1.5	1.35	1.17	1.46	0.0526	8.67%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	-4.43%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		0.950	1.000	1.000	0.850	0.950					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-004		1.35	1.46	1.46	1.17	1.35					
29633-010		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 03-3802-9234		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:07		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-005	03-2849-2316	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location	Lat/Long						
29633-005	Treated Sediment	USDC Penobscot, Winterport ME		P/S/3% (Nv SediMite 3%)							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-010 passed proportion survived				1.21%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-005		29633-010	20	n/a	1	7	Exact	1.0000	Non-Significant Effect		
ANOVA Table											
Source	Sum Squares		Mean Square	DF	F Stat	P-Value	Decision(α:5%)				
Between	6.533E-07		6.533E-07	1	0.778	0.4071	Non-Significant Effect				
Error	5.88E-06		8.4E-07	7							
Total	6.533E-06			8							
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Levene Equality of Variance Test			5.53	12.2	0.0510	Equal Variances				
Variances	Mod Levene Equality of Variance Test			1	13.7	0.3559	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.634	0.701	2.4E-04	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
29633-010		4	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-005		5	1.46	1.46	1.46	1.46	1.46	1.46	0.000523	0.08%	0.00%
29633-010		4	1.46	1.46	1.46	1.46	1.46	1.46	0	0.00%	0.04%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.000	1.000	1.000	1.000	1.000					
29633-010		1.000	1.000	1.000	Outlier	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-005		1.46	1.46	1.46	1.46	1.46					
29633-010		1.46	1.46	1.46	1.46						

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID:	13-0766-1720		Endpoint:	Proportion Survived			CETIS Version:	CETISv1.9.3			
Analyzed:	08 Dec-17 13:07		Analysis:	Nonparametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-006	16-5969-1773	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source	Station Location	Lat/Long							
29633-006	Treated Sediment	USDC Penobscot, Winterport ME	P/S/5% (Nv SediMite 5%)								
29633-010	Treated Sediment	USDC Penobscot, Winterport ME	P/B/10% (Nv Biochar 10%)								
Data Transform	Alt Hyp	Comparison Result				PMSD					
Angular (Corrected)	C < T	29633-010 passed proportion survived				0.80%					
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-006		29633-010	28	n/a	1	8	Exact	0.7778	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:5%)						
Extreme Value	Grubbs Extreme Value Test	2.36	2.29	0.0309	Outlier Detected						
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.0009791	0.0009791	1	0.172	0.6895	Non-Significant Effect					
Error	0.0456139	0.0057017	8								
Total	0.046593		9								
Distributional Tests											
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)						
Variances	Variance Ratio F Test	3.37	23.2	0.2659	Equal Variances						
Distribution	Shapiro-Wilk W Normality Test	0.641	0.741	1.7E-04	Non-Normal Distribution						
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	0.990	0.962	1.000	1.000	0.950	1.000	0.010	2.26%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	1.01%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-006		5	1.44	1.37	1.5	1.46	1.35	1.46	0.0228	3.55%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	1.38%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		0.950	1.000	1.000	1.000	1.000					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-006		1.35	1.46	1.46	1.46	1.46					
29633-010		1.46	1.46	1.46	1.25	1.46					

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Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 18-6558-8858		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:08		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-007	04-3350-0970	10 Oct-17 14:00	10 Oct-17 14:00	13d 22h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-007	Treated Sediment	USDC Penobscot, Winterport ME		P/S/10% (Nv SediMite 10%							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-010 passed proportion survived				1.85%		
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-007		29633-010	27.5	n/a	2	8	Exact	0.7778	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.9	2.29	0.3487	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	7.35E-07	7.35E-07	1	8.33E-05	0.9929	Non-Significant Effect					
Error	0.0706005	0.0088251	8								
Total	0.0706012		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.01	23.2	0.9950	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.517	0.741	5.8E-06	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-007		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0421	6.64%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	0.04%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.000	1.000	1.000	0.900	1.000					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-007		1.46	1.46	1.46	1.25	1.46					
29633-010		1.46	1.46	1.46	1.25	1.46					

CETIS Analytical Report

Report Date: 08 Dec-17 13:11 (p 103 of 104)
 Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 03-1630-0637		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:08		Analysis: Parametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-008	14-3306-7366	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-008	Treated Sediment	USDC Penobscot, Winterport ME		P/B/3% (Nv Biochar 3%)							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result				PMSD		
Angular (Corrected)		C < T			29633-010 passed proportion survived				2.82%		
Equal Variance t Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)		
29633-008		29633-010	1.02	1.86	0.089	8	CDF	0.1679	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			2.36	2.29	0.0301	Outlier Detected				
ANOVA Table											
Source	Sum Squares		Mean Square		DF	F Stat	P-Value	Decision(α:5%)			
Between	0.0059629		0.0059629		1	1.05	0.3358	Non-Significant Effect			
Error	0.045485		0.0056856		8						
Total	0.0514479				9						
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			3.42	23.2	0.2613	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.827	0.741	0.0310	Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-008		5	0.960	0.932	0.988	0.950	0.950	1.000	0.010	2.33%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-2.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-008		5	1.37	1.3	1.43	1.35	1.35	1.46	0.0227	3.71%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	-3.57%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-008		0.950	1.000	0.950	0.950	0.950					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-008		1.35	1.46	1.35	1.35	1.35					
29633-010		1.46	1.46	1.46	1.25	1.46					

CETIS Analytical Report

Report Date: 08 Dec-17 13:11 (p 104 of 104)
Test Code: 29633Nv | 08-6945-1216

Polychaete Survival and Growth Test							EnviroSystems, Inc.				
Analysis ID: 15-9762-0686		Endpoint: Proportion Survived			CETIS Version: CETISv1.9.3						
Analyzed: 08 Dec-17 13:08		Analysis: Nonparametric-Two Sample			Official Results: Yes						
Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project					
29633-009	02-5574-6077	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h	Wood, PLC	Ecological Risk Assessm					
29633-010	06-2111-1913	10 Oct-17 15:10	10 Oct-17 15:10	13d 21h							
Sample Code	Material Type	Sample Source		Station Location		Lat/Long					
29633-009	Treated Sediment	USDC Penobscot, Winterport ME		P/B/5% (Nv Biochar 5%)							
29633-010	Treated Sediment	USDC Penobscot, Winterport ME		P/B/10% (Nv Biochar 10%)							
Data Transform		Alt Hyp			Comparison Result			PMSD			
Angular (Corrected)		C < T			29633-010 passed proportion survived			3.62%			
Wilcoxon Rank Sum Two-Sample Test											
Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)		
29633-009		29633-010	25	n/a	2	8	Exact	0.5000	Non-Significant Effect		
Auxiliary Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:5%)				
Extreme Value	Grubbs Extreme Value Test			1.7	2.29	0.6884	No Outliers Detected				
ANOVA Table											
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)					
Between	0.004398	0.004398	1	0.4	0.5447	Non-Significant Effect					
Error	0.087959	0.0109949	8								
Total	0.092357		9								
Distributional Tests											
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)				
Variances	Variance Ratio F Test			1.5	23.2	0.7040	Equal Variances				
Distribution	Shapiro-Wilk W Normality Test			0.759	0.741	0.0045	Non-Normal Distribution				
Proportion Survived Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-009		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	0.00%
29633-010		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-2.08%
Angular (Corrected) Transformed Summary											
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
29633-009		5	1.37	1.23	1.52	1.46	1.25	1.46	0.0514	8.35%	0.00%
29633-010		5	1.42	1.3	1.53	1.46	1.25	1.46	0.0419	6.62%	-3.05%
Proportion Survived Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-009		1.000	0.900	1.000	1.000	0.900					
29633-010		1.000	1.000	1.000	0.900	1.000					
Angular (Corrected) Transformed Detail											
Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
29633-009		1.46	1.25	1.46	1.46	1.25					
29633-010		1.46	1.46	1.46	1.25	1.46					

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/L/0%	A	00	10/24/2017 17:25:00	12.5	7.91	90.6	7.36	48519	31.6
P/L/0%	B	00	10/24/2017 17:25:17	12.4	7.62	87.1	7.39	48466	31.56
P/L/0%	C	00	10/24/2017 17:25:34	12.4	8.08	92.3	7.45	48513	31.59
P/L/0%	D	00	10/24/2017 17:25:49	12.4	7.94	90.8	7.4	48516	31.59
P/L/0%	E	00	10/24/2017 17:26:00	12.3	7.86	89.6	7.39	48529	31.6
P/N/0%	A	00	10/24/2017 17:26:20	12.2	8.35	95	7.51	48358	31.47
P/N/0%	B	00	10/24/2017 17:27:15	12	6.9	78.1	7.45	48324	31.44
P/N/0%	C	00	10/24/2017 17:27:34	12	8.12	91.9	7.53	48361	31.46
P/N/0%	D	00	10/24/2017 17:27:54	11.7	8.05	90.7	7.54	48299	31.41
P/N/0%	E	00	10/24/2017 17:28:14	11.7	7.56	85.1	7.5	48328	31.42
P/AC/3%	A	00	10/24/2017 17:28:42	11.4	8.21	91.9	7.55	48372	31.44
P/AC/3%	B	00	10/24/2017 17:29:00	11.2	8.17	90.9	7.55	48249	31.34
P/AC/3%	C	00	10/24/2017 17:29:55	12.4	8.32	95.1	7.59	48350	31.47
P/AC/3%	D	00	10/24/2017 17:30:14	12.3	7.32	83.5	7.51	48127	31.31
P/AC/3%	E	00	10/24/2017 17:30:33	12.5	7.78	89	7.54	48412	31.52
P/AC/5%	A	00	10/24/2017 17:30:53	12.4	7.82	89.4	7.55	48374	31.49
P/AC/5%	B	00	10/24/2017 17:31:14	12.2	7.88	89.7	7.55	48396	31.5
P/AC/5%	C	00	10/24/2017 17:31:35	12.1	7.71	87.4	7.53	48353	31.46
P/AC/5%	D	00	10/24/2017 17:31:58	11.7	7.99	89.9	7.56	48153	31.3
P/AC/5%	E	00	10/24/2017 17:32:13	11.6	8.36	94	7.59	48393	31.47
P/AC/10%	A	00	10/24/2017 17:32:21	11.6	8.4	94.3	7.6	48461	31.51
P/AC/10%	B	00	10/24/2017 17:32:47	11.3	7.9	88.2	7.55	48325	31.4
P/AC/10%	C	00	10/24/2017 17:33:05	11.4	8.61	96.4	7.63	48509	31.54
P/AC/10%	D	00	10/24/2017 17:33:15	11	8.46	93.9	7.61	48443	31.47
P/AC/10%	E	00	10/24/2017 17:33:35	12.4	8.09	92.5	7.61	48311	31.44
P/S/3%	A	00	10/24/2017 17:33:44	12.4	8.19	93.5	7.63	48238	31.39
P/S/3%	B	00	10/24/2017 17:33:53	12.3	8.32	94.8	7.64	48231	31.38
P/S/3%	C	00	10/24/2017 17:34:02	12.3	8.32	94.9	7.64	48346	31.46
P/S/3%	D	00	10/24/2017 17:34:15	12	8.43	95.1	7.67	47240	30.65
P/S/3%	E	00	10/24/2017 17:34:29	12.1	8.69	98.5	7.7	48418	31.51
P/S/5%	A	00	10/24/2017 17:35:09	11.6	8.62	96.9	7.68	48373	31.45
P/S/5%	B	00	10/24/2017 17:35:23	11.5	8.59	96.1	7.68	48306	31.4
P/S/5%	C	00	10/24/2017 17:35:48	11.3	8.9	99.2	7.72	48307	31.39
P/S/5%	D	00	10/24/2017 17:36:04	11.3	8.64	96.4	7.69	48401	31.46
P/S/5%	E	00	10/24/2017 17:36:14	11.2	8.6	95.7	7.69	48398	31.45
P/S/10%	A	00	10/24/2017 17:36:29	11	8.87	98.4	7.7	48452	31.48
P/S/10%	B	00	10/24/2017 17:37:17	11.2	8.79	97.9	7.72	48525	31.54
P/S/10%	C	00	10/24/2017 17:37:34	11.5	8.68	97.3	7.7	48508	31.54
P/S/10%	D	00	10/24/2017 17:37:48	11.5	8.55	96	7.7	48444	31.5
P/S/10%	E	00	10/24/2017 17:38:04	11.9	8.61	97.3	7.71	48451	31.52
P/B/3%	A	00	10/24/2017 17:38:21	12.2	8.42	95.8	7.68	48374	31.48
P/B/3%	B	00	10/24/2017 17:38:44	12.4	8.45	96.6	7.69	48380	31.49
P/B/3%	C	00	10/24/2017 17:39:37	12.5	8.57	98.2	7.73	48461	31.56
P/B/3%	D	00	10/24/2017 17:39:51	12.6	8.5	97.7	7.72	48470	31.57

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/B/3%	E	00	10/24/2017 17:40:06	12.7	8.46	97.2	7.72	48346	31.48
P/B/5%	A	00	10/24/2017 17:40:18	12.7	8.48	97.5	7.73	48351	31.48
P/B/5%	B	00	10/24/2017 17:40:26	12.8	8.42	97	7.71	48418	31.54
P/B/5%	C	00	10/24/2017 17:40:37	12.8	8.47	97.6	7.72	48272	31.43
P/B/5%	D	00	10/24/2017 17:41:01	12	8.57	97.1	7.7	48462	31.53
P/B/5%	E	00	10/24/2017 17:41:15	12.1	8.36	94.8	7.68	48436	31.52
P/B/10%	A	00	10/24/2017 17:41:32	12	8.35	94.6	7.68	48379	31.48
P/B/10%	B	00	10/24/2017 17:41:50	12.2	7.94	90.2	7.65	48436	31.52
P/B/10%	C	00	10/24/2017 17:41:58	12.2	8.13	92.3	7.67	48251	31.39
P/B/10%	D	00	10/24/2017 17:42:09	12.4	8.29	94.7	7.67	48386	31.5
P/B/10%	E	00	10/24/2017 17:42:45	12.4	8.31	95.1	7.68	48401	31.51
P/L/0%	A	01	10/25/2017 09:58:09	12.1	9.77	111.4	7.39	48431	31.52
P/L/0%	B	01	10/25/2017 09:58:43	12	9.08	103.5	7.43	48256	31.39
P/L/0%	C	01	10/25/2017 09:59:05	12	9.04	102.9	7.47	48397	31.49
P/L/0%	D	01	10/25/2017 09:59:18	12	9.16	104.4	7.45	48374	31.47
P/L/0%	E	01	10/25/2017 09:59:38	11.9	8.29	94.2	7.35	48389	31.48
P/N/0%	A	01	10/25/2017 09:59:57	11.8	9.03	102.3	7.55	48066	31.24
P/N/0%	B	01	10/25/2017 10:01:28	11.7	4.52	51.1	7.26	47929	31.13
P/N/0%	C	01	10/25/2017 10:01:56	11.7	8.44	95.4	7.51	48087	31.25
P/N/0%	D	01	10/25/2017 10:02:17	11.5	8.1	91.1	7.49	47941	31.13
P/N/0%	E	01	10/25/2017 10:02:26	11.4	7.68	86.2	7.46	48048	31.21
P/AC/3%	A	01	10/25/2017 10:02:40	11	8.3	92.5	7.51	48058	31.2
P/AC/3%	B	01	10/25/2017 10:02:51	10.9	8.43	93.5	7.51	47953	31.11
P/AC/3%	C	01	10/25/2017 10:05:06	12.1	8.36	95.4	7.61	48035	31.23
P/AC/3%	D	01	10/25/2017 10:05:17	12.1	8.38	95.4	7.61	47803	31.06
P/AC/3%	E	01	10/25/2017 10:05:29	12.2	8.15	93.2	7.59	48115	31.29
P/AC/5%	A	01	10/25/2017 10:05:45	12.4	8.26	94.7	7.63	48238	31.39
P/AC/5%	B	01	10/25/2017 10:06:02	12	8.23	93.7	7.6	48097	31.27
P/AC/5%	C	01	10/25/2017 10:06:17	11.8	8.54	96.8	7.64	48030	31.21
P/AC/5%	D	01	10/25/2017 10:06:36	11.6	7.92	89.2	7.56	47722	30.98
P/AC/5%	E	01	10/25/2017 10:06:53	11.5	8.57	96.4	7.63	48021	31.19
P/AC/10%	A	01	10/25/2017 10:07:04	11.4	8.46	95	7.63	48137	31.27
P/AC/10%	B	01	10/25/2017 10:07:18	11	8.6	95.8	7.64	47952	31.12
P/AC/10%	C	01	10/25/2017 10:07:29	11.1	8.72	97.5	7.67	48305	31.38
P/AC/10%	D	01	10/25/2017 10:07:48	10.7	8.06	89.2	7.58	48074	31.19
P/AC/10%	E	01	10/25/2017 10:10:05	12.1	8.17	93.2	7.63	47946	31.17
P/S/3%	A	01	10/25/2017 10:10:21	12.2	8.38	95.5	7.67	47836	31.09
P/S/3%	B	01	10/25/2017 10:10:32	12.1	8.48	96.6	7.68	47878	31.12
P/S/3%	C	01	10/25/2017 10:10:40	12.1	8.46	96.6	7.68	48036	31.23
P/S/3%	D	01	10/25/2017 10:10:56	11.9	8.5	96.2	7.68	46954	30.44
P/S/3%	E	01	10/25/2017 10:11:17	11.9	8.84	100.4	7.75	48146	31.3
P/S/5%	A	01	10/25/2017 10:11:47	11.5	8.72	98.2	7.73	48059	31.22
P/S/5%	B	01	10/25/2017 10:12:21	11.3	8.74	97.9	7.73	47989	31.16

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/S/5%	C	01	10/25/2017 10:12:31	11.1	8.93	99.5	7.77	47965	31.13
P/S/5%	D	01	10/25/2017 10:12:41	11	8.91	99.3	7.74	48048	31.19
P/S/5%	E	01	10/25/2017 10:13:01	10.9	8.72	96.9	7.71	48076	31.2
P/S/10%	A	01	10/25/2017 10:13:14	10.8	8.96	99.3	7.76	48124	31.23
P/S/10%	B	01	10/25/2017 10:15:42	10.9	8.82	98	7.79	48157	31.26
P/S/10%	C	01	10/25/2017 10:15:54	11.1	8.83	98.5	7.79	48211	31.31
P/S/10%	D	01	10/25/2017 10:16:07	11.1	8.77	97.9	7.77	48071	31.21
P/S/10%	E	01	10/25/2017 10:16:20	11.4	8.64	97	7.77	48059	31.21
P/B/3%	A	01	10/25/2017 10:16:38	11.8	8.53	96.6	7.74	48042	31.22
P/B/3%	B	01	10/25/2017 10:16:53	12.1	8.54	97.3	7.75	48052	31.24
P/B/3%	C	01	10/25/2017 10:17:23	12.1	8.71	99.4	7.78	48190	31.34
P/B/3%	D	01	10/25/2017 10:17:44	12.2	8.47	96.9	7.76	48173	31.34
P/B/3%	E	01	10/25/2017 10:17:55	12.3	8.55	97.8	7.78	48054	31.25
P/B/5%	A	01	10/25/2017 10:18:16	12.3	8.62	98.6	7.79	48022	31.23
P/B/5%	B	01	10/25/2017 10:18:25	12.4	8.51	97.7	7.76	48175	31.34
P/B/5%	C	01	10/25/2017 10:18:36	12.4	8.53	97.8	7.78	47888	31.14
P/B/5%	D	01	10/25/2017 10:19:47	11.6	8.61	97.1	7.75	48217	31.34
P/B/5%	E	01	10/25/2017 10:20:04	11.7	8.24	93.3	7.71	48202	31.33
P/B/10%	A	01	10/25/2017 10:20:14	11.7	8.37	94.6	7.72	48090	31.25
P/B/10%	B	01	10/25/2017 10:20:21	11.8	8.25	93.6	7.69	48185	31.33
P/B/10%	C	01	10/25/2017 10:20:31	11.9	8.17	92.7	7.7	47862	31.1
P/B/10%	D	01	10/25/2017 10:20:44	12.1	8.38	95.5	7.71	48129	31.3
P/B/10%	E	01	10/25/2017 10:20:55	12.1	8.42	96.1	7.71	48140	31.31
P/L/0%	A	02	10/26/2017 10:21:30	12.3	8.78	100.4	7.52	46551	30.17
P/L/0%	B	02	10/26/2017 10:21:57	12.3	8.69	99.2	7.55	46468	30.11
P/L/0%	C	02	10/26/2017 10:22:26	12.1	8.79	100	7.53	46597	30.19
P/L/0%	D	02	10/26/2017 10:22:49	12.2	9.12	104	7.59	46539	30.16
P/L/0%	E	02	10/26/2017 10:23:10	12.2	8.53	97.2	7.54	46541	30.16
P/N/0%	A	02	10/26/2017 10:23:36	12	8.99	102.1	7.61	46440	30.08
P/N/0%	B	02	10/26/2017 10:24:00	11.9	9.1	103	7.64	46401	30.05
P/N/0%	C	02	10/26/2017 10:24:35	11.7	8.87	100	7.61	46359	30.01
P/N/0%	D	02	10/26/2017 10:25:00	11.6	8.85	99.6	7.62	46348	29.99
P/N/0%	E	02	10/26/2017 10:25:20	11.4	7.66	85.7	7.53	46285	29.94
P/AC/3%	A	02	10/26/2017 10:25:46	11	8.74	97.1	7.57	46307	29.94
P/AC/3%	B	02	10/26/2017 10:26:10	10.9	9.24	102.4	7.63	46384	29.99
P/AC/3%	C	02	10/26/2017 10:26:51	12.2	8.88	101.3	7.66	46413	30.07
P/AC/3%	D	02	10/26/2017 10:27:19	12.2	8.88	101.2	7.67	46308	29.99
P/AC/3%	E	02	10/26/2017 10:27:45	12.3	8.68	99.2	7.66	46441	30.09
P/AC/5%	A	02	10/26/2017 10:28:03	12.4	8.62	98.7	7.65	46477	30.12
P/AC/5%	B	02	10/26/2017 10:28:21	12.2	8.64	98.6	7.66	46462	30.1
P/AC/5%	C	02	10/26/2017 10:28:48	12	8.71	98.8	7.65	46419	30.06
P/AC/5%	D	02	10/26/2017 10:29:11	11.7	8.24	92.8	7.61	46083	29.81
P/AC/5%	E	02	10/26/2017 10:29:35	11.5	8.87	99.6	7.65	46251	29.92

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/AC/10%	A	02	10/26/2017 10:29:54	11.3	8.63	96.5	7.63	46329	29.97
P/AC/10%	B	02	10/26/2017 10:30:12	11.2	8.74	97.4	7.64	46347	29.97
P/AC/10%	C	02	10/26/2017 10:30:35	10.9	9.21	102.3	7.7	46536	30.1
P/AC/10%	D	02	10/26/2017 10:30:56	10.7	8.67	95.7	7.64	46434	30.01
P/AC/10%	E	02	10/26/2017 10:31:23	12.2	8.44	96.1	7.63	46311	29.99
P/S/3%	A	02	10/26/2017 10:31:47	12.3	8.65	98.6	7.68	46200	29.92
P/S/3%	B	02	10/26/2017 10:31:58	12.3	8.7	99.3	7.68	46417	30.07
P/S/3%	C	02	10/26/2017 10:32:22	12.2	8.62	98.2	7.67	46344	30.02
P/S/3%	D	02	10/26/2017 10:32:49	12	8.72	98.4	7.68	45288	29.25
P/S/3%	E	02	10/26/2017 10:33:12	12	9.06	102.7	7.75	46453	30.08
P/S/5%	A	02	10/26/2017 10:33:44	11.8	8.86	100.1	7.72	46473	30.09
P/S/5%	B	02	10/26/2017 10:34:05	11.3	8.84	98.6	7.7	46115	29.81
P/S/5%	C	02	10/26/2017 10:34:25	11.2	9.2	102.5	7.76	46314	29.95
P/S/5%	D	02	10/26/2017 10:34:52	11.1	8.92	99.1	7.72	46307	29.94
P/S/5%	E	02	10/26/2017 10:35:12	11.3	8.71	97.2	7.7	46520	30.1
P/S/10%	A	02	10/26/2017 10:35:35	10.9	9.14	101.2	7.75	46533	30.09
P/S/10%	B	02	10/26/2017 10:36:37	10.8	9.08	100.3	7.77	46468	30.04
P/S/10%	C	02	10/26/2017 10:36:57	11	9.04	100.4	7.76	46539	30.1
P/S/10%	D	02	10/26/2017 10:37:19	11.2	8.75	97.5	7.73	46464	30.06
P/S/10%	E	02	10/26/2017 10:37:43	11.5	8.86	99.5	7.75	46469	30.08
P/B/3%	A	02	10/26/2017 10:38:08	12	8.6	97.6	7.72	46476	30.1
P/B/3%	B	02	10/26/2017 10:38:27	12.1	8.69	98.9	7.72	46427	30.07
P/B/3%	C	02	10/26/2017 10:39:05	12.2	8.8	100.4	7.75	46533	30.15
P/B/3%	D	02	10/26/2017 10:39:25	12.2	8.6	98	7.73	46421	30.07
P/B/3%	E	02	10/26/2017 10:39:44	12.3	8.81	100.6	7.76	46390	30.05
P/B/5%	A	02	10/26/2017 10:40:08	12.3	8.73	99.6	7.77	46327	30.01
P/B/5%	B	02	10/26/2017 10:40:27	12.4	8.49	97.2	7.73	46491	30.13
P/B/5%	C	02	10/26/2017 10:40:50	12.4	8.73	99.9	7.76	46292	29.99
P/B/5%	D	02	10/26/2017 10:41:26	11.4	8.74	98	7.73	46490	30.09
P/B/5%	E	02	10/26/2017 10:41:51	11.7	8.27	93.3	7.69	46494	30.1
P/B/10%	A	02	10/26/2017 10:42:14	11.9	8.43	95.4	7.7	46513	30.12
P/B/10%	B	02	10/26/2017 10:43:21	11.8	7.52	85	7.64	46471	30.09
P/B/10%	C	02	10/26/2017 10:43:47	12	8.25	93.5	7.67	46397	30.05
P/B/10%	D	02	10/26/2017 10:44:09	12.1	8.42	95.7	7.7	46463	30.1
P/B/10%	E	02	10/26/2017 10:44:35	12.3	8.31	94.8	7.68	46485	30.12
P/L/0%	A	03	10/27/2017 09:21:39	12.2	8.28	93.1	7.57	46282	29.97
P/L/0%	B	03	10/27/2017 09:22:47	12.2	8.07	90.6	7.57	46266	29.96
P/L/0%	C	03	10/27/2017 09:23:19	12	8.32	93.3	7.57	46378	30.03
P/L/0%	D	03	10/27/2017 09:23:46	12.2	8.52	95.7	7.6	46290	29.98
P/L/0%	E	03	10/27/2017 09:24:10	12.1	8.03	90.2	7.55	46286	29.97
P/N/0%	A	03	10/27/2017 09:24:31	12	8.44	94.5	7.59	46248	29.94
P/N/0%	B	03	10/27/2017 09:25:20	11.9	8.6	96.1	7.63	46221	29.92
P/N/0%	C	03	10/27/2017 09:25:46	11.9	8.43	94	7.62	46223	29.92

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/N/0%	D	03	10/27/2017 09:26:11	11.6	8.29	92	7.59	46145	29.85
P/N/0%	E	03	10/27/2017 09:26:27	11.5	8.42	93.1	7.59	46098	29.81
P/AC/3%	A	03	10/27/2017 09:26:51	11.2	8.28	91.1	7.56	46116	29.81
P/AC/3%	B	03	10/27/2017 09:27:13	11.2	8.66	95.3	7.61	46240	29.9
P/AC/3%	C	03	10/27/2017 09:27:41	12.1	8.46	94.9	7.62	46224	29.93
P/AC/3%	D	03	10/27/2017 09:27:54	12.1	8.55	95.9	7.63	46200	29.91
P/AC/3%	E	03	10/27/2017 09:28:14	12.2	8.33	93.6	7.62	46227	29.93
P/AC/5%	A	03	10/27/2017 09:28:30	12.2	8.3	93.3	7.62	46251	29.95
P/AC/5%	B	03	10/27/2017 09:28:53	12.1	8.25	92.5	7.62	46268	29.96
P/AC/5%	C	03	10/27/2017 09:29:16	11.9	8.39	93.6	7.62	46181	29.89
P/AC/5%	D	03	10/27/2017 09:29:44	11.7	8.03	89.3	7.57	46066	29.8
P/AC/5%	E	03	10/27/2017 09:30:07	11.5	8.54	94.4	7.61	46043	29.77
P/AC/10%	A	03	10/27/2017 09:30:26	11.3	8.42	92.9	7.61	46124	29.82
P/AC/10%	B	03	10/27/2017 09:30:49	11.3	8.38	92.4	7.61	46215	29.88
P/AC/10%	C	03	10/27/2017 09:31:08	11.1	8.79	96.5	7.65	46308	29.94
P/AC/10%	D	03	10/27/2017 09:31:34	11.1	8.26	90.7	7.61	46252	29.9
P/AC/10%	E	03	10/27/2017 09:32:05	12.1	8.36	93.8	7.63	46194	29.9
P/S/3%	A	03	10/27/2017 09:32:28	12.1	8.49	95	7.64	45910	29.7
P/S/3%	B	03	10/27/2017 09:32:42	12.2	8.55	96	7.66	46214	29.92
P/S/3%	C	03	10/27/2017 09:33:05	12.1	8.45	94.8	7.66	46214	29.92
P/S/3%	D	03	10/27/2017 09:33:29	11.9	8.52	94.6	7.65	45151	29.15
P/S/3%	E	03	10/27/2017 09:33:48	11.8	8.87	99	7.69	46257	29.94
P/S/5%	A	03	10/27/2017 09:34:17	11.9	8.63	96.2	7.68	46269	29.95
P/S/5%	B	03	10/27/2017 09:34:41	11.3	8.81	97	7.69	45852	29.63
P/S/5%	C	03	10/27/2017 09:35:05	11.3	8.97	98.9	7.71	46178	29.86
P/S/5%	D	03	10/27/2017 09:35:29	11.2	8.77	96.4	7.69	46115	29.81
P/S/5%	E	03	10/27/2017 09:35:49	11.4	8.49	93.8	7.67	46297	29.95
P/S/10%	A	03	10/27/2017 09:36:14	11.3	8.81	97.1	7.7	46326	29.96
P/S/10%	B	03	10/27/2017 09:37:18	11.1	8.88	97.4	7.72	46278	29.92
P/S/10%	C	03	10/27/2017 09:37:33	11.2	8.81	96.9	7.72	46308	29.95
P/S/10%	D	03	10/27/2017 09:38:01	11.3	8.67	95.6	7.7	46253	29.91
P/S/10%	E	03	10/27/2017 09:38:38	11.7	8.51	94.6	7.71	46279	29.95
P/B/3%	A	03	10/27/2017 09:38:57	11.9	8.52	95.2	7.7	46249	29.94
P/B/3%	B	03	10/27/2017 09:39:16	12.2	8.51	95.6	7.7	46245	29.94
P/B/3%	C	03	10/27/2017 09:40:02	12.1	8.73	97.9	7.72	46326	30
P/B/3%	D	03	10/27/2017 09:40:23	12.3	8.61	96.9	7.72	46278	29.97
P/B/3%	E	03	10/27/2017 09:41:01	12.2	8.72	97.9	7.74	46247	29.95
P/B/5%	A	03	10/27/2017 09:41:25	12.1	8.75	98.1	7.75	46151	29.87
P/B/5%	B	03	10/27/2017 09:41:47	12.3	8.5	95.8	7.71	46292	29.98
P/B/5%	C	03	10/27/2017 09:42:13	12.3	8.68	97.7	7.74	46129	29.87
P/B/5%	D	03	10/27/2017 09:42:44	11.7	8.56	95.1	7.71	46257	29.93
P/B/5%	E	03	10/27/2017 09:43:09	11.9	8.22	91.7	7.68	46266	29.95
P/B/10%	A	03	10/27/2017 09:43:28	12	8.37	93.7	7.69	46290	29.97
P/B/10%	B	03	10/27/2017 09:43:49	12	8.45	94.6	7.69	46266	29.95

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/B/10%	C	03	10/27/2017 09:44:09	12.1	8.4	94.1	7.69	46207	29.91
P/B/10%	D	03	10/27/2017 09:44:35	12.2	8.46	95.1	7.69	46253	29.95
P/B/10%	E	03	10/27/2017 09:45:07	12.3	8.31	93.6	7.69	46266	29.96
P/L/0%	A	04	10/28/2017 09:31:24	12.1	9.39	105.2	7.47	46832	30.36
P/L/0%	B	04	10/28/2017 09:31:49	12	9.22	103.2	7.48	46818	30.35
P/L/0%	C	04	10/28/2017 09:32:10	12	9.21	102.8	7.48	46917	30.42
P/L/0%	D	04	10/28/2017 09:32:28	12	9.37	104.7	7.5	46806	30.34
P/L/0%	E	04	10/28/2017 09:32:49	12	8.84	98.8	7.47	46795	30.33
P/N/0%	A	04	10/28/2017 09:33:12	11.9	9.11	101.6	7.49	46779	30.32
P/N/0%	B	04	10/28/2017 09:33:37	11.8	9.09	101.1	7.49	46763	30.3
P/N/0%	C	04	10/28/2017 09:34:01	11.7	8.89	98.7	7.5	46767	30.3
P/N/0%	D	04	10/28/2017 09:34:22	11.5	8.72	96.4	7.48	46690	30.24
P/N/0%	E	04	10/28/2017 09:34:47	11.4	8.78	96.8	7.47	46664	30.21
P/AC/3%	A	04	10/28/2017 09:35:12	11.1	8.59	94.2	7.44	46684	30.21
P/AC/3%	B	04	10/28/2017 09:35:35	11.1	9.03	98.9	7.48	46788	30.28
P/AC/3%	C	04	10/28/2017 09:36:15	12	8.78	98.2	7.51	46764	30.31
P/AC/3%	D	04	10/28/2017 09:36:31	12.1	8.87	99.2	7.51	46758	30.31
P/AC/3%	E	04	10/28/2017 09:36:55	12.1	8.74	97.8	7.52	46735	30.29
P/AC/5%	A	04	10/28/2017 09:37:43	12.1	8.44	94.4	7.54	46752	30.31
P/AC/5%	B	04	10/28/2017 09:38:16	12	8.53	95.3	7.52	46775	30.32
P/AC/5%	C	04	10/28/2017 09:38:40	11.8	8.6	95.7	7.52	46727	30.28
P/AC/5%	D	04	10/28/2017 09:39:08	11.6	8.28	91.6	7.47	46621	30.19
P/AC/5%	E	04	10/28/2017 09:39:30	11.5	8.68	95.9	7.5	46653	30.21
P/AC/10%	A	04	10/28/2017 09:39:54	11.3	8.51	93.7	7.5	46686	30.22
P/AC/10%	B	04	10/28/2017 09:40:08	11.2	8.6	94.5	7.5	46767	30.28
P/AC/10%	C	04	10/28/2017 09:40:30	11	8.98	98.3	7.52	46814	30.3
P/AC/10%	D	04	10/28/2017 09:40:54	10.9	8.31	90.7	7.5	46787	30.27
P/AC/10%	E	04	10/28/2017 09:41:26	12	8.59	95.8	7.52	46710	30.27
P/S/3%	A	04	10/28/2017 09:41:51	12	8.62	96.2	7.52	46433	30.07
P/S/3%	B	04	10/28/2017 09:42:05	12.1	8.73	97.6	7.54	46740	30.3
P/S/3%	C	04	10/28/2017 09:42:25	12	8.54	95.4	7.53	46732	30.29
P/S/3%	D	04	10/28/2017 09:42:51	11.8	8.63	95.5	7.51	45651	29.5
P/S/3%	E	04	10/28/2017 09:43:12	11.7	8.99	99.8	7.54	46779	30.31
P/S/5%	A	04	10/28/2017 09:43:41	11.7	8.87	98.5	7.56	46777	30.31
P/S/5%	B	04	10/28/2017 09:44:03	11.3	8.73	95.8	7.54	46307	29.95
P/S/5%	C	04	10/28/2017 09:44:25	11.2	9.1	99.9	7.56	46737	30.25
P/S/5%	D	04	10/28/2017 09:44:43	11.2	8.94	98.1	7.56	46686	30.22
P/S/5%	E	04	10/28/2017 09:45:03	11.3	8.87	97.7	7.57	46796	30.3
P/S/10%	A	04	10/28/2017 09:45:27	11.2	9.01	98.9	7.58	46814	30.31
P/S/10%	B	04	10/28/2017 10:08:11	11.1	10.22	112.1	7.61	46931	30.39
P/S/10%	C	04	10/28/2017 10:08:43	11.2	9.94	109.1	7.63	46888	30.36
P/S/10%	D	04	10/28/2017 10:09:16	11.4	9.61	106.1	7.62	46869	30.36
P/S/10%	E	04	10/28/2017 10:09:32	11.4	9.57	105.6	7.61	46839	30.34

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/B/3%	A	04	10/28/2017 10:09:50	11.8	9.31	103.5	7.61	46802	30.33
P/B/3%	B	04	10/28/2017 10:10:13	12	9.21	103	7.62	46792	30.33
P/B/3%	C	04	10/28/2017 10:10:50	12	9.22	103	7.62	46876	30.39
P/B/3%	D	04	10/28/2017 10:11:08	12.2	9.08	101.8	7.62	46817	30.35
P/B/3%	E	04	10/28/2017 10:11:25	12.2	9.13	102.5	7.63	46831	30.37
P/B/5%	A	04	10/28/2017 10:11:41	12.2	9.1	101.8	7.63	46359	30.03
P/B/5%	B	04	10/28/2017 10:12:06	12.3	8.94	100.5	7.63	46827	30.37
P/B/5%	C	04	10/28/2017 10:12:29	12.4	8.99	101.3	7.64	46786	30.34
P/B/5%	D	04	10/28/2017 10:12:59	11.5	9.03	99.9	7.62	46781	30.3
P/B/5%	E	04	10/28/2017 10:13:20	11.8	8.82	98.1	7.62	46779	30.31
P/B/10%	A	04	10/28/2017 10:13:38	11.9	8.87	98.9	7.63	46792	30.33
P/B/10%	B	04	10/28/2017 10:14:07	11.9	8.86	98.8	7.63	46788	30.32
P/B/10%	C	04	10/28/2017 10:14:39	11.9	8.6	95.9	7.62	46729	30.28
P/B/10%	D	04	10/28/2017 10:15:04	12.1	8.78	98.3	7.63	46782	30.33
P/B/10%	E	04	10/28/2017 10:15:28	12.2	8.77	98.4	7.64	46768	30.32
P/L/0%	A	05	10/29/2017 11:31:48	12.4	8.51	97.1	7.6	48475	31.56
P/L/0%	B	05	10/29/2017 11:31:59	12.3	8.47	96.6	7.6	48518	31.59
P/L/0%	C	05	10/29/2017 11:32:12	12.3	8.56	97.6	7.62	48467	31.55
P/L/0%	D	05	10/29/2017 11:32:26	12.3	8.82	100.4	7.65	48433	31.53
P/L/0%	E	05	10/29/2017 11:32:33	12.2	8.79	100	7.61	48420	31.52
P/N/0%	A	05	10/29/2017 11:32:47	12.2	8.71	99	7.63	48461	31.54
P/N/0%	B	05	10/29/2017 11:34:37	12.1	8.76	99.4	7.67	48459	31.53
P/N/0%	C	05	10/29/2017 11:34:58	12	8.63	97.7	7.65	48451	31.52
P/N/0%	D	05	10/29/2017 11:35:11	11.7	8.59	96.8	7.61	48528	31.57
P/N/0%	E	05	10/29/2017 11:35:21	11.6	8.6	96.6	7.62	48483	31.53
P/AC/3%	A	05	10/29/2017 11:35:31	11.3	8.6	96	7.58	48519	31.54
P/AC/3%	B	05	10/29/2017 11:35:47	11.3	8.85	98.6	7.63	48547	31.56
P/AC/3%	C	05	10/29/2017 11:37:32	12.3	8.68	98.9	7.67	48515	31.58
P/AC/3%	D	05	10/29/2017 11:37:45	12.3	8.66	98.6	7.68	48490	31.57
P/AC/3%	E	05	10/29/2017 11:37:56	12.3	8.56	97.6	7.66	48473	31.56
P/AC/5%	A	05	10/29/2017 11:38:12	12.3	8.53	97.1	7.66	48447	31.54
P/AC/5%	B	05	10/29/2017 11:38:20	12.2	8.52	96.8	7.65	48495	31.57
P/AC/5%	C	05	10/29/2017 11:38:31	12	8.59	97.4	7.65	48580	31.62
P/AC/5%	D	05	10/29/2017 11:38:49	11.8	8.19	92.3	7.58	48462	31.53
P/AC/5%	E	05	10/29/2017 11:39:03	11.7	8.62	96.9	7.63	48537	31.57
P/AC/10%	A	05	10/29/2017 11:39:17	11.5	8.52	95.6	7.62	48518	31.55
P/AC/10%	B	05	10/29/2017 11:39:28	11.3	8.53	95.3	7.61	48564	31.58
P/AC/10%	C	05	10/29/2017 11:39:44	11.4	8.81	98.6	7.67	48535	31.56
P/AC/10%	D	05	10/29/2017 11:40:02	11.3	8.45	94.1	7.64	48526	31.54
P/AC/10%	E	05	10/29/2017 11:42:41	12.2	8.35	95	7.64	48520	31.58
P/S/3%	A	05	10/29/2017 11:42:50	12.2	8.48	96.3	7.65	48315	31.44
P/S/3%	B	05	10/29/2017 11:43:04	12.2	8.62	98.1	7.67	48474	31.55
P/S/3%	C	05	10/29/2017 11:43:19	12.2	8.57	97.4	7.66	48489	31.56

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/S/3%	D	05	10/29/2017 11:43:32	12	8.59	96.9	7.65	47509	30.85
P/S/3%	E	05	10/29/2017 11:43:50	12	8.92	101	7.73	48540	31.59
P/S/5%	A	05	10/29/2017 11:44:14	11.9	8.73	98.8	7.7	48472	31.54
P/S/5%	B	05	10/29/2017 11:44:29	11.5	8.64	96.6	7.67	48170	31.3
P/S/5%	C	05	10/29/2017 11:44:42	11.4	8.97	100.4	7.73	48593	31.6
P/S/5%	D	05	10/29/2017 11:44:58	11.4	8.83	98.7	7.7	48518	31.55
P/S/5%	E	05	10/29/2017 11:45:12	11.5	8.67	97.2	7.69	48515	31.55
P/S/10%	A	05	10/29/2017 11:45:23	11.3	8.88	99.3	7.72	48525	31.55
P/S/10%	B	05	10/29/2017 11:46:54	11.3	8.91	99.4	7.73	48599	31.6
P/S/10%	C	05	10/29/2017 11:47:07	11.4	8.9	99.5	7.73	48539	31.56
P/S/10%	D	05	10/29/2017 11:47:20	11.7	8.74	98.3	7.72	48478	31.53
P/S/10%	E	05	10/29/2017 11:47:33	11.7	8.84	99.6	7.73	48617	31.63
P/B/3%	A	05	10/29/2017 11:47:45	12.1	8.68	98.5	7.71	48492	31.56
P/B/3%	B	05	10/29/2017 11:47:55	12.3	8.64	98.4	7.72	48449	31.54
P/B/3%	C	05	10/29/2017 11:48:57	12.3	8.81	100.5	7.76	48686	31.71
P/B/3%	D	05	10/29/2017 11:49:09	12.4	8.74	100	7.74	48458	31.55
P/B/3%	E	05	10/29/2017 11:49:19	12.4	8.75	100.1	7.75	48558	31.62
P/B/5%	A	05	10/29/2017 11:49:28	12.4	8.76	100.2	7.75	48570	31.63
P/B/5%	B	05	10/29/2017 11:49:37	12.5	8.7	99.6	7.73	48496	31.58
P/B/5%	C	05	10/29/2017 11:49:48	12.6	8.64	99.2	7.74	48423	31.53
P/B/5%	D	05	10/29/2017 11:50:37	11.8	8.62	97.2	7.71	48485	31.54
P/B/5%	E	05	10/29/2017 11:50:51	12	8.38	94.9	7.69	48462	31.53
P/B/10%	A	05	10/29/2017 11:51:02	12.1	8.47	96.1	7.7	48466	31.54
P/B/10%	B	05	10/29/2017 11:51:11	12.1	8.56	97.3	7.7	48478	31.55
P/B/10%	C	05	10/29/2017 11:51:20	12.1	8.51	96.7	7.69	48440	31.52
P/B/10%	D	05	10/29/2017 11:51:28	12.3	8.47	96.4	7.7	48449	31.54
P/B/10%	E	05	10/29/2017 11:51:55	12.4	8.4	95.9	7.7	48430	31.53
P/L/0%	A	06	10/30/2017 15:16:57	12.3	8.21	94.7	7.6	47261	30.68
P/L/0%	B	06	10/30/2017 15:17:13	12.3	8.44	97.2	7.62	46732	30.3
P/L/0%	C	06	10/30/2017 15:17:25	12.3	8.31	95.6	7.6	46922	30.44
P/L/0%	D	06	10/30/2017 15:17:39	12.2	8.55	98.3	7.62	46935	30.44
P/L/0%	E	06	10/30/2017 15:17:53	12.2	8.22	94.5	7.57	46792	30.34
P/N/0%	A	06	10/30/2017 15:18:11	12.1	8.52	97.8	7.62	46900	30.41
P/N/0%	B	06	10/30/2017 15:19:15	12.1	8.57	98.2	7.65	46778	30.32
P/N/0%	C	06	10/30/2017 15:19:29	11.9	8.39	95.9	7.62	47035	30.5
P/N/0%	D	06	10/30/2017 15:19:45	11.8	8.23	93.9	7.59	47287	30.68
P/N/0%	E	06	10/30/2017 15:19:55	11.7	8.28	94.2	7.59	47084	30.53
P/AC/3%	A	06	10/30/2017 15:20:08	11.3	8.26	93.4	7.57	47467	30.79
P/AC/3%	B	06	10/30/2017 15:20:22	11.2	8.64	97.4	7.62	47207	30.59
P/AC/3%	C	06	10/30/2017 15:21:57	12.2	8.5	97.9	7.66	47136	30.59
P/AC/3%	D	06	10/30/2017 15:22:16	12.3	8.49	97.7	7.65	46823	30.37
P/AC/3%	E	06	10/30/2017 15:22:33	12.2	8.11	93.4	7.61	47256	30.67
P/AC/5%	A	06	10/30/2017 15:22:50	12.2	8.28	95.2	7.62	47111	30.57

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/AC/5%	B	06	10/30/2017 15:23:01	12.2	8.26	95	7.62	46979	30.47
P/AC/5%	C	06	10/30/2017 15:23:16	12.2	8.34	95.8	7.62	46801	30.34
P/AC/5%	D	06	10/30/2017 15:23:34	11.9	8.09	92.5	7.58	47081	30.54
P/AC/5%	E	06	10/30/2017 15:23:53	11.9	8.45	96.4	7.62	46984	30.46
P/AC/10%	A	06	10/30/2017 15:24:05	11.7	8.42	95.7	7.62	47123	30.55
P/AC/10%	B	06	10/30/2017 15:24:21	11.3	8.26	93.4	7.6	47493	30.8
P/AC/10%	C	06	10/30/2017 15:24:38	11.4	8.63	97.6	7.64	46982	30.44
P/AC/10%	D	06	10/30/2017 15:24:57	11.3	8.37	94.4	7.61	46983	30.44
P/AC/10%	E	06	10/30/2017 15:27:16	12.2	8.23	94.6	7.63	47123	30.58
P/S/3%	A	06	10/30/2017 15:27:31	12.3	8.33	96	7.64	47338	30.73
P/S/3%	B	06	10/30/2017 15:27:45	12.3	8.42	96.9	7.65	46854	30.39
P/S/3%	C	06	10/30/2017 15:27:55	12.2	8.43	97	7.65	46970	30.47
P/S/3%	D	06	10/30/2017 15:28:18	12.1	8.33	95.6	7.65	47216	30.64
P/S/3%	E	06	10/30/2017 15:28:35	12	8.71	99.8	7.71	47292	30.69
P/S/5%	A	06	10/30/2017 15:28:54	11.9	8.55	97.7	7.68	47007	30.48
P/S/5%	B	06	10/30/2017 15:29:19	11.6	8.55	97.2	7.67	47237	30.63
P/S/5%	C	06	10/30/2017 15:29:28	11.5	8.69	98.5	7.7	47300	30.67
P/S/5%	D	06	10/30/2017 15:29:39	11.6	8.67	98.3	7.68	46914	30.4
P/S/5%	E	06	10/30/2017 15:29:50	11.4	8.52	96.3	7.66	47024	30.47
P/S/10%	A	06	10/30/2017 15:30:08	11.4	8.75	98.7	7.69	46929	30.4
P/S/10%	B	06	10/30/2017 15:32:21	11.3	8.68	97.9	7.72	47225	30.61
P/S/10%	C	06	10/30/2017 15:32:42	11.3	8.7	98.1	7.72	47145	30.55
P/S/10%	D	06	10/30/2017 15:32:52	11.5	8.6	97.2	7.7	46972	30.44
P/S/10%	E	06	10/30/2017 15:33:05	11.9	8.56	97.7	7.69	46796	30.33
P/B/3%	A	06	10/30/2017 15:33:15	12	8.49	97.2	7.68	46984	30.47
P/B/3%	B	06	10/30/2017 15:33:27	12.2	8.47	97.3	7.69	46858	30.39
P/B/3%	C	06	10/30/2017 15:34:03	12.3	8.57	98.7	7.72	46996	30.49
P/B/3%	D	06	10/30/2017 15:34:18	12.4	8.53	98.4	7.7	46824	30.37
P/B/3%	E	06	10/30/2017 15:34:29	12.4	8.56	98.8	7.72	47103	30.57
P/B/5%	A	06	10/30/2017 15:34:44	12.4	8.55	98.6	7.72	46981	30.48
P/B/5%	B	06	10/30/2017 15:34:55	12.5	8.42	97.2	7.69	46897	30.42
P/B/5%	C	06	10/30/2017 15:35:11	12.5	8.49	98.2	7.71	46965	30.48
P/B/5%	D	06	10/30/2017 15:35:36	11.7	8.52	96.8	7.68	46877	30.38
P/B/5%	E	06	10/30/2017 15:35:57	11.8	7.05	80.4	7.61	47008	30.48
P/B/10%	A	06	10/30/2017 15:36:26	12	8.26	94.4	7.64	46840	30.36
P/B/10%	B	06	10/30/2017 15:36:41	12.1	8.33	95.4	7.65	46785	30.33
P/B/10%	C	06	10/30/2017 15:36:59	12.2	8.27	94.9	7.65	46849	30.38
P/B/10%	D	06	10/30/2017 15:37:12	12.2	8.36	96	7.66	46812	30.35
P/B/10%	E	06	10/30/2017 15:37:24	12.3	8.27	95.1	7.64	46809	30.35
P/L/0%	A	07	10/31/2017 12:14:53	12.1	8.73	98.3	7.57	46598	30.2
P/L/0%	B	07	10/31/2017 12:15:14	12.1	8.77	98.7	7.62	46447	30.09
P/L/0%	C	07	10/31/2017 12:15:38	12.1	8.7	97.7	7.63	46519	30.14
P/L/0%	D	07	10/31/2017 12:16:08	12	8.89	99.9	7.66	46441	30.08

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/L/0%	E	07	10/31/2017 12:16:36	12	8.37	94	7.6	46429	30.07
P/N/0%	A	07	10/31/2017 12:17:00	11.9	8.81	98.7	7.65	46506	30.12
P/N/0%	B	07	10/31/2017 12:17:24	11.8	8.89	99.4	7.68	46432	30.06
P/N/0%	C	07	10/31/2017 12:17:43	11.7	8.81	98.3	7.63	46465	30.08
P/N/0%	D	07	10/31/2017 12:18:06	11.6	8.64	96.2	7.64	46653	30.21
P/N/0%	E	07	10/31/2017 12:18:23	11.4	8.66	96.1	7.64	46625	30.18
P/AC/3%	A	07	10/31/2017 12:18:39	11.1	8.68	95.8	7.63	46833	30.32
P/AC/3%	B	07	10/31/2017 12:19:01	11.1	8.92	98.2	7.66	46583	30.14
P/AC/3%	C	07	10/31/2017 12:19:27	12.1	8.82	99.2	7.69	46560	30.17
P/AC/3%	D	07	10/31/2017 12:20:00	12.1	8.86	99.7	7.7	46463	30.1
P/AC/3%	E	07	10/31/2017 12:20:27	12.1	8.62	97	7.68	46544	30.16
P/AC/5%	A	07	10/31/2017 12:20:50	12.1	8.47	95.2	7.68	46600	30.19
P/AC/5%	B	07	10/31/2017 12:21:13	12	8.6	96.6	7.67	46489	30.11
P/AC/5%	C	07	10/31/2017 12:21:39	12	8.75	98.1	7.69	46425	30.07
P/AC/5%	D	07	10/31/2017 12:22:03	11.8	8.49	95	7.65	46518	30.12
P/AC/5%	E	07	10/31/2017 12:22:22	11.7	8.77	97.8	7.68	46521	30.12
P/AC/10%	A	07	10/31/2017 12:22:39	11.5	8.74	97	7.68	46565	30.14
P/AC/10%	B	07	10/31/2017 12:22:53	11.2	8.69	96	7.66	46829	30.32
P/AC/10%	C	07	10/31/2017 12:23:16	11.2	8.95	98.8	7.7	46552	30.12
P/AC/10%	D	07	10/31/2017 12:23:38	11.1	8.55	94	7.67	46518	30.09
P/AC/10%	E	07	10/31/2017 12:24:11	12	8.72	97.9	7.68	46593	30.19
P/S/3%	A	07	10/31/2017 12:24:34	12.1	8.8	99	7.7	46728	30.29
P/S/3%	B	07	10/31/2017 12:24:54	12.1	8.9	100.1	7.72	46452	30.09
P/S/3%	C	07	10/31/2017 12:25:13	12	8.81	99	7.71	46615	30.2
P/S/3%	D	07	10/31/2017 12:25:36	11.9	8.79	98.6	7.7	46626	30.21
P/S/3%	E	07	10/31/2017 12:25:54	11.7	9.15	102.2	7.75	46660	30.22
P/S/5%	A	07	10/31/2017 12:26:23	11.8	8.88	99.3	7.73	46464	30.09
P/S/5%	B	07	10/31/2017 12:26:46	11.6	8.91	99.2	7.73	46667	30.22
P/S/5%	C	07	10/31/2017 12:27:05	11.3	9.21	102	7.76	46764	30.28
P/S/5%	D	07	10/31/2017 12:27:26	11.5	8.91	98.9	7.73	46484	30.09
P/S/5%	E	07	10/31/2017 12:27:48	11.3	8.8	97.4	7.71	46566	30.14
P/S/10%	A	07	10/31/2017 12:28:06	11.1	9.1	100.2	7.74	46536	30.1
P/S/10%	B	07	10/31/2017 12:28:42	11	9.15	100.7	7.75	46811	30.3
P/S/10%	C	07	10/31/2017 12:29:00	11.2	8.98	99	7.75	46530	30.1
P/S/10%	D	07	10/31/2017 12:29:23	11.2	8.96	98.9	7.74	46635	30.18
P/S/10%	E	07	10/31/2017 12:29:44	11.7	8.9	99.2	7.75	46465	30.08
P/B/3%	A	07	10/31/2017 12:30:03	11.9	8.8	98.6	7.74	46482	30.1
P/B/3%	B	07	10/31/2017 12:30:19	12	8.87	99.7	7.74	46460	30.09
P/B/3%	C	07	10/31/2017 12:30:57	12	8.95	100.5	7.76	46505	30.13
P/B/3%	D	07	10/31/2017 12:31:18	12.1	8.86	99.8	7.77	46792	30.33
P/B/3%	E	07	10/31/2017 12:31:41	12.2	8.91	100.4	7.77	46523	30.15
P/B/5%	A	07	10/31/2017 12:32:09	12.1	8.93	100.7	7.77	46711	30.28
P/B/5%	B	07	10/31/2017 12:32:28	12.3	8.69	98.1	7.75	46479	30.12
P/B/5%	C	07	10/31/2017 12:32:46	12.3	8.86	100.1	7.75	46424	30.08

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/B/5%	D	07	10/31/2017 12:33:14	11.6	8.8	97.9	7.74	46472	30.08
P/B/5%	E	07	10/31/2017 12:33:35	11.8	8.46	94.6	7.71	46452	30.08
P/B/10%	A	07	10/31/2017 12:33:59	11.9	8.75	97.9	7.72	46455	30.08
P/B/10%	B	07	10/31/2017 12:34:24	12	8.7	97.5	7.72	46472	30.1
P/B/10%	C	07	10/31/2017 12:34:42	12	8.67	97.4	7.72	46453	30.09
P/B/10%	D	07	10/31/2017 12:35:02	12	8.78	98.6	7.73	46477	30.11
P/B/10%	E	07	10/31/2017 12:35:29	12.1	8.69	97.7	7.72	46467	30.1
P/L/0%	A	08	11/1/2017 11:20:28	12.2	8.63	96.2	7.63	47747	31.03
P/L/0%	B	08	11/1/2017 11:20:42	12.1	8.68	96.7	7.62	47789	31.05
P/L/0%	C	08	11/1/2017 11:20:54	12	8.7	96.7	7.61	47591	30.91
P/L/0%	D	08	11/1/2017 11:21:06	12	8.83	98.1	7.62	47829	31.08
P/L/0%	E	08	11/1/2017 11:21:22	12	8.37	93.1	7.57	47942	31.16
P/N/0%	A	08	11/1/2017 11:21:36	11.9	8.75	97	7.61	47704	30.98
P/N/0%	B	08	11/1/2017 11:22:16	11.7	8.89	98.3	7.62	47783	31.03
P/N/0%	C	08	11/1/2017 11:22:32	11.7	8.68	95.8	7.61	47852	31.08
P/N/0%	D	08	11/1/2017 11:22:42	11.6	8.72	96	7.6	47641	30.92
P/N/0%	E	08	11/1/2017 11:22:52	11.4	8.75	96	7.6	47699	30.96
P/AC/3%	A	08	11/1/2017 11:23:01	11.2	8.76	95.5	7.58	47373	30.71
P/AC/3%	B	08	11/1/2017 11:23:15	11.1	8.97	97.7	7.61	47625	30.88
P/AC/3%	C	08	11/1/2017 11:23:52	12	8.81	97.8	7.62	47492	30.83
P/AC/3%	D	08	11/1/2017 11:24:10	12.1	8.84	98.4	7.64	47817	31.07
P/AC/3%	E	08	11/1/2017 11:24:45	12.1	8.59	95.5	7.61	47612	30.92
P/AC/5%	A	08	11/1/2017 11:25:07	12	8.71	96.6	7.62	47485	30.83
P/AC/5%	B	08	11/1/2017 11:25:20	12	8.65	96	7.61	47676	30.96
P/AC/5%	C	08	11/1/2017 11:25:30	11.9	8.75	97.3	7.62	47950	31.16
P/AC/5%	D	08	11/1/2017 11:25:49	11.7	8.48	93.5	7.58	47549	30.86
P/AC/5%	E	08	11/1/2017 11:26:07	11.6	8.83	97.4	7.62	47882	31.1
P/AC/10%	A	08	11/1/2017 11:26:18	11.4	8.78	96.3	7.61	47679	30.94
P/AC/10%	B	08	11/1/2017 11:26:32	11.3	8.79	96.2	7.61	47770	31
P/AC/10%	C	08	11/1/2017 11:26:45	11.2	9.02	98.6	7.64	47933	31.12
P/AC/10%	D	08	11/1/2017 11:27:00	11	8.77	95.6	7.61	47984	31.14
P/AC/10%	E	08	11/1/2017 11:27:47	12	8.68	96.4	7.62	47689	30.98
P/S/3%	A	08	11/1/2017 11:27:57	12	8.78	97.4	7.62	47420	30.78
P/S/3%	B	08	11/1/2017 11:28:09	12.1	8.83	98.3	7.64	47854	31.1
P/S/3%	C	08	11/1/2017 11:28:21	11.9	8.87	98.3	7.63	47480	30.82
P/S/3%	D	08	11/1/2017 11:28:32	11.8	8.86	97.9	7.61	47318	30.7
P/S/3%	E	08	11/1/2017 11:28:42	11.6	9.06	99.9	7.65	47598	30.89
P/S/5%	A	08	11/1/2017 11:29:03	11.7	8.92	98.6	7.65	47918	31.13
P/S/5%	B	08	11/1/2017 11:29:18	11.5	8.94	98.2	7.65	47618	30.9
P/S/5%	C	08	11/1/2017 11:29:27	11.3	9.13	99.8	7.67	47642	30.91
P/S/5%	D	08	11/1/2017 11:29:39	11.4	9.03	99.2	7.65	48023	31.19
P/S/5%	E	08	11/1/2017 11:29:50	11.3	9	98.6	7.65	47872	31.08
P/S/10%	A	08	11/1/2017 11:30:00	11.1	9.09	99.2	7.67	48009	31.16

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/S/10%	B	08	11/1/2017 11:30:52	11	9.17	99.7	7.68	47463	30.77
P/S/10%	C	08	11/1/2017 11:31:11	11.1	9.11	99.5	7.68	47985	31.15
P/S/10%	D	08	11/1/2017 11:31:24	11.2	9.02	98.6	7.67	47691	30.94
P/S/10%	E	08	11/1/2017 11:31:34	11.6	8.93	98.5	7.67	48035	31.21
P/B/3%	A	08	11/1/2017 11:31:46	11.9	8.81	97.6	7.66	47875	31.1
P/B/3%	B	08	11/1/2017 11:31:56	12	8.81	98.1	7.67	48020	31.21
P/B/3%	C	08	11/1/2017 11:32:27	12	8.92	99.3	7.69	47877	31.11
P/B/3%	D	08	11/1/2017 11:32:37	12.2	8.84	98.7	7.68	47980	31.19
P/B/3%	E	08	11/1/2017 11:32:50	12.2	8.91	99.3	7.68	47588	30.91
P/B/5%	A	08	11/1/2017 11:33:01	12.1	8.93	99.4	7.68	47561	30.89
P/B/5%	B	08	11/1/2017 11:33:16	12.2	8.78	98.2	7.67	47949	31.17
P/B/5%	C	08	11/1/2017 11:33:32	12.3	8.83	99	7.68	48033	31.24
P/B/5%	D	08	11/1/2017 11:34:00	11.5	8.87	97.7	7.65	47894	31.1
P/B/5%	E	08	11/1/2017 11:34:13	11.8	8.55	94.6	7.63	48015	31.2
P/B/10%	A	08	11/1/2017 11:34:35	11.8	8.77	97.2	7.65	47984	31.18
P/B/10%	B	08	11/1/2017 11:34:44	11.9	8.74	97	7.66	47879	31.11
P/B/10%	C	08	11/1/2017 11:34:57	12	8.64	96.1	7.65	47985	31.19
P/B/10%	D	08	11/1/2017 11:35:20	12	8.79	97.8	7.67	47924	31.15
P/B/10%	E	08	11/1/2017 11:35:46	12.1	8.71	97.1	7.67	47940	31.16
P/L/0%	A	09	11/2/2017 12:22:43	12.6	8.75	98.3	7.7	46583	30.2
P/L/0%	B	09	11/2/2017 12:22:54	12.5	8.83	99.1	7.71	46546	30.17
P/L/0%	C	09	11/2/2017 12:23:05	12.5	8.85	99.1	7.72	46490	30.13
P/L/0%	D	09	11/2/2017 12:23:15	12.4	8.98	100.4	7.73	46539	30.16
P/L/0%	E	09	11/2/2017 12:23:26	12.4	8.59	96	7.66	46565	30.18
P/N/0%	A	09	11/2/2017 12:23:43	12.4	8.9	99.5	7.71	46463	30.11
P/N/0%	B	09	11/2/2017 12:24:06	12.3	8.99	100.4	7.74	46543	30.16
P/N/0%	C	09	11/2/2017 12:24:20	12.3	8.77	97.9	7.71	46560	30.18
P/N/0%	D	09	11/2/2017 12:24:31	12.3	8.7	97.2	7.69	46722	30.29
P/N/0%	E	09	11/2/2017 12:24:40	12.4	8.63	96.6	7.68	46731	30.3
P/AC/3%	A	09	11/2/2017 12:24:52	12.4	8.65	96.9	7.68	46662	30.25
P/AC/3%	B	09	11/2/2017 12:25:04	12.5	8.74	98.1	7.7	46640	30.24
P/AC/3%	C	09	11/2/2017 12:25:28	12.5	8.9	99.9	7.73	46650	30.25
P/AC/3%	D	09	11/2/2017 12:25:46	12.5	8.95	100.3	7.75	46548	30.17
P/AC/3%	E	09	11/2/2017 12:26:05	12.4	8.58	96.1	7.69	46736	30.31
P/AC/5%	A	09	11/2/2017 12:26:16	12.4	8.69	97.2	7.71	46577	30.19
P/AC/5%	B	09	11/2/2017 12:26:25	12.4	8.72	97.5	7.71	46625	30.23
P/AC/5%	C	09	11/2/2017 12:26:37	12.4	8.78	98.2	7.72	46474	30.12
P/AC/5%	D	09	11/2/2017 12:26:53	12.3	8.44	94.4	7.67	46859	30.39
P/AC/5%	E	09	11/2/2017 12:27:05	12.3	8.75	98	7.71	46841	30.38
P/AC/10%	A	09	11/2/2017 12:27:16	12.3	8.69	97.2	7.7	46737	30.31
P/AC/10%	B	09	11/2/2017 12:27:25	12.3	8.66	96.9	7.7	46841	30.38
P/AC/10%	C	09	11/2/2017 12:27:35	12.4	8.78	98.4	7.73	46836	30.38
P/AC/10%	D	09	11/2/2017 12:27:50	12.5	8.44	94.7	7.69	46711	30.29

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/AC/10%	E	09	11/2/2017 12:28:43	12.4	8.67	97	7.72	46689	30.27
P/S/3%	A	09	11/2/2017 12:28:56	12.4	8.78	98.4	7.73	46867	30.4
P/S/3%	B	09	11/2/2017 12:29:06	12.4	8.88	99.4	7.75	46518	30.15
P/S/3%	C	09	11/2/2017 12:29:19	12.3	8.88	99.3	7.74	46856	30.39
P/S/3%	D	09	11/2/2017 12:29:39	12.4	8.73	97.6	7.73	46587	30.2
P/S/3%	E	09	11/2/2017 12:29:55	12.3	9.08	101.5	7.79	46720	30.29
P/S/5%	A	09	11/2/2017 12:30:13	12.4	8.85	99	7.76	46650	30.24
P/S/5%	B	09	11/2/2017 12:30:25	12.3	8.87	99.2	7.76	46875	30.4
P/S/5%	C	09	11/2/2017 12:30:33	12.3	8.97	100.3	7.78	46877	30.4
P/S/5%	D	09	11/2/2017 12:30:45	12.4	8.91	99.7	7.77	46520	30.15
P/S/5%	E	09	11/2/2017 12:50:21	12.4	9.06	101.4	7.84	46503	30.14
P/S/10%	A	09	11/2/2017 12:50:41	12.5	9.1	102	7.83	46413	30.08
P/S/10%	B	09	11/2/2017 12:51:31	12.4	9	100.7	7.82	46666	30.26
P/S/10%	C	09	11/2/2017 12:52:13	12.4	8.9	99.6	7.82	46536	30.16
P/S/10%	D	09	11/2/2017 12:52:25	12.4	8.88	99.2	7.79	46429	30.08
P/S/10%	E	09	11/2/2017 12:52:36	12.2	9	100.4	7.8	46540	30.16
P/B/3%	A	09	11/2/2017 12:52:49	12.2	8.94	99.7	7.78	46526	30.15
P/B/3%	B	09	11/2/2017 12:52:59	12.2	8.96	99.8	7.79	46518	30.14
P/B/3%	C	09	11/2/2017 12:53:28	12.2	9.01	100.4	7.81	46658	30.24
P/B/3%	D	09	11/2/2017 12:53:42	12.2	8.99	100.3	7.81	46754	30.31
P/B/3%	E	09	11/2/2017 12:53:54	12.3	9.05	101.1	7.8	46417	30.07
P/B/5%	A	09	11/2/2017 12:54:07	12.2	9.04	100.8	7.8	46588	30.19
P/B/5%	B	09	11/2/2017 12:54:22	12.3	8.91	99.5	7.78	46559	30.17
P/B/5%	C	09	11/2/2017 12:54:35	12.3	8.98	100.3	7.79	46434	30.09
P/B/5%	D	09	11/2/2017 12:55:05	12.4	8.82	98.7	7.76	46392	30.06
P/B/5%	E	09	11/2/2017 12:55:15	12.4	8.67	97	7.74	46533	30.16
P/B/10%	A	09	11/2/2017 12:55:24	12.4	8.68	97	7.75	46388	30.05
P/B/10%	B	09	11/2/2017 12:55:34	12.3	8.79	98.3	7.74	46526	30.15
P/B/10%	C	09	11/2/2017 12:55:44	12.3	8.79	98.2	7.74	46412	30.07
P/B/10%	D	09	11/2/2017 12:55:53	12.3	8.79	98.1	7.75	46450	30.1
P/B/10%	E	09	11/2/2017 12:56:04	12.3	8.84	98.8	7.75	46415	30.07
P/L/0%	A	10	11/3/2017 11:35:41	12.5	8.96	100.7	7.62	44622	28.79
P/L/0%	B	10	11/3/2017 11:36:08	12.5	9.02	101.1	7.66	44335	28.59
P/L/0%	C	10	11/3/2017 11:36:39	12.4	9.1	101.9	7.65	44274	28.54
P/L/0%	D	10	11/3/2017 11:37:00	12.4	9.21	103.1	7.68	44514	28.71
P/L/0%	E	10	11/3/2017 11:37:24	12.4	8.89	99.5	7.63	44455	28.67
P/N/0%	A	10	11/3/2017 11:37:44	12.3	9.16	102.4	7.67	44341	28.59
P/N/0%	B	10	11/3/2017 11:38:02	12.3	9.23	103.1	7.69	44247	28.52
P/N/0%	C	10	11/3/2017 11:38:26	12.3	9.1	101.7	7.67	44370	28.61
P/N/0%	D	10	11/3/2017 11:38:47	12.3	8.85	99.2	7.65	44694	28.84
P/N/0%	E	10	11/3/2017 11:39:06	12.4	8.83	99.2	7.65	44909	29
P/AC/3%	A	10	11/3/2017 11:39:24	12.5	8.83	99.4	7.64	44798	28.92
P/AC/3%	B	10	11/3/2017 11:39:39	12.6	8.92	100.5	7.67	44802	28.93

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/AC/3%	C	10	11/3/2017 11:40:09	12.5	9.1	102.1	7.69	44264	28.54
P/AC/3%	D	10	11/3/2017 11:40:31	12.5	9.03	101.5	7.7	44798	28.92
P/AC/3%	E	10	11/3/2017 11:40:55	12.5	8.85	99.2	7.67	44408	28.64
P/AC/5%	A	10	11/3/2017 11:41:17	12.4	8.92	100	7.67	44321	28.58
P/AC/5%	B	10	11/3/2017 11:41:45	12.4	8.94	100.2	7.68	44363	28.61
P/AC/5%	C	10	11/3/2017 11:42:14	12.4	8.89	99.7	7.69	44537	28.73
P/AC/5%	D	10	11/3/2017 11:42:36	12.4	8.5	95.6	7.64	45201	29.2
P/AC/5%	E	10	11/3/2017 11:43:10	12.5	8.7	97.6	7.66	44068	28.4
P/AC/10%	A	10	11/3/2017 11:43:43	12.5	8.87	99.5	7.67	44054	28.39
P/AC/10%	B	10	11/3/2017 11:44:10	12.5	8.59	96.7	7.66	44813	28.93
P/AC/10%	C	10	11/3/2017 11:44:34	12.5	8.86	99.5	7.7	44392	28.63
P/AC/10%	D	10	11/3/2017 11:44:49	12.6	8.82	99	7.68	44141	28.45
P/AC/10%	E	10	11/3/2017 11:45:18	12.4	8.66	97.5	7.68	45134	29.16
P/S/3%	A	10	11/3/2017 11:45:36	12.4	8.77	98.7	7.7	45326	29.29
P/S/3%	B	10	11/3/2017 11:45:54	12.4	8.91	100	7.71	44400	28.63
P/S/3%	C	10	11/3/2017 11:46:18	12.4	8.82	99.1	7.71	44956	29.03
P/S/3%	D	10	11/3/2017 11:46:40	12.4	8.66	97.9	7.71	46228	29.94
P/S/3%	E	10	11/3/2017 11:46:59	12.4	8.97	100.9	7.77	45194	29.2
P/S/5%	A	10	11/3/2017 11:47:30	12.4	8.79	99	7.75	45355	29.32
P/S/5%	B	10	11/3/2017 11:47:54	12.4	8.78	99	7.73	45647	29.53
P/S/5%	C	10	11/3/2017 11:48:14	12.5	8.95	100.6	7.77	44514	28.72
P/S/5%	D	10	11/3/2017 11:48:27	12.5	8.91	100.1	7.74	44371	28.61
P/S/5%	E	10	11/3/2017 11:48:48	12.5	8.7	97.9	7.72	44802	28.92
P/S/10%	A	10	11/3/2017 11:49:12	12.5	8.88	100.1	7.76	44870	28.97
P/S/10%	B	10	11/3/2017 11:50:15	12.5	8.81	99.2	7.77	45262	29.25
P/S/10%	C	10	11/3/2017 11:50:40	12.4	8.89	99.7	7.76	44479	28.69
P/S/10%	D	10	11/3/2017 11:50:57	12.4	8.8	98.7	7.75	44489	28.7
P/S/10%	E	10	11/3/2017 11:51:38	12.3	8.89	99.5	7.75	44346	28.59
P/B/3%	A	10	11/3/2017 11:52:03	12.3	8.8	98.3	7.73	44217	28.5
P/B/3%	B	10	11/3/2017 11:52:24	12.3	8.8	98.3	7.72	44026	28.36
P/B/3%	C	10	11/3/2017 11:53:03	12.1	8.85	98.7	7.76	44528	28.71
P/B/3%	D	10	11/3/2017 11:53:21	12.2	8.78	98.3	7.75	45061	29.1
P/B/3%	E	10	11/3/2017 11:53:43	12.2	8.92	99.7	7.77	44531	28.72
P/B/5%	A	10	11/3/2017 11:54:01	12.1	8.93	99.7	7.77	44816	28.92
P/B/5%	B	10	11/3/2017 11:54:25	12.2	8.64	96.5	7.73	44756	28.88
P/B/5%	C	10	11/3/2017 11:54:48	12.2	8.89	99.4	7.76	44704	28.84
P/B/5%	D	10	11/3/2017 11:55:22	12.5	8.59	96.5	7.73	44505	28.71
P/B/5%	E	10	11/3/2017 11:55:48	12.4	8.55	95.9	7.69	44208	28.5
P/B/10%	A	10	11/3/2017 11:56:22	12.4	8.6	96.5	7.72	44587	28.76
P/B/10%	B	10	11/3/2017 11:56:43	12.4	8.63	96.7	7.71	44350	28.59
P/B/10%	C	10	11/3/2017 11:57:04	12.3	8.64	96.7	7.71	44420	28.64
P/B/10%	D	10	11/3/2017 11:57:22	12.3	8.69	97.2	7.71	44290	28.55
P/B/10%	E	10	11/3/2017 11:57:49	12.3	8.59	96.1	7.7	44416	28.64

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/L/0%	A	11	11/4/2017 11:10:29	12.6	8.73	96.7	7.73	43870	28.26
P/L/0%	B	11	11/4/2017 11:10:43	12.5	8.83	97.7	7.73	44030	28.37
P/L/0%	C	11	11/4/2017 11:11:04	12.5	8.79	97.2	7.71	44199	28.49
P/L/0%	D	11	11/4/2017 11:11:30	12.4	9.01	99.4	7.74	44021	28.36
P/L/0%	E	11	11/4/2017 11:11:51	12.4	8.59	94.8	7.68	44111	28.42
P/N/0%	A	11	11/4/2017 11:12:09	12.4	8.86	97.8	7.71	44210	28.49
P/N/0%	B	11	11/4/2017 11:12:51	12.3	8.79	97	7.74	44276	28.54
P/N/0%	C	11	11/4/2017 11:13:07	12.3	8.91	98.2	7.73	44213	28.5
P/N/0%	D	11	11/4/2017 11:13:33	12.4	8.65	95.4	7.7	44077	28.4
P/N/0%	E	11	11/4/2017 11:13:52	12.5	8.61	95.2	7.7	44089	28.41
P/AC/3%	A	11	11/4/2017 11:14:17	12.6	8.64	95.8	7.68	44082	28.41
P/AC/3%	B	11	11/4/2017 11:14:33	12.7	8.74	97	7.7	44009	28.36
P/AC/3%	C	11	11/4/2017 11:16:41	12.5	8.66	95.8	7.74	44214	28.5
P/AC/3%	D	11	11/4/2017 11:16:59	12.5	8.89	98.3	7.74	44066	28.4
P/AC/3%	E	11	11/4/2017 11:17:26	12.4	8.86	97.9	7.72	44116	28.43
P/AC/5%	A	11	11/4/2017 11:17:54	12.4	8.82	97.4	7.72	44157	28.46
P/AC/5%	B	11	11/4/2017 11:18:18	12.4	8.79	97	7.71	44192	28.48
P/AC/5%	C	11	11/4/2017 11:18:44	12.4	8.81	97.3	7.72	44145	28.45
P/AC/5%	D	11	11/4/2017 11:19:08	12.4	8.45	93.3	7.67	44138	28.44
P/AC/5%	E	11	11/4/2017 11:19:26	12.5	8.76	97	7.69	44429	28.65
P/AC/10%	A	11	11/4/2017 11:20:19	12.5	8.59	95.1	7.71	44419	28.65
P/AC/10%	B	11	11/4/2017 11:20:38	12.5	8.7	96.2	7.7	44108	28.43
P/AC/10%	C	11	11/4/2017 11:21:03	12.5	8.84	97.8	7.73	44165	28.47
P/AC/10%	D	11	11/4/2017 11:21:24	12.5	8.84	98	7.72	44345	28.6
P/AC/10%	E	11	11/4/2017 11:21:52	12.4	8.77	96.8	7.71	44109	28.42
P/S/3%	A	11	11/4/2017 11:22:10	12.4	8.83	97.4	7.72	44210	28.5
P/S/3%	B	11	11/4/2017 11:22:30	12.4	8.97	99	7.74	44191	28.48
P/S/3%	C	11	11/4/2017 11:22:55	12.4	8.85	97.5	7.73	44053	28.38
P/S/3%	D	11	11/4/2017 11:23:11	12.3	8.85	97.9	7.72	44919	29
P/S/3%	E	11	11/4/2017 11:23:29	12.3	9.11	100.3	7.77	44134	28.44
P/S/5%	A	11	11/4/2017 11:23:58	12.4	8.92	98.6	7.76	44326	28.58
P/S/5%	B	11	11/4/2017 11:24:16	12.4	8.91	98.5	7.75	44279	28.55
P/S/5%	C	11	11/4/2017 11:24:41	12.4	9.06	100.1	7.77	44227	28.51
P/S/5%	D	11	11/4/2017 11:25:04	12.5	8.93	98.7	7.75	44150	28.46
P/S/5%	E	11	11/4/2017 11:25:25	12.5	8.9	98.4	7.75	44020	28.36
P/S/10%	A	11	11/4/2017 11:25:45	12.5	9.01	99.7	7.77	44052	28.39
P/S/10%	B	11	11/4/2017 11:27:27	12.5	8.95	99	7.77	44215	28.5
P/S/10%	C	11	11/4/2017 11:27:47	12.4	8.88	98.2	7.77	44177	28.47
P/S/10%	D	11	11/4/2017 11:28:09	12.4	8.89	98.1	7.76	43994	28.34
P/S/10%	E	11	11/4/2017 11:28:28	12.3	8.99	99	7.77	44100	28.41
P/B/3%	A	11	11/4/2017 11:29:04	12.3	8.86	97.6	7.75	44340	28.58
P/B/3%	B	11	11/4/2017 11:29:30	12.3	8.96	98.8	7.75	44443	28.66
P/B/3%	C	11	11/4/2017 11:30:05	12.1	9.08	99.5	7.78	44008	28.34
P/B/3%	D	11	11/4/2017 11:30:25	12.2	9.02	99.3	7.77	44276	28.54

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/B/3%	E	11	11/4/2017 11:30:48	12.2	9.05	99.3	7.78	43950	28.3
P/B/5%	A	11	11/4/2017 11:31:05	12.1	9.12	100.2	7.78	44175	28.46
P/B/5%	B	11	11/4/2017 11:31:32	12.2	8.91	97.9	7.76	44033	28.36
P/B/5%	C	11	11/4/2017 11:31:58	12.2	9.05	99.3	7.78	44026	28.36
P/B/5%	D	11	11/4/2017 11:32:34	12.5	8.76	96.9	7.75	43946	28.31
P/B/5%	E	11	11/4/2017 11:32:55	12.5	8.48	93.9	7.72	44284	28.55
P/B/10%	A	11	11/4/2017 11:33:16	12.4	8.83	97.4	7.74	44024	28.36
P/B/10%	B	11	11/4/2017 11:33:35	12.4	8.76	96.7	7.74	44164	28.46
P/B/10%	C	11	11/4/2017 11:33:49	12.3	8.78	96.8	7.74	44182	28.47
P/B/10%	D	11	11/4/2017 11:34:19	12.3	8.62	95.1	7.74	44275	28.54
P/B/10%	E	11	11/4/2017 11:34:52	12.3	8.85	97.5	7.74	44239	28.51
P/L/0%	A	12	11/5/2017 10:50:53	12.6	8.89	99.5	7.65	46325	30.02
P/L/0%	B	12	11/5/2017 10:51:09	12.5	9.03	100.9	7.67	46222	29.94
P/L/0%	C	12	11/5/2017 10:51:20	12.5	8.94	99.8	7.66	46362	30.04
P/L/0%	D	12	11/5/2017 10:51:30	12.4	9.05	100.8	7.68	46215	29.93
P/L/0%	E	12	11/5/2017 10:51:41	12.4	8.78	97.8	7.63	46305	30
P/N/0%	A	12	11/5/2017 10:51:51	12.4	8.86	98.7	7.66	46293	29.99
P/N/0%	B	12	11/5/2017 10:52:19	12.4	8.97	99.9	7.71	46388	30.05
P/N/0%	C	12	11/5/2017 10:52:28	12.3	8.97	99.9	7.69	46347	30.02
P/N/0%	D	12	11/5/2017 10:52:41	12.4	8.74	97.3	7.67	46233	29.94
P/N/0%	E	12	11/5/2017 10:53:05	12.5	8.65	96.6	7.65	46189	29.92
P/AC/3%	A	12	11/5/2017 10:53:15	12.6	8.61	96.3	7.65	46185	29.92
P/AC/3%	B	12	11/5/2017 10:53:28	12.7	8.7	97.5	7.68	46097	29.86
P/AC/3%	C	12	11/5/2017 10:53:53	12.5	8.83	98.7	7.7	46345	30.03
P/AC/3%	D	12	11/5/2017 10:54:05	12.5	8.82	98.4	7.71	46162	29.9
P/AC/3%	E	12	11/5/2017 10:54:14	12.5	8.79	98.1	7.7	46266	29.97
P/AC/5%	A	12	11/5/2017 10:54:24	12.4	8.82	98.4	7.7	46334	30.02
P/AC/5%	B	12	11/5/2017 10:54:33	12.4	8.76	97.7	7.69	46329	30.01
P/AC/5%	C	12	11/5/2017 10:54:42	12.4	8.76	97.7	7.69	46313	30
P/AC/5%	D	12	11/5/2017 10:54:57	12.4	8.53	95	7.65	46004	29.78
P/AC/5%	E	12	11/5/2017 10:55:15	12.5	8.73	97.6	7.68	46463	30.11
P/AC/10%	A	12	11/5/2017 10:55:26	12.5	8.7	97.3	7.68	46438	30.1
P/AC/10%	B	12	11/5/2017 10:55:35	12.5	8.68	97	7.68	46256	29.96
P/AC/10%	C	12	11/5/2017 10:55:44	12.5	8.77	98.1	7.71	46355	30.04
P/AC/10%	D	12	11/5/2017 10:55:59	12.6	8.66	96.9	7.7	46434	30.1
P/AC/10%	E	12	11/5/2017 10:56:44	12.4	8.66	96.4	7.7	45934	29.73
P/S/3%	A	12	11/5/2017 10:56:59	12.4	8.74	97.3	7.71	45939	29.73
P/S/3%	B	12	11/5/2017 10:57:10	12.4	8.82	98.4	7.72	46311	30
P/S/3%	C	12	11/5/2017 10:57:22	12.4	8.76	97.5	7.71	46026	29.79
P/S/3%	D	12	11/5/2017 10:57:35	12.3	8.72	97.2	7.7	46437	30.09
P/S/3%	E	12	11/5/2017 10:57:52	12.3	9	100	7.77	46024	29.79
P/S/5%	A	12	11/5/2017 10:58:16	12.4	8.8	98.1	7.75	45939	29.73
P/S/5%	B	12	11/5/2017 10:58:28	12.4	8.78	97.8	7.74	46044	29.81

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/S/5%	C	12	11/5/2017 10:58:43	12.4	8.95	100	7.77	46342	30.02
P/S/5%	D	12	11/5/2017 10:58:59	12.5	8.78	98.1	7.74	46315	30.01
P/S/5%	E	12	11/5/2017 10:59:12	12.5	8.81	98.4	7.75	46068	29.83
P/S/10%	A	12	11/5/2017 10:59:20	12.6	8.79	98.3	7.76	46107	29.86
P/S/10%	B	12	11/5/2017 11:00:04	12.5	8.79	98.3	7.77	46281	29.98
P/S/10%	C	12	11/5/2017 11:00:20	12.5	8.72	97.4	7.76	46313	30
P/S/10%	D	12	11/5/2017 11:00:39	12.4	8.75	97.5	7.75	45857	29.68
P/S/10%	E	12	11/5/2017 11:00:51	12.3	8.82	98.2	7.75	46251	29.95
P/B/3%	A	12	11/5/2017 11:01:03	12.3	8.76	97.5	7.74	46412	30.07
P/B/3%	B	12	11/5/2017 11:01:23	12.3	8.8	97.9	7.74	46461	30.1
P/B/3%	C	12	11/5/2017 11:02:40	12.1	8.89	98.5	7.78	46141	29.87
P/B/3%	D	12	11/5/2017 11:02:50	12.2	8.88	98.7	7.77	46361	30.03
P/B/3%	E	12	11/5/2017 11:03:04	12.2	8.9	98.7	7.78	45921	29.71
P/B/5%	A	12	11/5/2017 11:03:20	12.1	8.92	98.9	7.77	46198	29.91
P/B/5%	B	12	11/5/2017 11:03:30	12.2	8.82	97.8	7.76	46149	29.87
P/B/5%	C	12	11/5/2017 11:03:42	12.2	8.86	98.2	7.78	45891	29.69
P/B/5%	D	12	11/5/2017 11:04:09	12.5	8.64	96.5	7.74	45986	29.77
P/B/5%	E	12	11/5/2017 11:04:17	12.5	8.55	95.6	7.72	46354	30.03
P/B/10%	A	12	11/5/2017 11:04:29	12.4	8.69	96.9	7.74	46085	29.84
P/B/10%	B	12	11/5/2017 11:04:39	12.4	8.65	96.4	7.73	46326	30.01
P/B/10%	C	12	11/5/2017 11:04:49	12.3	8.67	96.6	7.73	46262	29.96
P/B/10%	D	12	11/5/2017 11:04:58	12.3	8.72	97.2	7.74	46395	30.06
P/B/10%	E	12	11/5/2017 11:05:10	12.3	8.76	97.6	7.74	46371	30.04
P/L/0%	A	13	11/6/2017 13:22:56	12.7	8.51	96.7	7.66	45226	29.23
P/L/0%	B	13	11/6/2017 13:23:05	12.6	8.66	98.1	7.68	45130	29.16
P/L/0%	C	13	11/6/2017 13:23:15	12.5	8.67	98.1	7.66	45128	29.16
P/L/0%	D	13	11/6/2017 13:23:28	12.5	8.85	100.1	7.68	45074	29.12
P/L/0%	E	13	11/6/2017 13:23:38	12.5	8.71	98.5	7.66	45035	29.09
P/N/0%	A	13	11/6/2017 13:23:48	12.4	8.76	99	7.68	45176	29.19
P/N/0%	B	13	11/6/2017 13:24:11	12.4	8.83	99.7	7.7	45109	29.14
P/N/0%	C	13	11/6/2017 13:24:22	12.4	8.79	99.2	7.69	45217	29.21
P/N/0%	D	13	11/6/2017 13:24:34	12.4	8.62	97.5	7.67	45453	29.38
P/N/0%	E	13	11/6/2017 13:24:44	12.5	8.59	97.3	7.66	45266	29.25
P/AC/3%	A	13	11/6/2017 13:24:56	12.6	8.53	96.7	7.65	45228	29.23
P/AC/3%	B	13	11/6/2017 13:25:08	12.7	8.65	98.3	7.68	45195	29.21
P/AC/3%	C	13	11/6/2017 13:25:31	12.6	8.8	99.7	7.7	45142	29.17
P/AC/3%	D	13	11/6/2017 13:25:46	12.5	8.76	99.3	7.69	45407	29.36
P/AC/3%	E	13	11/6/2017 13:26:01	12.5	8.48	96	7.66	45151	29.17
P/AC/5%	A	13	11/6/2017 13:26:13	12.5	8.61	97.5	7.67	45150	29.17
P/AC/5%	B	13	11/6/2017 13:26:25	12.5	8.66	98	7.67	45164	29.18
P/AC/5%	C	13	11/6/2017 13:26:37	12.5	8.68	98.2	7.68	45150	29.17
P/AC/5%	D	13	11/6/2017 13:26:49	12.5	8.57	97	7.66	45063	29.11
P/AC/5%	E	13	11/6/2017 13:27:03	12.5	8.67	98.3	7.69	45476	29.4

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/AC/10%	A	13	11/6/2017 13:27:14	12.5	8.6	97.5	7.67	45582	29.48
P/AC/10%	B	13	11/6/2017 13:27:26	12.5	8.51	96.6	7.67	45642	29.52
P/AC/10%	C	13	11/6/2017 13:27:40	12.6	8.73	99	7.7	45160	29.18
P/AC/10%	D	13	11/6/2017 13:27:56	12.6	8.63	97.9	7.69	45051	29.1
P/AC/10%	E	13	11/6/2017 13:28:10	12.5	8.68	98.2	7.68	45280	29.26
P/S/3%	A	13	11/6/2017 13:28:20	12.5	8.7	98.5	7.7	45282	29.27
P/S/3%	B	13	11/6/2017 13:28:31	12.5	8.75	99	7.7	45153	29.17
P/S/3%	C	13	11/6/2017 13:28:41	12.5	8.71	98.5	7.7	45327	29.3
P/S/3%	D	13	11/6/2017 13:28:53	12.4	8.68	98.5	7.69	45884	29.7
P/S/3%	E	13	11/6/2017 13:29:08	12.5	8.93	101	7.75	45195	29.2
P/S/5%	A	13	11/6/2017 13:29:13	12.5	8.94	101.2	7.74	45205	29.21
P/S/5%	B	13	11/6/2017 13:29:33	12.5	8.7	98.7	7.72	45665	29.54
P/S/5%	C	13	11/6/2017 13:29:44	12.5	8.85	100.2	7.74	45150	29.17
P/S/5%	D	13	11/6/2017 13:29:53	12.6	8.79	99.5	7.73	45141	29.17
P/S/5%	E	13	11/6/2017 13:30:05	12.6	8.68	98.4	7.72	45233	29.23
P/S/10%	A	13	11/6/2017 13:30:15	12.6	8.76	99.5	7.74	45508	29.43
P/S/10%	B	13	11/6/2017 13:30:49	12.5	8.81	99.8	7.74	45250	29.24
P/S/10%	C	13	11/6/2017 13:30:57	12.5	8.83	99.9	7.74	45190	29.2
P/S/10%	D	13	11/6/2017 13:31:07	12.5	8.75	99	7.73	45093	29.13
P/S/10%	E	13	11/6/2017 13:31:28	12.3	8.89	100.3	7.74	45136	29.15
P/B/3%	A	13	11/6/2017 13:31:40	12.3	8.81	99.3	7.72	45122	29.14
P/B/3%	B	13	11/6/2017 13:31:56	12.3	8.82	99.3	7.72	45005	29.06
P/B/3%	C	13	11/6/2017 13:32:29	12.2	8.91	100.1	7.75	45131	29.15
P/B/3%	D	13	11/6/2017 13:32:42	12.3	8.82	99.3	7.73	44959	29.03
P/B/3%	E	13	11/6/2017 13:32:55	12.2	8.92	100.4	7.75	45489	29.4
P/B/5%	A	13	11/6/2017 13:33:12	12.2	8.87	99.8	7.75	45378	29.32
P/B/5%	B	13	11/6/2017 13:33:24	12.2	8.69	97.7	7.71	45292	29.26
P/B/5%	C	13	11/6/2017 13:33:38	12.1	8.86	99.7	7.75	45554	29.45
P/B/5%	D	13	11/6/2017 13:34:05	12.5	8.64	97.8	7.72	45109	29.14
P/B/5%	E	13	11/6/2017 13:34:16	12.4	8.55	96.7	7.7	45136	29.16
P/B/10%	A	13	11/6/2017 13:34:27	12.4	8.62	97.3	7.7	44941	29.02
P/B/10%	B	13	11/6/2017 13:34:40	12.4	8.64	97.5	7.7	45176	29.18
P/B/10%	C	13	11/6/2017 13:34:52	12.3	8.66	97.7	7.7	45133	29.15
P/B/10%	D	13	11/6/2017 13:35:04	12.3	8.69	98	7.71	45159	29.17
P/B/10%	E	13	11/6/2017 13:35:27	12.3	8.53	96.1	7.7	45167	29.18
P/L/0%	A	14	11/7/2017 10:58:42	12.8	8.71	97.8	7.67	45057	29.11
P/L/0%	B	14	11/7/2017 10:58:59	12.7	8.87	99.4	7.69	45044	29.1
P/L/0%	C	14	11/7/2017 10:59:10	12.7	8.78	98.4	7.68	45067	29.12
P/L/0%	D	14	11/7/2017 10:59:24	12.6	9.02	101	7.7	45122	29.16
P/L/0%	E	14	11/7/2017 10:59:39	12.6	8.71	97.4	7.67	45100	29.14
P/N/0%	A	14	11/7/2017 10:59:53	12.6	8.92	99.9	7.7	45128	29.16
P/N/0%	B	14	11/7/2017 11:00:37	12.6	8.94	100	7.71	45134	29.16
P/N/0%	C	14	11/7/2017 11:00:48	12.6	8.86	99.1	7.7	45144	29.17

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/N/0%	D	14	11/7/2017 11:00:57	12.6	8.74	97.8	7.68	45087	29.13
P/N/0%	E	14	11/7/2017 11:01:07	12.7	8.68	97.2	7.68	45065	29.12
P/AC/3%	A	14	11/7/2017 11:01:17	12.7	8.66	97.1	7.67	45050	29.11
P/AC/3%	B	14	11/7/2017 11:01:28	12.8	8.77	98.6	7.68	45040	29.1
P/AC/3%	C	14	11/7/2017 11:01:52	12.7	8.89	99.6	7.7	45086	29.13
P/AC/3%	D	14	11/7/2017 11:02:07	12.7	8.88	99.5	7.7	45095	29.14
P/AC/3%	E	14	11/7/2017 11:02:21	12.6	8.81	98.6	7.68	45076	29.12
P/AC/5%	A	14	11/7/2017 11:02:40	12.6	8.85	99	7.7	45100	29.14
P/AC/5%	B	14	11/7/2017 11:02:55	12.6	8.82	98.6	7.69	45115	29.15
P/AC/5%	C	14	11/7/2017 11:03:06	12.6	8.85	98.9	7.7	45100	29.14
P/AC/5%	D	14	11/7/2017 11:03:19	12.6	8.69	97.3	7.68	45115	29.15
P/AC/5%	E	14	11/7/2017 11:03:35	12.6	8.87	99.3	7.69	45123	29.16
P/AC/10%	A	14	11/7/2017 11:03:48	12.7	8.77	98.2	7.69	45127	29.16
P/AC/10%	B	14	11/7/2017 11:04:00	12.7	8.69	97.4	7.68	45142	29.17
P/AC/10%	C	14	11/7/2017 11:04:13	12.7	8.92	99.9	7.71	45133	29.17
P/AC/10%	D	14	11/7/2017 11:04:28	12.7	8.87	99.4	7.7	45146	29.18
P/AC/10%	E	14	11/7/2017 11:05:17	12.7	8.76	98	7.69	45054	29.11
P/S/3%	A	14	11/7/2017 11:05:30	12.6	8.88	99.3	7.7	45038	29.1
P/S/3%	B	14	11/7/2017 11:05:43	12.6	8.97	100.3	7.71	45098	29.14
P/S/3%	C	14	11/7/2017 11:06:03	12.6	8.92	99.8	7.71	45047	29.1
P/S/3%	D	14	11/7/2017 11:06:14	12.6	8.85	99	7.7	45278	29.27
P/S/3%	E	14	11/7/2017 11:06:39	12.5	9.11	101.7	7.73	45062	29.11
P/S/5%	A	14	11/7/2017 11:06:53	12.6	8.96	100.3	7.72	45018	29.08
P/S/5%	B	14	11/7/2017 11:07:05	12.6	8.96	100.3	7.71	45136	29.17
P/S/5%	C	14	11/7/2017 11:07:15	12.6	9.02	100.8	7.73	45036	29.09
P/S/5%	D	14	11/7/2017 11:07:27	12.7	8.95	100.3	7.72	45113	29.15
P/S/5%	E	14	11/7/2017 11:07:41	12.7	8.91	99.9	7.72	45121	29.16
P/S/10%	A	14	11/7/2017 11:07:54	12.7	8.98	100.7	7.72	45163	29.19
P/S/10%	B	14	11/7/2017 11:08:58	12.7	8.93	99.9	7.73	45102	29.14
P/S/10%	C	14	11/7/2017 11:09:10	12.6	8.99	100.5	7.74	45138	29.17
P/S/10%	D	14	11/7/2017 11:09:19	12.5	8.99	100.3	7.73	45058	29.11
P/S/10%	E	14	11/7/2017 11:09:31	12.4	9.05	100.8	7.73	45132	29.15
P/B/3%	A	14	11/7/2017 11:09:42	12.4	9.04	100.6	7.72	45128	29.15
P/B/3%	B	14	11/7/2017 11:09:54	12.4	9.01	100.3	7.72	45183	29.19
P/B/3%	C	14	11/7/2017 11:10:30	12.3	9.11	101.3	7.74	45145	29.16
P/B/3%	D	14	11/7/2017 11:10:55	12.4	9.04	100.7	7.73	45086	29.12
P/B/3%	E	14	11/7/2017 11:11:03	12.5	9.02	100.6	7.74	45119	29.15
P/B/5%	A	14	11/7/2017 11:11:18	12.4	9.07	101.1	7.73	45090	29.13
P/B/5%	B	14	11/7/2017 11:11:31	12.5	8.95	99.8	7.73	45149	29.17
P/B/5%	C	14	11/7/2017 11:11:43	12.5	8.98	100.2	7.73	45170	29.18
P/B/5%	D	14	11/7/2017 11:12:07	12.6	8.88	99.4	7.72	45106	29.14
P/B/5%	E	14	11/7/2017 11:12:25	12.6	8.75	97.9	7.7	45130	29.16
P/B/10%	A	14	11/7/2017 11:13:04	12.6	8.87	99.1	7.71	45109	29.14
P/B/10%	B	14	11/7/2017 11:13:17	12.5	8.92	99.7	7.72	45135	29.16

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/B/10%	C	14	11/7/2017 11:13:28	12.5	8.89	99.1	7.72	45163	29.18
P/B/10%	D	14	11/7/2017 11:13:40	12.5	8.9	99.2	7.72	45131	29.16
P/B/10%	E	14	11/7/2017 11:13:53	12.5	8.9	99.4	7.71	45126	29.15
P/L/0%	A	15	11/8/2017 15:51:25	13.4	8.49	96.8	7.58	46050	29.85
P/L/0%	B	15	11/8/2017 15:51:44	13.3	8.58	97.7	7.62	46086	29.87
P/L/0%	C	15	11/8/2017 15:52:01	13.3	8.28	94.3	7.59	46187	29.94
P/L/0%	D	15	11/8/2017 15:52:17	13.3	8.77	100.1	7.66	46409	30.1
P/L/0%	E	15	11/8/2017 15:52:28	13.1	8.47	96.1	7.59	46225	29.96
P/N/0%	A	15	11/8/2017 15:52:39	13	8.65	98.1	7.64	46283	30
P/N/0%	B	15	11/8/2017 15:53:08	13	8.83	100.1	7.67	46378	30.07
P/N/0%	C	15	11/8/2017 15:53:18	13	8.7	98.5	7.66	46308	30.02
P/N/0%	D	15	11/8/2017 15:53:30	12.9	8.62	97.3	7.65	46150	29.9
P/N/0%	E	15	11/8/2017 15:53:43	12.9	8.55	96.6	7.63	46049	29.83
P/AC/3%	A	15	11/8/2017 15:53:55	13.1	8.49	96.1	7.63	46097	29.87
P/AC/3%	B	15	11/8/2017 15:54:09	13.2	8.65	98.4	7.66	46211	29.96
P/AC/3%	C	15	11/8/2017 15:54:29	13.4	8.61	98.2	7.68	46204	29.96
P/AC/3%	D	15	11/8/2017 15:54:40	13.4	8.65	98.6	7.69	46225	29.97
P/AC/3%	E	15	11/8/2017 15:54:51	13.4	8.55	97.7	7.67	46377	30.08
P/AC/5%	A	15	11/8/2017 15:55:03	13.3	8.56	97.4	7.67	46297	30.02
P/AC/5%	B	15	11/8/2017 15:55:14	13.1	8.65	98.1	7.67	46242	29.98
P/AC/5%	C	15	11/8/2017 15:55:30	13.1	8.67	98.5	7.68	46335	30.04
P/AC/5%	D	15	11/8/2017 15:55:46	13.2	8.4	95.4	7.65	46361	30.06
P/AC/5%	E	15	11/8/2017 15:56:01	13	8.67	98.2	7.68	46219	29.96
P/AC/10%	A	15	11/8/2017 15:56:15	13	8.51	96.3	7.67	46190	29.93
P/AC/10%	B	15	11/8/2017 15:56:24	12.9	8.62	97.3	7.67	46040	29.83
P/AC/10%	C	15	11/8/2017 15:56:37	13.1	8.71	98.8	7.71	46279	30
P/AC/10%	D	15	11/8/2017 15:56:48	13.2	8.56	97.3	7.69	46352	30.06
P/AC/10%	E	15	11/8/2017 15:57:30	13.1	8.61	97.5	7.69	46106	29.88
P/S/3%	A	15	11/8/2017 15:57:46	13.2	8.63	98.1	7.71	46266	30
P/S/3%	B	15	11/8/2017 15:57:57	13.3	8.69	99	7.73	46395	30.09
P/S/3%	C	15	11/8/2017 15:58:11	13	8.76	99	7.72	46120	29.88
P/S/3%	D	15	11/8/2017 15:58:22	12.8	8.76	98.8	7.71	46074	29.85
P/S/3%	E	15	11/8/2017 15:58:36	13	8.88	100.5	7.75	46398	30.08
P/S/5%	A	15	11/8/2017 15:58:49	13	8.79	99.6	7.74	46180	29.93
P/S/5%	B	15	11/8/2017 15:58:59	12.9	8.79	99.2	7.73	46063	29.84
P/S/5%	C	15	11/8/2017 15:59:15	12.9	8.9	100.3	7.76	45968	29.77
P/S/5%	D	15	11/8/2017 15:59:29	13.2	8.74	99.6	7.74	46533	30.19
P/S/5%	E	15	11/8/2017 15:59:45	13.2	8.72	99.2	7.74	46470	30.14
P/S/10%	A	15	11/8/2017 16:00:00	13.1	8.81	100.2	7.75	46497	30.16
P/S/10%	B	15	11/8/2017 16:00:54	12.9	8.83	99.7	7.76	46246	29.97
P/S/10%	C	15	11/8/2017 16:01:07	12.8	8.83	99.5	7.75	46274	29.99
P/S/10%	D	15	11/8/2017 16:01:16	12.6	8.83	99.2	7.75	46164	29.9
P/S/10%	E	15	11/8/2017 16:01:28	12.4	8.94	100	7.75	46163	29.9

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/B/3%	A	15	11/8/2017 16:01:39	12.5	8.83	99	7.73	46379	30.05
P/B/3%	B	15	11/8/2017 16:01:53	12.5	8.86	99.2	7.74	46392	30.06
P/B/3%	C	15	11/8/2017 16:02:26	12.4	8.98	100.5	7.76	46343	30.02
P/B/3%	D	15	11/8/2017 16:02:36	12.5	8.96	100.4	7.76	46105	29.86
P/B/3%	E	15	11/8/2017 16:02:48	12.5	8.98	100.6	7.76	46239	29.95
P/B/5%	A	15	11/8/2017 16:03:01	12.5	8.97	100.5	7.76	46144	29.88
P/B/5%	B	15	11/8/2017 16:03:24	12.7	8.74	98.2	7.73	46301	30
P/B/5%	C	15	11/8/2017 16:03:36	12.9	8.77	99	7.75	46440	30.11
P/B/5%	D	15	11/8/2017 16:04:02	13	8.64	97.8	7.73	46341	30.04
P/B/5%	E	15	11/8/2017 16:04:17	12.9	8.38	94.6	7.69	46268	29.99
P/B/10%	A	15	11/8/2017 16:04:31	12.9	8.7	98.4	7.72	46317	30.02
P/B/10%	B	15	11/8/2017 16:04:45	12.8	8.72	98.3	7.73	46254	29.98
P/B/10%	C	15	11/8/2017 16:04:55	12.6	8.76	98.4	7.74	46242	29.96
P/B/10%	D	15	11/8/2017 16:05:06	12.7	8.79	98.9	7.74	46366	30.05
P/B/10%	E	15	11/8/2017 16:05:17	12.8	8.81	99.4	7.74	46275	29.99
P/L/0%	A	16	11/9/2017 09:50:50	12.8	9.05	102.5	7.64	47177	30.64
P/L/0%	B	16	11/9/2017 09:51:06	12.6	9.15	103.5	7.67	47607	30.94
P/L/0%	C	16	11/9/2017 09:51:18	12.6	9	101.7	7.65	47427	30.81
P/L/0%	D	16	11/9/2017 09:51:37	12.5	9.26	104.6	7.69	47612	30.94
P/L/0%	E	16	11/9/2017 09:51:55	12.6	8.9	100.5	7.67	47537	30.89
P/N/0%	A	16	11/9/2017 09:52:10	12.6	9.08	102.5	7.69	47546	30.9
P/N/0%	B	16	11/9/2017 09:52:53	12.5	9.18	103.6	7.7	47607	30.94
P/N/0%	C	16	11/9/2017 09:53:05	12.6	9.05	102.2	7.7	47507	30.87
P/N/0%	D	16	11/9/2017 09:53:20	12.6	8.96	101.2	7.68	47244	30.68
P/N/0%	E	16	11/9/2017 09:53:32	12.7	8.85	100.1	7.66	47064	30.56
P/AC/3%	A	16	11/9/2017 09:53:43	12.8	8.81	99.8	7.66	47232	30.68
P/AC/3%	B	16	11/9/2017 09:53:52	12.9	8.87	100.7	7.67	47259	30.7
P/AC/3%	C	16	11/9/2017 09:54:12	12.7	9.03	102.2	7.69	47424	30.81
P/AC/3%	D	16	11/9/2017 09:54:23	12.7	9.06	102.4	7.69	47315	30.73
P/AC/3%	E	16	11/9/2017 09:54:34	12.6	9.04	102.2	7.69	47495	30.86
P/AC/5%	A	16	11/9/2017 09:54:52	12.6	9.06	102.3	7.69	47218	30.66
P/AC/5%	B	16	11/9/2017 09:55:04	12.6	8.98	101.4	7.69	47453	30.83
P/AC/5%	C	16	11/9/2017 09:55:16	12.6	9.02	101.9	7.69	47397	30.79
P/AC/5%	D	16	11/9/2017 09:55:27	12.6	8.93	100.9	7.68	47480	30.85
P/AC/5%	E	16	11/9/2017 09:55:36	12.7	8.92	100.8	7.69	47423	30.81
P/AC/10%	A	16	11/9/2017 09:56:09	12.7	8.84	99.9	7.68	47260	30.7
P/AC/10%	B	16	11/9/2017 09:56:27	12.7	8.93	100.8	7.67	46934	30.46
P/AC/10%	C	16	11/9/2017 09:56:38	12.8	9	101.9	7.69	47256	30.7
P/AC/10%	D	16	11/9/2017 09:56:50	12.8	8.97	101.7	7.69	47552	30.91
P/AC/10%	E	16	11/9/2017 09:57:37	12.7	8.9	100.4	7.67	46798	30.36
P/S/3%	A	16	11/9/2017 09:57:45	12.7	8.93	100.6	7.66	46616	30.23
P/S/3%	B	16	11/9/2017 09:57:59	12.6	9.07	102.4	7.69	47338	30.75
P/S/3%	C	16	11/9/2017 09:58:09	12.6	9.05	101.9	7.68	46943	30.46

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/S/3%	D	16	11/9/2017 09:58:23	12.6	8.92	100.4	7.66	46749	30.32
P/S/3%	E	16	11/9/2017 09:58:41	12.5	9.19	103.5	7.7	47438	30.82
P/S/5%	A	16	11/9/2017 09:58:56	12.7	9.01	101.7	7.69	47171	30.63
P/S/5%	B	16	11/9/2017 09:59:08	12.7	9	101.5	7.69	46818	30.38
P/S/5%	C	16	11/9/2017 09:59:19	12.6	9.18	103.4	7.7	46897	30.43
P/S/5%	D	16	11/9/2017 09:59:33	12.7	9.04	102.2	7.7	47471	30.85
P/S/5%	E	16	11/9/2017 09:59:41	12.7	9.02	102.1	7.7	47407	30.8
P/S/10%	A	16	11/9/2017 09:59:51	12.8	9.01	102.1	7.71	47488	30.86
P/S/10%	B	16	11/9/2017 10:00:41	12.7	9.06	102.5	7.71	47287	30.72
P/S/10%	C	16	11/9/2017 10:00:49	12.7	9.07	102.6	7.72	47527	30.89
P/S/10%	D	16	11/9/2017 10:01:01	12.6	9.01	101.6	7.71	47300	30.72
P/S/10%	E	16	11/9/2017 10:01:12	12.5	9.07	102.2	7.71	47448	30.82
P/B/3%	A	16	11/9/2017 10:01:21	12.5	9.01	101.5	7.71	47521	30.88
P/B/3%	B	16	11/9/2017 10:01:32	12.4	9.06	102.1	7.71	47582	30.92
P/B/3%	C	16	11/9/2017 10:02:02	12.4	9.11	102.4	7.72	47238	30.67
P/B/3%	D	16	11/9/2017 10:02:14	12.5	9.05	102	7.72	47318	30.73
P/B/3%	E	16	11/9/2017 10:02:24	12.5	9.09	102.4	7.72	47292	30.71
P/B/5%	A	16	11/9/2017 10:02:34	12.5	9.09	102.4	7.72	47486	30.85
P/B/5%	B	16	11/9/2017 10:02:45	12.5	8.97	101.1	7.71	47494	30.86
P/B/5%	C	16	11/9/2017 10:02:56	12.5	8.99	101.4	7.71	47440	30.82
P/B/5%	D	16	11/9/2017 10:03:19	12.7	8.89	100.6	7.7	47417	30.81
P/B/5%	E	16	11/9/2017 10:03:29	12.7	8.75	99	7.69	47449	30.83
P/B/10%	A	16	11/9/2017 10:03:44	12.6	8.89	100.5	7.71	47497	30.86
P/B/10%	B	16	11/9/2017 10:03:55	12.6	8.87	100.2	7.72	47535	30.89
P/B/10%	C	16	11/9/2017 10:04:04	12.5	8.9	100.3	7.71	47414	30.8
P/B/10%	D	16	11/9/2017 10:04:28	12.5	8.93	100.7	7.71	47500	30.86
P/B/10%	E	16	11/9/2017 10:04:42	12.6	8.91	100.6	7.72	47502	30.87
P/L/0%	A	17	11/10/2017 11:41:42	12.9	8.62	97.9	7.71	45933	29.75
P/L/0%	B	17	11/10/2017 11:42:04	12.8	8.76	99.3	7.73	45994	29.79
P/L/0%	C	17	11/10/2017 11:42:55	12.7	8.55	96.8	7.71	45988	29.78
P/L/0%	D	17	11/10/2017 11:43:19	12.7	8.85	100.1	7.74	46004	29.79
P/L/0%	E	17	11/10/2017 11:43:44	12.7	8.61	97.4	7.7	45987	29.78
P/N/0%	A	17	11/10/2017 11:44:13	12.7	8.77	99.2	7.73	45989	29.78
P/N/0%	B	17	11/10/2017 11:44:46	12.7	8.82	99.7	7.74	45996	29.78
P/N/0%	C	17	11/10/2017 11:45:06	12.7	8.76	99.1	7.74	45988	29.78
P/N/0%	D	17	11/10/2017 11:45:25	12.8	8.59	97.3	7.71	45884	29.71
P/N/0%	E	17	11/10/2017 11:46:08	12.8	8.24	93.5	7.7	45919	29.73
P/AC/3%	A	17	11/10/2017 11:46:30	12.9	8.59	97.5	7.7	45976	29.78
P/AC/3%	B	17	11/10/2017 11:46:53	13	8.69	98.9	7.72	45966	29.77
P/AC/3%	C	17	11/10/2017 11:47:24	12.8	8.78	99.6	7.74	46003	29.79
P/AC/3%	D	17	11/10/2017 11:47:48	12.7	8.83	99.9	7.75	45982	29.78
P/AC/3%	E	17	11/10/2017 11:48:11	12.7	8.82	99.8	7.74	45993	29.78
P/AC/5%	A	17	11/10/2017 11:48:34	12.7	8.74	98.8	7.74	45888	29.71

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/AC/5%	B	17	11/10/2017 11:48:54	12.7	8.74	98.8	7.73	45992	29.78
P/AC/5%	C	17	11/10/2017 11:49:16	12.7	8.76	99.1	7.74	45998	29.79
P/AC/5%	D	17	11/10/2017 11:49:44	12.7	8.6	97.3	7.71	45997	29.79
P/AC/5%	E	17	11/10/2017 11:50:06	12.7	8.68	98.3	7.73	45993	29.78
P/AC/10%	A	17	11/10/2017 11:50:26	12.8	8.58	97.3	7.71	45945	29.75
P/AC/10%	B	17	11/10/2017 11:50:52	12.8	8.64	97.9	7.72	45828	29.67
P/AC/10%	C	17	11/10/2017 11:51:14	12.8	8.76	99.4	7.75	45986	29.78
P/AC/10%	D	17	11/10/2017 11:51:41	12.9	8.63	98.1	7.73	46043	29.83
P/AC/10%	E	17	11/10/2017 11:52:11	12.8	8.66	98	7.72	45871	29.7
P/S/3%	A	17	11/10/2017 11:52:37	12.7	8.77	99	7.73	45540	29.46
P/S/3%	B	17	11/10/2017 11:52:53	12.7	8.81	99.6	7.75	45991	29.78
P/S/3%	C	17	11/10/2017 11:53:22	12.6	8.83	99.7	7.74	45867	29.69
P/S/3%	D	17	11/10/2017 11:53:43	12.6	8.72	98.2	7.72	45496	29.42
P/S/3%	E	17	11/10/2017 11:54:08	12.5	8.97	101	7.76	46024	29.8
P/S/5%	A	17	11/10/2017 11:54:41	12.7	8.79	99.4	7.75	45773	29.63
P/S/5%	B	17	11/10/2017 11:55:19	12.7	8.58	97	7.75	45708	29.58
P/S/5%	C	17	11/10/2017 11:55:39	12.7	8.83	99.7	7.77	45798	29.64
P/S/5%	D	17	11/10/2017 11:56:01	12.8	8.8	99.7	7.76	46002	29.79
P/S/5%	E	17	11/10/2017 11:56:25	12.8	8.8	99.8	7.76	45994	29.79
P/S/10%	A	17	11/10/2017 11:56:45	12.9	8.79	99.8	7.77	46035	29.82
P/S/10%	B	17	11/10/2017 11:57:53	12.8	8.26	93.7	7.78	46008	29.8
P/S/10%	C	17	11/10/2017 11:58:11	12.7	8.84	100.1	7.77	46018	29.8
P/S/10%	D	17	11/10/2017 11:58:38	12.7	8.74	98.8	7.75	46006	29.79
P/S/10%	E	17	11/10/2017 11:59:03	12.6	8.86	99.9	7.76	46013	29.79
P/B/3%	A	17	11/10/2017 11:59:30	12.6	8.78	99	7.75	46008	29.79
P/B/3%	B	17	11/10/2017 12:00:01	12.5	8.88	100.2	7.75	46004	29.79
P/B/3%	C	17	11/10/2017 12:00:39	12.5	8.89	100.2	7.77	46025	29.8
P/B/3%	D	17	11/10/2017 12:01:04	12.6	8.89	100.3	7.77	46008	29.79
P/B/3%	E	17	11/10/2017 12:01:22	12.6	8.9	100.5	7.78	46011	29.79
P/B/5%	A	17	11/10/2017 12:01:39	12.6	8.89	100.3	7.78	46039	29.81
P/B/5%	B	17	11/10/2017 12:01:57	12.6	8.85	99.9	7.76	46016	29.8
P/B/5%	C	17	11/10/2017 12:02:17	12.6	8.82	99.5	7.77	46026	29.8
P/B/5%	D	17	11/10/2017 12:02:57	12.8	8.67	98.3	7.75	46005	29.8
P/B/5%	E	17	11/10/2017 12:03:41	12.7	8.22	93.1	7.73	45997	29.79
P/B/10%	A	17	11/10/2017 12:04:12	12.7	8.72	98.5	7.74	45994	29.78
P/B/10%	B	17	11/10/2017 12:04:38	12.6	8.75	98.9	7.75	46008	29.79
P/B/10%	C	17	11/10/2017 12:04:57	12.6	8.72	98.4	7.75	45994	29.78
P/B/10%	D	17	11/10/2017 12:05:23	12.6	8.81	99.4	7.75	46024	29.8
P/B/10%	E	17	11/10/2017 12:05:48	12.6	8.8	99.4	7.76	46008	29.79
P/L/0%	A	18	11/11/2017 09:37:53	12.9	8.68	97.6	7.73	46636	30.25
P/L/0%	B	18	11/11/2017 09:38:21	12.8	8.87	99.5	7.74	46598	30.22
P/L/0%	C	18	11/11/2017 09:39:50	12.8	8.73	97.8	7.73	46581	30.21
P/L/0%	D	18	11/11/2017 09:40:13	12.7	8.8	98.4	7.74	46561	30.19

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/L/0%	E	18	11/11/2017 09:40:35	12.7	8.57	95.9	7.7	46559	30.19
P/N/0%	A	18	11/11/2017 09:40:55	12.7	8.82	98.8	7.73	46568	30.2
P/N/0%	B	18	11/11/2017 09:41:41	12.7	8.73	97.7	7.75	46593	30.22
P/N/0%	C	18	11/11/2017 09:42:05	12.7	8.65	96.8	7.74	46580	30.21
P/N/0%	D	18	11/11/2017 09:42:29	12.8	8.65	97	7.73	46719	30.31
P/N/0%	E	18	11/11/2017 09:42:54	12.9	8.55	96	7.71	46616	30.24
P/AC/3%	A	18	11/11/2017 09:43:19	12.9	8.41	94.6	7.72	46609	30.23
P/AC/3%	B	18	11/11/2017 09:43:44	13	8.77	98.7	7.74	46598	30.23
P/AC/3%	C	18	11/11/2017 09:45:00	12.8	8.84	99	7.75	46594	30.22
P/AC/3%	D	18	11/11/2017 09:45:31	12.7	8.75	98	7.75	46611	30.23
P/AC/3%	E	18	11/11/2017 09:45:58	12.7	8.85	98.9	7.75	46574	30.2
P/AC/5%	A	18	11/11/2017 09:46:19	12.7	8.82	98.7	7.75	46693	30.29
P/AC/5%	B	18	11/11/2017 09:46:52	12.7	8.79	98.3	7.75	46578	30.2
P/AC/5%	C	18	11/11/2017 09:47:13	12.7	8.83	98.8	7.75	46625	30.24
P/AC/5%	D	18	11/11/2017 09:47:39	12.7	8.71	97.6	7.73	46611	30.23
P/AC/5%	E	18	11/11/2017 09:48:00	12.7	8.82	98.7	7.74	46592	30.22
P/AC/10%	A	18	11/11/2017 09:49:47	12.8	7.9	88.6	7.72	46713	30.3
P/AC/10%	B	18	11/11/2017 09:50:17	12.8	8.68	97.3	7.72	46707	30.3
P/AC/10%	C	18	11/11/2017 09:50:32	12.9	8.74	98.3	7.74	46896	30.44
P/AC/10%	D	18	11/11/2017 09:50:56	12.9	8.72	98.1	7.73	46640	30.26
P/AC/10%	E	18	11/11/2017 09:51:24	12.8	8.73	97.8	7.73	46715	30.3
P/S/3%	A	18	11/11/2017 09:51:46	12.7	8.76	97.8	7.72	46502	30.15
P/S/3%	B	18	11/11/2017 09:52:05	12.6	8.92	99.7	7.75	46642	30.25
P/S/3%	C	18	11/11/2017 09:52:41	12.6	8.84	98.7	7.73	46687	30.28
P/S/3%	D	18	11/11/2017 09:53:07	12.6	8.74	97.4	7.71	46394	30.07
P/S/3%	E	18	11/11/2017 09:53:36	12.5	9.02	100.4	7.76	46672	30.26
P/S/5%	A	18	11/11/2017 09:54:07	12.7	8.82	98.7	7.75	46650	30.26
P/S/5%	B	18	11/11/2017 09:54:25	12.7	8.77	98.1	7.74	46607	30.23
P/S/5%	C	18	11/11/2017 09:54:51	12.6	8.95	100	7.77	46632	30.24
P/S/5%	D	18	11/11/2017 09:55:15	12.7	8.92	99.8	7.77	46641	30.25
P/S/5%	E	18	11/11/2017 09:55:34	12.8	8.89	99.6	7.77	46622	30.24
P/S/10%	A	18	11/11/2017 09:55:52	12.9	8.86	99.5	7.78	46710	30.31
P/S/10%	B	18	11/11/2017 09:58:25	12.8	8.82	99	7.78	46710	30.3
P/S/10%	C	18	11/11/2017 10:26:59	12.6	9.83	109.8	7.74	46827	30.38
P/S/10%	D	18	11/11/2017 10:27:20	12.6	9.6	107.1	7.74	46835	30.38
P/S/10%	E	18	11/11/2017 10:27:38	12.5	9.59	106.8	7.75	46731	30.31
P/B/3%	A	18	11/11/2017 10:28:02	12.5	9.53	106.1	7.75	46699	30.28
P/B/3%	B	18	11/11/2017 10:28:23	12.4	9.67	107.5	7.76	46670	30.26
P/B/3%	C	18	11/11/2017 10:29:06	12.4	9.52	105.9	7.77	46760	30.32
P/B/3%	D	18	11/11/2017 10:29:31	12.6	9.43	105.2	7.78	46798	30.36
P/B/3%	E	18	11/11/2017 10:30:00	12.6	9.24	103.1	7.78	46795	30.36
P/B/5%	A	18	11/11/2017 10:30:26	12.5	9.39	104.7	7.78	46843	30.39
P/B/5%	B	18	11/11/2017 10:30:48	12.6	9.28	103.5	7.77	46675	30.27
P/B/5%	C	18	11/11/2017 10:31:16	12.6	9.27	103.5	7.77	46799	30.36

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/B/5%	D	18	11/11/2017 10:31:51	12.8	9.11	102.1	7.76	46736	30.32
P/B/5%	E	18	11/11/2017 10:32:19	12.7	9.09	101.6	7.75	46623	30.24
P/B/10%	A	18	11/11/2017 10:32:43	12.6	9.2	102.6	7.76	46625	30.23
P/B/10%	B	18	11/11/2017 10:33:10	12.6	9.13	101.8	7.76	46637	30.24
P/B/10%	C	18	11/11/2017 10:33:38	12.6	9.08	101.2	7.77	46697	30.28
P/B/10%	D	18	11/11/2017 10:33:54	12.5	9.18	102.4	7.77	46670	30.26
P/B/10%	E	18	11/11/2017 10:34:21	12.6	9.13	102	7.77	46672	30.27
P/L/0%	A	19	11/12/2017 10:25:06	12.7	9.55	106.8	7.52	46707	30.3
P/L/0%	B	19	11/12/2017 10:30:23	12.7	8.96	100	7.58	46494	30.14
P/L/0%	C	19	11/12/2017 10:30:34	12.6	9	100.4	7.57	46511	30.15
P/L/0%	D	19	11/12/2017 10:30:46	12.5	9.11	101.5	7.58	46491	30.14
P/L/0%	E	19	11/12/2017 10:31:03	12.6	8.76	97.6	7.55	46478	30.13
P/N/0%	A	19	11/12/2017 10:31:14	12.5	8.96	99.7	7.56	46482	30.13
P/N/0%	B	19	11/12/2017 10:31:44	12.5	9.05	100.6	7.58	46476	30.12
P/N/0%	C	19	11/12/2017 10:31:55	12.6	8.93	99.5	7.58	46512	30.15
P/N/0%	D	19	11/12/2017 10:32:07	12.7	8.83	98.7	7.56	46828	30.38
P/N/0%	E	19	11/12/2017 10:32:19	12.7	8.79	98.4	7.56	46557	30.19
P/AC/3%	A	19	11/12/2017 10:32:29	12.8	8.75	98	7.55	46576	30.21
P/AC/3%	B	19	11/12/2017 10:32:43	12.9	8.82	98.9	7.57	46496	30.15
P/AC/3%	C	19	11/12/2017 10:33:11	12.7	8.92	99.6	7.58	46536	30.17
P/AC/3%	D	19	11/12/2017 10:33:26	12.6	8.98	100.1	7.58	46501	30.14
P/AC/3%	E	19	11/12/2017 10:33:39	12.5	8.97	99.9	7.58	46485	30.13
P/AC/5%	A	19	11/12/2017 10:33:50	12.6	8.9	99.3	7.57	46780	30.34
P/AC/5%	B	19	11/12/2017 10:34:03	12.5	8.95	99.6	7.58	46514	30.15
P/AC/5%	C	19	11/12/2017 10:34:13	12.5	8.93	99.5	7.57	46539	30.17
P/AC/5%	D	19	11/12/2017 10:34:41	12.6	8.74	97.4	7.56	46536	30.17
P/AC/5%	E	19	11/12/2017 10:34:54	12.6	8.86	98.8	7.58	46522	30.16
P/AC/10%	A	19	11/12/2017 10:35:08	12.7	8.76	97.9	7.57	46667	30.27
P/AC/10%	B	19	11/12/2017 10:35:17	12.7	8.78	98.2	7.56	46796	30.36
P/AC/10%	C	19	11/12/2017 10:35:31	12.8	8.81	98.9	7.55	47226	30.67
P/AC/10%	D	19	11/12/2017 10:35:42	12.8	8.78	98.4	7.56	46709	30.3
P/AC/10%	E	19	11/12/2017 10:36:24	12.6	8.79	98.2	7.54	46855	30.4
P/S/3%	A	19	11/12/2017 10:36:34	12.6	8.83	98.4	7.54	46711	30.29
P/S/3%	B	19	11/12/2017 10:36:46	12.5	8.95	99.6	7.57	46561	30.18
P/S/3%	C	19	11/12/2017 10:36:58	12.5	8.93	99.4	7.56	46682	30.27
P/S/3%	D	19	11/12/2017 10:37:15	12.5	8.81	98.1	7.54	46611	30.22
P/S/3%	E	19	11/12/2017 10:37:32	12.4	9.04	100.4	7.56	46591	30.2
P/S/5%	A	19	11/12/2017 10:37:59	12.6	8.86	99	7.55	46924	30.45
P/S/5%	B	19	11/12/2017 10:38:14	12.6	8.84	98.7	7.54	46878	30.42
P/S/5%	C	19	11/12/2017 10:38:31	12.6	8.98	100.1	7.57	46677	30.27
P/S/5%	D	19	11/12/2017 10:38:42	12.6	8.95	99.8	7.58	46529	30.17
P/S/5%	E	19	11/12/2017 10:38:58	12.7	8.88	99.2	7.59	46545	30.18
P/S/10%	A	19	11/12/2017 10:39:11	12.7	8.91	99.7	7.59	46612	30.23

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/S/10%	B	19	11/12/2017 10:40:12	12.7	8.86	99.1	7.59	46695	30.29
P/S/10%	C	19	11/12/2017 10:40:27	12.6	8.88	99.2	7.59	46752	30.33
P/S/10%	D	19	11/12/2017 10:40:38	12.5	8.89	99	7.6	46488	30.13
P/S/10%	E	19	11/12/2017 10:40:48	12.4	8.91	99	7.59	46634	30.23
P/B/3%	A	19	11/12/2017 10:40:59	12.4	8.87	98.4	7.59	46520	30.15
P/B/3%	B	19	11/12/2017 10:41:11	12.3	8.93	99.1	7.6	46474	30.12
P/B/3%	C	19	11/12/2017 10:41:43	12.4	8.95	99.4	7.59	46750	30.31
P/B/3%	D	19	11/12/2017 10:41:52	12.4	8.97	99.7	7.6	46477	30.12
P/B/3%	E	19	11/12/2017 10:42:02	12.4	8.98	100	7.6	46774	30.34
P/B/5%	A	19	11/12/2017 10:42:10	12.4	8.97	99.8	7.6	46789	30.35
P/B/5%	B	19	11/12/2017 10:42:21	12.4	8.9	98.9	7.6	46492	30.13
P/B/5%	C	19	11/12/2017 10:42:32	12.5	8.86	98.5	7.6	46511	30.15
P/B/5%	D	19	11/12/2017 10:42:56	12.6	8.78	98	7.58	46589	30.21
P/B/5%	E	19	11/12/2017 10:43:09	12.6	8.66	96.5	7.59	46488	30.14
P/B/10%	A	19	11/12/2017 10:43:28	12.5	8.82	98.2	7.6	46485	30.13
P/B/10%	B	19	11/12/2017 10:43:41	12.5	8.77	97.6	7.6	46503	30.14
P/B/10%	C	19	11/12/2017 10:43:50	12.4	8.79	97.6	7.6	46528	30.16
P/B/10%	D	19	11/12/2017 10:44:00	12.4	8.82	98	7.6	46532	30.16
P/B/10%	E	19	11/12/2017 10:44:12	12.5	8.82	98.1	7.6	46556	30.18
P/L/0%	A	20	11/13/2017 12:19:20	12.7	9.42	105.2	7.63	45181	29.2
P/L/0%	B	20	11/13/2017 12:19:38	12.6	9.42	105	7.64	45167	29.19
P/L/0%	C	20	11/13/2017 12:19:51	12.6	9.38	104.4	7.65	45173	29.19
P/L/0%	D	20	11/13/2017 12:20:06	12.5	9.45	105.1	7.65	45119	29.15
P/L/0%	E	20	11/13/2017 12:20:18	12.5	9.32	103.5	7.63	45046	29.1
P/N/0%	A	20	11/13/2017 12:20:28	12.5	9.36	104.1	7.64	45125	29.15
P/N/0%	B	20	11/13/2017 12:20:58	12.5	9.38	104.2	7.65	45028	29.08
P/N/0%	C	20	11/13/2017 12:21:12	12.5	9.31	103.5	7.65	45099	29.14
P/N/0%	D	20	11/13/2017 12:21:26	12.6	9.19	102.7	7.63	45764	29.62
P/N/0%	E	20	11/13/2017 12:21:40	12.7	9.12	101.9	7.63	45249	29.25
P/AC/3%	A	20	11/13/2017 12:21:51	12.8	9.09	101.7	7.63	45289	29.28
P/AC/3%	B	20	11/13/2017 12:22:04	12.8	9.23	103.4	7.65	45176	29.2
P/AC/3%	C	20	11/13/2017 12:22:28	12.6	9.34	104.1	7.66	45089	29.13
P/AC/3%	D	20	11/13/2017 12:22:39	12.6	9.31	103.7	7.66	45166	29.19
P/AC/3%	E	20	11/13/2017 12:22:51	12.5	9.31	103.6	7.66	45137	29.16
P/AC/5%	A	20	11/13/2017 12:23:06	12.5	9.31	103.6	7.66	45264	29.25
P/AC/5%	B	20	11/13/2017 12:23:22	12.5	9.28	103.2	7.65	45162	29.18
P/AC/5%	C	20	11/13/2017 12:23:35	12.6	9.2	102.5	7.65	45296	29.28
P/AC/5%	D	20	11/13/2017 12:23:48	12.6	9.13	101.8	7.64	45230	29.23
P/AC/5%	E	20	11/13/2017 12:24:01	12.6	9.21	102.7	7.65	45125	29.16
P/AC/10%	A	20	11/13/2017 12:24:14	12.7	9.07	101.4	7.64	45590	29.49
P/AC/10%	B	20	11/13/2017 12:24:23	12.7	9.12	101.9	7.64	45413	29.37
P/AC/10%	C	20	11/13/2017 12:24:37	12.8	9.13	102.4	7.65	45916	29.73
P/AC/10%	D	20	11/13/2017 12:24:52	12.8	9.13	102.1	7.65	45180	29.2

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/AC/10%	E	20	11/13/2017 12:25:42	12.6	9.11	101.7	7.64	45304	29.29
P/S/3%	A	20	11/13/2017 12:25:52	12.6	9.1	101.5	7.64	45626	29.52
P/S/3%	B	20	11/13/2017 12:26:03	12.6	9.2	102.4	7.66	45249	29.24
P/S/3%	C	20	11/13/2017 12:26:14	12.5	9.25	103	7.65	45390	29.34
P/S/3%	D	20	11/13/2017 12:26:25	12.6	9.12	101.8	7.63	45725	29.59
P/S/3%	E	20	11/13/2017 12:26:40	12.4	9.35	104	7.65	45488	29.41
P/S/5%	A	20	11/13/2017 12:27:02	12.6	9.21	102.7	7.65	45366	29.33
P/S/5%	B	20	11/13/2017 12:27:14	12.6	9.16	102.5	7.64	45957	29.76
P/S/5%	C	20	11/13/2017 12:27:26	12.6	9.29	103.6	7.66	45410	29.36
P/S/5%	D	20	11/13/2017 12:27:37	12.6	9.27	103.4	7.67	45210	29.22
P/S/5%	E	20	11/13/2017 12:27:47	12.7	9.21	102.9	7.66	45241	29.24
P/S/10%	A	20	11/13/2017 12:28:01	12.8	9.16	102.6	7.67	45383	29.35
P/S/10%	B	20	11/13/2017 12:29:12	12.7	9.16	102.5	7.68	45475	29.41
P/S/10%	C	20	11/13/2017 12:29:28	12.6	9.2	102.6	7.67	45159	29.18
P/S/10%	D	20	11/13/2017 12:29:48	12.6	9.1	101.4	7.66	45215	29.22
P/S/10%	E	20	11/13/2017 12:30:03	12.4	9.28	103	7.67	45116	29.15
P/B/3%	A	20	11/13/2017 12:30:18	12.4	9.19	102	7.66	45035	29.09
P/B/3%	B	20	11/13/2017 12:30:38	12.4	9.22	102.2	7.66	45032	29.08
P/B/3%	C	20	11/13/2017 12:31:19	12.4	9.28	103	7.68	45422	29.36
P/B/3%	D	20	11/13/2017 12:31:39	12.5	9.23	102.6	7.68	45238	29.23
P/B/3%	E	20	11/13/2017 12:31:52	12.5	9.25	102.8	7.68	45338	29.31
P/B/5%	A	20	11/13/2017 12:32:14	12.4	9.24	103	7.68	45796	29.63
P/B/5%	B	20	11/13/2017 12:32:28	12.5	9.13	101.5	7.67	45132	29.16
P/B/5%	C	20	11/13/2017 12:32:43	12.5	9.17	102	7.67	45071	29.12
P/B/5%	D	20	11/13/2017 12:33:10	12.7	9.03	100.8	7.66	45123	29.16
P/B/5%	E	20	11/13/2017 12:33:25	12.6	9.03	100.5	7.65	45044	29.1
P/B/10%	A	20	11/13/2017 12:33:47	12.5	9.13	101.5	7.66	45019	29.08
P/B/10%	B	20	11/13/2017 12:34:02	12.5	9.05	100.6	7.66	45063	29.11
P/B/10%	C	20	11/13/2017 12:34:17	12.4	9.07	100.7	7.66	45124	29.15
P/B/10%	D	20	11/13/2017 12:34:29	12.4	9.11	101.2	7.66	45026	29.08
P/B/10%	E	20	11/13/2017 12:35:01	12.5	9.07	100.8	7.66	45136	29.16
P/L/0%	A	21	11/14/2017 12:49:39	12.8	9.14	101.8	7.65	43899	28.29
P/L/0%	B	21	11/14/2017 12:50:06	12.7	9.22	102.4	7.66	43882	28.27
P/L/0%	C	21	11/14/2017 12:50:24	12.7	9.15	101.6	7.66	43862	28.26
P/L/0%	D	21	11/14/2017 12:50:44	12.6	9.21	102.2	7.66	43912	28.29
P/L/0%	E	21	11/14/2017 12:51:12	12.6	8.99	99.8	7.63	43888	28.27
P/N/0%	A	21	11/14/2017 12:51:34	12.6	9.19	101.9	7.65	43902	28.28
P/N/0%	B	21	11/14/2017 12:52:00	12.6	9.23	102.3	7.66	43913	28.29
P/N/0%	C	21	11/14/2017 12:52:18	12.7	9.09	100.9	7.65	43902	28.28
P/N/0%	D	21	11/14/2017 12:53:00	12.7	8.88	98.7	7.65	43920	28.3
P/N/0%	E	21	11/14/2017 12:53:22	12.8	8.78	97.7	7.64	43849	28.25
P/AC/3%	A	21	11/14/2017 12:53:41	12.8	8.93	99.5	7.64	43868	28.27
P/AC/3%	B	21	11/14/2017 12:54:07	12.9	9.03	100.7	7.65	43879	28.28

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/AC/3%	C	21	11/14/2017 12:54:34	12.7	9.17	102	7.66	43885	28.28
P/AC/3%	D	21	11/14/2017 12:54:52	12.6	9.24	102.6	7.67	43889	28.27
P/AC/3%	E	21	11/14/2017 12:55:07	12.6	9.21	102.1	7.67	43880	28.27
P/AC/5%	A	21	11/14/2017 12:55:29	12.6	9.17	101.6	7.67	43879	28.27
P/AC/5%	B	21	11/14/2017 12:55:53	12.6	9.17	101.7	7.66	43906	28.29
P/AC/5%	C	21	11/14/2017 12:56:25	12.6	9.17	101.8	7.66	43898	28.28
P/AC/5%	D	21	11/14/2017 12:56:55	12.7	8.95	99.4	7.64	43899	28.28
P/AC/5%	E	21	11/14/2017 12:57:19	12.7	9.08	100.9	7.65	43847	28.25
P/AC/10%	A	21	11/14/2017 12:58:18	12.7	8.91	99	7.65	43962	28.33
P/AC/10%	B	21	11/14/2017 12:58:41	12.7	9.06	100.7	7.65	43922	28.3
P/AC/10%	C	21	11/14/2017 12:59:03	12.7	9.12	101.5	7.67	43966	28.33
P/AC/10%	D	21	11/14/2017 12:59:27	12.8	9.06	100.9	7.66	43958	28.33
P/AC/10%	E	21	11/14/2017 12:59:57	12.7	9.06	100.7	7.65	43887	28.28
P/S/3%	A	21	11/14/2017 13:00:24	12.6	9.16	101.5	7.66	43931	28.3
P/S/3%	B	21	11/14/2017 13:00:48	12.6	9.2	102	7.67	43897	28.28
P/S/3%	C	21	11/14/2017 13:01:13	12.6	9.16	101.5	7.67	43899	28.28
P/S/3%	D	21	11/14/2017 13:01:44	12.6	9.06	100.5	7.65	43968	28.33
P/S/3%	E	21	11/14/2017 13:02:08	12.5	9.27	102.6	7.68	43944	28.31
P/S/5%	A	21	11/14/2017 13:02:38	12.6	9.17	101.8	7.67	43928	28.3
P/S/5%	B	21	11/14/2017 13:02:58	12.7	9.06	100.6	7.67	44103	28.43
P/S/5%	C	21	11/14/2017 13:03:20	12.6	9.25	102.6	7.69	43948	28.32
P/S/5%	D	21	11/14/2017 13:03:44	12.7	9.18	102	7.69	43921	28.3
P/S/5%	E	21	11/14/2017 13:04:03	12.7	9.07	100.8	7.68	43912	28.29
P/S/10%	A	21	11/14/2017 13:04:23	12.8	9.1	101.3	7.69	43951	28.32
P/S/10%	B	21	11/14/2017 13:05:15	12.7	9.12	101.5	7.69	43936	28.31
P/S/10%	C	21	11/14/2017 13:05:33	12.7	9.04	100.4	7.69	43927	28.3
P/S/10%	D	21	11/14/2017 13:05:54	12.6	9.11	101	7.68	43938	28.31
P/S/10%	E	21	11/14/2017 13:06:12	12.5	9.18	101.6	7.67	43978	28.33
P/B/3%	A	21	11/14/2017 13:06:30	12.5	9.19	101.7	7.67	43935	28.3
P/B/3%	B	21	11/14/2017 13:06:50	12.5	9.14	101.1	7.68	43968	28.33
P/B/3%	C	21	11/14/2017 13:07:28	12.5	9.19	101.7	7.69	43960	28.32
P/B/3%	D	21	11/14/2017 13:07:55	12.6	9.19	101.8	7.7	43878	28.26
P/B/3%	E	21	11/14/2017 13:08:18	12.6	9.19	101.8	7.7	43907	28.28
P/B/5%	A	21	11/14/2017 13:08:38	12.5	9.22	102.1	7.7	44014	28.36
P/B/5%	B	21	11/14/2017 13:09:02	12.6	9.07	100.5	7.68	43928	28.3
P/B/5%	C	21	11/14/2017 13:09:25	12.6	9.11	101	7.69	43786	28.2
P/B/5%	D	21	11/14/2017 13:10:10	12.7	9.03	100.3	7.68	43922	28.3
P/B/5%	E	21	11/14/2017 13:10:33	12.6	9.06	100.5	7.65	43937	28.31
P/B/10%	A	21	11/14/2017 13:10:52	12.6	9.1	100.9	7.66	43937	28.31
P/B/10%	B	21	11/14/2017 13:11:20	12.6	9.06	100.4	7.66	43926	28.3
P/B/10%	C	21	11/14/2017 13:11:41	12.5	9.1	100.7	7.66	43964	28.32
P/B/10%	D	21	11/14/2017 13:12:04	12.5	9.13	101.1	7.67	43972	28.33
P/B/10%	E	21	11/14/2017 13:12:34	12.6	9.1	100.9	7.67	43955	28.32

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/L/0%	A	22	11/15/2017 13:47:08	12.8	9.05	102	7.76	46174	29.92
P/L/0%	B	22	11/15/2017 13:47:25	12.7	9.11	102.5	7.76	46097	29.86
P/L/0%	C	22	11/15/2017 13:47:36	12.7	9.09	102.2	7.76	46062	29.83
P/L/0%	D	22	11/15/2017 13:47:45	12.6	9.16	102.9	7.77	46182	29.92
P/L/0%	E	22	11/15/2017 13:48:01	12.7	8.85	99.4	7.71	46143	29.89
P/N/0%	A	22	11/15/2017 13:48:16	12.6	9.11	102.4	7.76	46149	29.89
P/N/0%	B	22	11/15/2017 13:48:47	12.6	9.09	102.1	7.77	46226	29.95
P/N/0%	C	22	11/15/2017 13:48:59	12.6	9.06	101.8	7.76	46251	29.97
P/N/0%	D	22	11/15/2017 13:49:14	12.7	8.93	100.3	7.74	45915	29.73
P/N/0%	E	22	11/15/2017 13:49:29	12.8	8.84	99.5	7.73	45970	29.77
P/AC/3%	A	22	11/15/2017 13:49:38	12.8	8.87	100	7.73	45958	29.76
P/AC/3%	B	22	11/15/2017 13:49:50	12.9	8.93	100.8	7.75	46081	29.85
P/AC/3%	C	22	11/15/2017 13:50:18	12.7	9.03	101.5	7.77	46137	29.89
P/AC/3%	D	22	11/15/2017 13:50:28	12.7	9.04	101.5	7.77	46144	29.89
P/AC/3%	E	22	11/15/2017 13:50:44	12.6	9.05	101.5	7.77	46072	29.84
P/AC/5%	A	22	11/15/2017 13:50:54	12.6	9.03	101.3	7.76	46030	29.81
P/AC/5%	B	22	11/15/2017 13:51:47	12.6	8.95	100.5	7.76	46126	29.88
P/AC/5%	C	22	11/15/2017 13:52:08	12.6	8.92	100.1	7.75	46100	29.86
P/AC/5%	D	22	11/15/2017 13:52:30	12.7	8.8	98.9	7.73	46054	29.83
P/AC/5%	E	22	11/15/2017 13:52:41	12.7	8.85	99.3	7.74	45722	29.59
P/AC/10%	A	22	11/15/2017 13:52:53	12.7	8.83	99.2	7.74	45950	29.75
P/AC/10%	B	22	11/15/2017 13:55:26	12.7	8.8	98.9	7.75	45964	29.76
P/AC/10%	C	22	11/15/2017 13:55:36	12.8	8.84	99.5	7.77	46073	29.84
P/AC/10%	D	22	11/15/2017 13:55:48	12.8	8.87	99.9	7.76	46166	29.91
P/AC/10%	E	22	11/15/2017 13:56:21	12.7	8.8	98.7	7.74	45666	29.55
P/S/3%	A	22	11/15/2017 13:56:33	12.6	8.86	99.4	7.75	45875	29.7
P/S/3%	B	22	11/15/2017 13:56:45	12.6	8.94	100.3	7.77	46073	29.84
P/S/3%	C	22	11/15/2017 13:57:02	12.6	8.89	99.7	7.76	45924	29.73
P/S/3%	D	22	11/15/2017 13:57:16	12.6	8.84	99.1	7.74	45896	29.71
P/S/3%	E	22	11/15/2017 13:57:30	12.5	9.02	101	7.79	46038	29.81
P/S/5%	A	22	11/15/2017 13:57:45	12.6	8.97	100.7	7.78	46092	29.85
P/S/5%	B	22	11/15/2017 13:57:58	12.6	8.93	100.2	7.77	45821	29.66
P/S/5%	C	22	11/15/2017 13:58:14	12.6	8.99	100.9	7.8	46050	29.82
P/S/5%	D	22	11/15/2017 13:58:31	12.7	8.9	100.1	7.79	46114	29.87
P/S/5%	E	22	11/15/2017 13:58:44	12.7	8.89	100.1	7.78	46122	29.88
P/S/10%	A	22	11/15/2017 13:58:59	12.8	8.87	99.9	7.79	46130	29.88
P/S/10%	B	22	11/15/2017 13:59:39	12.7	8.88	99.9	7.79	46095	29.86
P/S/10%	C	22	11/15/2017 13:59:55	12.7	8.86	99.6	7.79	46101	29.86
P/S/10%	D	22	11/15/2017 14:00:11	12.6	8.85	99.3	7.78	46032	29.81
P/S/10%	E	22	11/15/2017 14:00:25	12.5	8.92	99.9	7.78	46225	29.94
P/B/3%	A	22	11/15/2017 14:00:38	12.5	8.9	99.8	7.77	46219	29.94
P/B/3%	B	22	11/15/2017 14:00:44	12.5	8.9	99.7	7.77	46213	29.93
P/B/3%	C	22	11/15/2017 14:00:57	12.4	8.93	100	7.78	46173	29.9
P/B/3%	D	22	11/15/2017 14:02:02	12.5	8.93	100	7.8	46181	29.91

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/B/3%	E	22	11/15/2017 14:02:24	12.5	8.98	100.7	7.79	46003	29.79
P/B/5%	A	22	11/15/2017 14:02:37	12.5	9.01	101	7.8	46036	29.81
P/B/5%	B	22	11/15/2017 14:02:47	12.5	8.99	100.7	7.8	46052	29.82
P/B/5%	C	22	11/15/2017 14:02:58	12.6	8.88	99.6	7.78	46153	29.89
P/B/5%	D	22	11/15/2017 14:03:12	12.6	8.88	99.6	7.79	45866	29.69
P/B/5%	E	22	11/15/2017 14:03:41	12.7	8.79	98.8	7.77	46118	29.87
P/B/10%	A	22	11/15/2017 14:03:59	12.6	8.78	98.7	7.76	46192	29.92
P/B/10%	B	22	11/15/2017 14:04:15	12.6	8.81	98.9	7.76	46202	29.93
P/B/10%	C	22	11/15/2017 14:04:35	12.6	8.73	98	7.75	46166	29.9
P/B/10%	D	22	11/15/2017 14:04:51	12.5	8.78	98.4	7.76	46182	29.91
P/B/10%	E	22	11/15/2017 14:05:11	12.5	8.82	98.8	7.77	46191	29.92
P/L/0%	A	23	11/16/2017 13:00:17	12.7	8.76	100.5	7.82	46940	30.46
P/L/0%	B	23	11/16/2017 13:00:27	12.6	8.82	101.1	7.81	46877	30.42
P/L/0%	C	23	11/16/2017 13:00:38	12.6	8.81	100.8	7.82	46902	30.43
P/L/0%	D	23	11/16/2017 13:00:57	12.5	8.88	101.5	7.82	46955	30.47
P/L/0%	E	23	11/16/2017 13:01:10	12.5	8.69	99.4	7.79	46915	30.44
P/N/0%	A	23	11/16/2017 13:01:19	12.5	8.74	100	7.81	46902	30.43
P/N/0%	B	23	11/16/2017 13:01:52	12.5	8.85	101.2	7.83	46950	30.46
P/N/0%	C	23	11/16/2017 13:02:08	12.5	8.81	100.7	7.82	46954	30.47
P/N/0%	D	23	11/16/2017 13:03:38	12.6	8.7	99.7	7.8	46782	30.35
P/N/0%	E	23	11/16/2017 13:03:55	12.7	8.62	98.9	7.79	46803	30.37
P/AC/3%	A	23	11/16/2017 13:04:06	12.8	8.63	99.2	7.79	46825	30.39
P/AC/3%	B	23	11/16/2017 13:04:21	12.8	8.75	100.7	7.81	46908	30.45
P/AC/3%	C	23	11/16/2017 13:04:47	12.7	8.78	100.7	7.83	46883	30.42
P/AC/3%	D	23	11/16/2017 13:05:00	12.6	8.82	100.9	7.83	46905	30.43
P/AC/3%	E	23	11/16/2017 13:05:20	12.6	8.8	100.6	7.82	46737	30.31
P/AC/5%	A	23	11/16/2017 13:05:52	12.6	8.81	100.7	7.82	46787	30.35
P/AC/5%	B	23	11/16/2017 13:06:06	12.5	8.83	101	7.82	46904	30.43
P/AC/5%	C	23	11/16/2017 13:06:21	12.6	8.75	100.1	7.81	46832	30.38
P/AC/5%	D	23	11/16/2017 13:06:44	12.6	8.66	99.2	7.8	46886	30.42
P/AC/5%	E	23	11/16/2017 13:07:03	12.6	8.76	100.4	7.81	46825	30.38
P/AC/10%	A	23	11/16/2017 13:07:20	12.7	8.67	99.4	7.8	46862	30.41
P/AC/10%	B	23	11/16/2017 13:07:34	12.7	8.34	95.7	7.76	46825	30.38
P/AC/10%	C	23	11/16/2017 13:07:51	12.7	8.8	101.1	7.82	46885	30.43
P/AC/10%	D	23	11/16/2017 13:08:06	12.8	8.72	100.2	7.82	46936	30.47
P/AC/10%	E	23	11/16/2017 13:08:47	12.6	8.71	99.8	7.82	46867	30.41
P/S/3%	A	23	11/16/2017 13:09:06	12.6	8.74	100	7.81	46550	30.18
P/S/3%	B	23	11/16/2017 13:09:25	12.6	8.82	101	7.83	46807	30.36
P/S/3%	C	23	11/16/2017 13:09:48	12.6	8.8	100.6	7.83	46699	30.29
P/S/3%	D	23	11/16/2017 13:10:01	12.6	8.73	99.9	7.8	46746	30.32
P/S/3%	E	23	11/16/2017 13:10:13	12.5	8.9	101.7	7.85	46888	30.42
P/S/5%	A	23	11/16/2017 13:10:38	12.6	8.82	101	7.84	46769	30.34
P/S/5%	B	23	11/16/2017 13:10:52	12.7	8.76	100.3	7.83	46595	30.22

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/S/5%	C	23	11/16/2017 13:11:08	12.6	8.87	101.6	7.86	46793	30.36
P/S/5%	D	23	11/16/2017 13:11:26	12.7	8.79	100.8	7.85	46837	30.39
P/S/5%	E	23	11/16/2017 13:11:43	12.7	8.78	100.7	7.84	46917	30.45
P/S/10%	A	23	11/16/2017 13:12:01	12.8	8.78	101	7.86	46879	30.42
P/S/10%	B	23	11/16/2017 13:12:41	12.7	8.76	100.6	7.85	46860	30.41
P/S/10%	C	23	11/16/2017 13:13:03	12.7	8.8	100.9	7.85	46896	30.43
P/S/10%	D	23	11/16/2017 13:13:20	12.5	8.81	100.8	7.84	46914	30.44
P/S/10%	E	23	11/16/2017 13:13:34	12.4	8.86	101.1	7.85	46925	30.44
P/B/3%	A	23	11/16/2017 13:13:56	12.4	8.8	100.4	7.84	46913	30.43
P/B/3%	B	23	11/16/2017 13:14:13	12.4	8.81	100.4	7.85	46913	30.43
P/B/3%	C	23	11/16/2017 13:14:44	12.4	8.88	101.3	7.86	46900	30.43
P/B/3%	D	23	11/16/2017 13:14:55	12.5	8.87	101.3	7.86	46761	30.33
P/B/3%	E	23	11/16/2017 13:15:12	12.5	8.93	102	7.87	46769	30.33
P/B/5%	A	23	11/16/2017 13:15:27	12.5	8.87	101.3	7.87	46834	30.38
P/B/5%	B	23	11/16/2017 13:15:39	12.5	8.83	100.8	7.86	46938	30.46
P/B/5%	C	23	11/16/2017 13:15:56	12.6	8.74	100	7.85	46648	30.25
P/B/5%	D	23	11/16/2017 13:16:27	12.7	8.68	99.5	7.84	46856	30.4
P/B/5%	E	23	11/16/2017 13:16:47	12.6	8.66	99.1	7.82	46894	30.43
P/B/10%	A	23	11/16/2017 13:17:05	12.5	8.76	100.2	7.84	46957	30.47
P/B/10%	B	23	11/16/2017 13:17:26	12.5	8.69	99.3	7.83	46897	30.43
P/B/10%	C	23	11/16/2017 13:17:50	12.4	8.71	99.4	7.83	46915	30.44
P/B/10%	D	23	11/16/2017 13:18:09	12.4	8.76	99.9	7.84	46932	30.45
P/B/10%	E	23	11/16/2017 13:18:33	12.5	8.74	99.9	7.84	46902	30.43
P/L/0%	A	24	11/17/2017 10:52:09	12.7	8.95	101.8	7.77	45857	29.69
P/L/0%	B	24	11/17/2017 11:23:38	12.6	9.25	105	7.77	45813	29.65
P/L/0%	C	24	11/17/2017 11:24:00	12.6	9.09	103.2	7.78	45777	29.62
P/L/0%	D	24	11/17/2017 11:24:36	12.5	8.69	98.6	7.8	45793	29.63
P/L/0%	E	24	11/17/2017 11:24:57	12.5	8.89	100.8	7.78	45769	29.62
P/N/0%	A	24	11/17/2017 11:25:13	12.5	9.11	103.3	7.8	45766	29.61
P/N/0%	B	24	11/17/2017 11:25:29	12.5	9.13	103.5	7.8	45782	29.62
P/N/0%	C	24	11/17/2017 11:25:45	12.5	9.06	102.7	7.8	45758	29.61
P/N/0%	D	24	11/17/2017 11:26:05	12.6	8.97	101.8	7.79	45707	29.58
P/N/0%	E	24	11/17/2017 11:26:25	12.7	8.82	100.4	7.78	45675	29.56
P/AC/3%	A	24	11/17/2017 11:26:42	12.8	8.9	101.4	7.78	45688	29.57
P/AC/3%	B	24	11/17/2017 11:26:58	12.8	8.95	102.1	7.8	45724	29.59
P/AC/3%	C	24	11/17/2017 11:27:34	12.6	8.51	96.7	7.8	45741	29.6
P/AC/3%	D	24	11/17/2017 11:27:46	12.6	9	102.1	7.81	45725	29.59
P/AC/3%	E	24	11/17/2017 11:28:05	12.6	8.96	101.6	7.81	45646	29.53
P/AC/5%	A	24	11/17/2017 11:28:35	12.6	8.92	101.2	7.81	45663	29.54
P/AC/5%	B	24	11/17/2017 11:28:57	12.5	8.93	101.3	7.8	45694	29.56
P/AC/5%	C	24	11/17/2017 11:29:41	12.6	8.74	99.1	7.8	45708	29.57
P/AC/5%	D	24	11/17/2017 11:30:04	12.6	8.78	99.7	7.79	45694	29.57
P/AC/5%	E	24	11/17/2017 11:30:21	12.6	8.85	100.5	7.79	45660	29.54

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/AC/10%	A	24	11/17/2017 11:30:37	12.7	8.78	99.8	7.79	45670	29.55
P/AC/10%	B	24	11/17/2017 11:31:01	12.7	8.74	99.4	7.77	45671	29.55
P/AC/10%	C	24	11/17/2017 11:31:19	12.7	8.88	101	7.81	45724	29.59
P/AC/10%	D	24	11/17/2017 11:31:42	12.8	8.77	99.9	7.8	45712	29.58
P/AC/10%	E	24	11/17/2017 11:32:13	12.6	8.78	99.8	7.79	45679	29.56
P/S/3%	A	24	11/17/2017 11:32:34	12.6	8.85	100.4	7.8	45489	29.42
P/S/3%	B	24	11/17/2017 11:32:49	12.6	8.88	100.8	7.81	45644	29.53
P/S/3%	C	24	11/17/2017 11:33:04	12.6	8.82	100	7.81	45552	29.46
P/S/3%	D	24	11/17/2017 11:33:28	12.6	8.74	99.2	7.79	45610	29.5
P/S/3%	E	24	11/17/2017 11:33:39	12.5	8.85	100.2	7.82	45687	29.56
P/S/5%	A	24	11/17/2017 11:34:12	12.6	8.83	100.3	7.81	45689	29.56
P/S/5%	B	24	11/17/2017 11:34:34	12.7	8.76	99.5	7.81	45534	29.45
P/S/5%	C	24	11/17/2017 11:34:58	12.6	8.92	101.2	7.83	45539	29.45
P/S/5%	D	24	11/17/2017 11:35:17	12.7	8.82	100.2	7.82	45645	29.53
P/S/5%	E	24	11/17/2017 11:35:30	12.7	8.79	99.9	7.82	45637	29.53
P/S/10%	A	24	11/17/2017 11:35:41	12.8	8.76	99.8	7.83	45740	29.6
P/S/10%	B	24	11/17/2017 11:36:19	12.7	8.77	99.8	7.82	45702	29.58
P/S/10%	C	24	11/17/2017 11:36:33	12.7	8.76	99.6	7.83	45629	29.52
P/S/10%	D	24	11/17/2017 11:36:47	12.6	8.66	98.2	7.81	45679	29.55
P/S/10%	E	24	11/17/2017 11:37:07	12.5	8.78	99.4	7.82	45662	29.54
P/B/3%	A	24	11/17/2017 11:37:20	12.5	8.73	98.8	7.81	45711	29.57
P/B/3%	B	24	11/17/2017 11:37:48	12.4	8.82	99.8	7.82	45683	29.55
P/B/3%	C	24	11/17/2017 11:38:23	12.4	8.88	100.5	7.83	45701	29.56
P/B/3%	D	24	11/17/2017 11:38:35	12.5	8.84	100.2	7.83	45619	29.51
P/B/3%	E	24	11/17/2017 11:38:56	12.5	8.89	100.7	7.84	45590	29.49
P/B/5%	A	24	11/17/2017 11:39:17	12.5	8.86	100.4	7.84	45682	29.55
P/B/5%	B	24	11/17/2017 11:39:31	12.5	8.8	99.7	7.83	45699	29.56
P/B/5%	C	24	11/17/2017 11:39:54	12.6	8.73	99	7.82	45371	29.33
P/B/5%	D	24	11/17/2017 11:40:25	12.7	8.6	97.7	7.81	45710	29.58
P/B/5%	E	24	11/17/2017 11:40:50	12.6	8.57	97.3	7.8	45682	29.56
P/B/10%	A	24	11/17/2017 11:41:13	12.5	8.76	99.3	7.81	45713	29.58
P/B/10%	B	24	11/17/2017 11:41:29	12.5	8.66	98.1	7.81	45658	29.54
P/B/10%	C	24	11/17/2017 11:41:51	12.4	8.32	94.2	7.81	45701	29.56
P/B/10%	D	24	11/17/2017 11:42:05	12.4	8.74	98.9	7.82	45736	29.59
P/B/10%	E	24	11/17/2017 11:42:27	12.5	8.66	98.1	7.82	45694	29.56
P/L/0%	A	25	11/18/2017 09:37:50	12.9	8.54	97.4	7.64	45901	29.72
P/L/0%	B	25	11/18/2017 09:38:09	12.8	8.62	98.1	7.64	45885	29.71
P/L/0%	C	25	11/18/2017 09:38:33	12.7	8.64	98.1	7.65	45889	29.71
P/L/0%	D	25	11/18/2017 09:38:51	12.6	8.78	99.5	7.66	45923	29.73
P/L/0%	E	25	11/18/2017 09:39:16	12.6	8.6	97.6	7.65	45912	29.72
P/N/0%	A	25	11/18/2017 09:39:29	12.6	8.66	98.3	7.65	45911	29.72
P/N/0%	B	25	11/18/2017 09:39:48	12.6	8.76	99.3	7.66	45913	29.72
P/N/0%	C	25	11/18/2017 09:40:09	12.6	8.7	98.7	7.66	45911	29.72

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/N/0%	D	25	11/18/2017 09:40:30	12.7	8.58	97.5	7.64	45838	29.67
P/N/0%	E	25	11/18/2017 09:40:54	12.8	8.45	96.2	7.65	45884	29.71
P/AC/3%	A	25	11/18/2017 09:41:07	12.9	8.5	96.9	7.64	45878	29.71
P/AC/3%	B	25	11/18/2017 09:41:28	12.9	8.67	98.9	7.66	45898	29.72
P/AC/3%	C	25	11/18/2017 09:41:51	12.7	8.72	99.1	7.65	45916	29.73
P/AC/3%	D	25	11/18/2017 09:42:17	12.6	8.72	98.9	7.66	45913	29.72
P/AC/3%	E	25	11/18/2017 09:42:43	12.6	8.6	97.4	7.66	45865	29.69
P/AC/5%	A	25	11/18/2017 09:42:58	12.6	8.73	98.9	7.67	45891	29.71
P/AC/5%	B	25	11/18/2017 09:43:09	12.6	8.71	98.7	7.66	45909	29.72
P/AC/5%	C	25	11/18/2017 09:43:31	12.6	8.67	98.3	7.67	45919	29.73
P/AC/5%	D	25	11/18/2017 09:43:55	12.7	8.55	97.1	7.66	45908	29.72
P/AC/5%	E	25	11/18/2017 09:44:18	12.7	8.61	97.7	7.66	45908	29.72
P/AC/10%	A	25	11/18/2017 09:44:34	12.7	8.6	97.7	7.66	45908	29.72
P/AC/10%	B	25	11/18/2017 09:44:56	12.7	8.52	96.8	7.64	45862	29.69
P/AC/10%	C	25	11/18/2017 09:45:15	12.8	8.67	98.5	7.66	45914	29.73
P/AC/10%	D	25	11/18/2017 09:45:31	12.8	8.63	98.3	7.66	45932	29.74
P/AC/10%	E	25	11/18/2017 09:45:59	12.7	8.57	97.1	7.65	45509	29.43
P/S/3%	A	25	11/18/2017 09:46:24	12.6	8.63	97.5	7.64	45373	29.33
P/S/3%	B	25	11/18/2017 09:46:47	12.6	8.7	98.6	7.66	45903	29.71
P/S/3%	C	25	11/18/2017 09:47:06	12.5	8.69	98.4	7.65	45845	29.67
P/S/3%	D	25	11/18/2017 09:47:19	12.6	8.64	97.8	7.65	45881	29.7
P/S/3%	E	25	11/18/2017 09:47:29	12.4	8.77	99	7.65	45944	29.74
P/S/5%	A	25	11/18/2017 09:48:04	12.6	8.72	98.8	7.66	45909	29.72
P/S/5%	B	25	11/18/2017 09:48:26	12.6	8.71	98.8	7.65	45831	29.66
P/S/5%	C	25	11/18/2017 09:48:49	12.6	8.67	98.2	7.66	45889	29.7
P/S/5%	D	25	11/18/2017 09:49:02	12.7	8.72	98.9	7.67	45917	29.73
P/S/5%	E	25	11/18/2017 09:49:17	12.7	8.65	98.2	7.67	45911	29.72
P/S/10%	A	25	11/18/2017 09:49:39	12.8	8.67	98.6	7.67	45958	29.76
P/S/10%	B	25	11/18/2017 09:50:19	12.7	8.75	99.5	7.68	45929	29.74
P/S/10%	C	25	11/18/2017 09:50:42	12.6	8.77	99.5	7.68	45927	29.73
P/S/10%	D	25	11/18/2017 09:51:03	12.6	8.59	97.3	7.66	45925	29.73
P/S/10%	E	25	11/18/2017 09:51:25	12.5	8.69	98.2	7.66	45924	29.73
P/B/3%	A	25	11/18/2017 09:51:37	12.5	8.7	98.4	7.66	45917	29.72
P/B/3%	B	25	11/18/2017 09:51:50	12.4	8.76	99	7.67	45936	29.73
P/B/3%	C	25	11/18/2017 09:52:34	12.4	8.74	98.7	7.67	45955	29.75
P/B/3%	D	25	11/18/2017 09:52:56	12.5	8.8	99.6	7.68	45857	29.68
P/B/3%	E	25	11/18/2017 09:53:16	12.5	8.81	99.7	7.68	45831	29.66
P/B/5%	A	25	11/18/2017 09:53:50	12.5	8.79	99.4	7.69	45957	29.75
P/B/5%	B	25	11/18/2017 09:54:05	12.5	8.7	98.5	7.68	45932	29.73
P/B/5%	C	25	11/18/2017 09:54:29	12.6	8.67	98.1	7.66	45715	29.58
P/B/5%	D	25	11/18/2017 09:56:36	12.7	8.61	97.8	7.68	45931	29.74
P/B/5%	E	25	11/18/2017 09:57:20	12.6	8.57	97.2	7.68	45927	29.73
P/B/10%	A	25	11/18/2017 09:57:32	12.6	8.68	98.4	7.69	45928	29.73
P/B/10%	B	25	11/18/2017 09:57:53	12.6	8.67	98.2	7.69	45899	29.71

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/B/10%	C	25	11/18/2017 09:58:08	12.5	8.65	97.8	7.69	45919	29.72
P/B/10%	D	25	11/18/2017 09:58:25	12.5	8.71	98.5	7.69	45944	29.74
P/B/10%	E	25	11/18/2017 09:58:47	12.5	8.69	98.4	7.69	45924	29.73
P/L/0%	A	26	11/19/2017 10:03:38	12.7	9.02	105.7	7.73	46484	30.14
P/L/0%	B	26	11/19/2017 10:04:01	12.6	9.04	105.7	7.74	46492	30.14
P/L/0%	C	26	11/19/2017 10:04:15	12.6	9.01	105.4	7.75	46575	30.2
P/L/0%	D	26	11/19/2017 10:04:30	12.5	9.13	106.5	7.76	46489	30.13
P/L/0%	E	26	11/19/2017 10:04:53	12.5	8.93	104.2	7.72	46449	30.11
P/N/0%	A	26	11/19/2017 10:05:05	12.5	9.02	105.2	7.74	46407	30.07
P/N/0%	B	26	11/19/2017 10:05:26	12.5	9	105	7.76	46387	30.06
P/N/0%	C	26	11/19/2017 10:05:39	12.6	8.9	103.9	7.75	46483	30.13
P/N/0%	D	26	11/19/2017 10:05:53	12.6	8.81	103	7.74	46589	30.21
P/N/0%	E	26	11/19/2017 10:06:06	12.7	8.77	102.9	7.73	46733	30.32
P/AC/3%	A	26	11/19/2017 10:06:24	12.8	8.75	102.8	7.73	46695	30.29
P/AC/3%	B	26	11/19/2017 10:06:43	12.8	8.89	104.3	7.75	46391	30.07
P/AC/3%	C	26	11/19/2017 10:07:07	12.7	8.91	104.4	7.77	46503	30.15
P/AC/3%	D	26	11/19/2017 10:07:21	12.6	8.97	104.8	7.76	46444	30.11
P/AC/3%	E	26	11/19/2017 10:07:35	12.6	8.89	104	7.77	46667	30.26
P/AC/5%	A	26	11/19/2017 10:07:44	12.6	8.88	103.8	7.77	46619	30.23
P/AC/5%	B	26	11/19/2017 10:07:57	12.6	8.92	104.1	7.76	46402	30.07
P/AC/5%	C	26	11/19/2017 10:08:12	12.6	8.88	103.7	7.76	46450	30.11
P/AC/5%	D	26	11/19/2017 10:08:29	12.6	8.69	101.6	7.73	46523	30.16
P/AC/5%	E	26	11/19/2017 10:08:48	12.7	8.8	103	7.75	46521	30.16
P/AC/10%	A	26	11/19/2017 10:09:08	12.7	8.81	103.1	7.75	46457	30.12
P/AC/10%	B	26	11/19/2017 10:09:24	12.7	8.58	100.6	7.71	46709	30.3
P/AC/10%	C	26	11/19/2017 10:09:43	12.8	8.76	102.8	7.76	46569	30.2
P/AC/10%	D	26	11/19/2017 10:09:59	12.8	8.77	102.8	7.75	46412	30.09
P/AC/10%	E	26	11/19/2017 10:10:55	12.7	8.67	101.4	7.74	46452	30.11
P/S/3%	A	26	11/19/2017 10:11:16	12.7	8.69	102	7.76	46932	30.46
P/S/3%	B	26	11/19/2017 10:11:29	12.6	8.8	103	7.77	46598	30.22
P/S/3%	C	26	11/19/2017 10:11:45	12.6	8.78	102.8	7.77	46804	30.36
P/S/3%	D	26	11/19/2017 10:12:08	12.6	8.65	101.4	7.75	46971	30.49
P/S/3%	E	26	11/19/2017 10:12:30	12.6	8.88	103.9	7.81	46615	30.23
P/S/5%	A	26	11/19/2017 10:12:56	12.7	8.71	101.9	7.78	46441	30.1
P/S/5%	B	26	11/19/2017 10:13:09	12.7	8.74	102.4	7.78	46581	30.21
P/S/5%	C	26	11/19/2017 10:13:23	12.7	8.8	103.1	7.8	46635	30.24
P/S/5%	D	26	11/19/2017 10:13:45	12.7	8.77	102.7	7.8	46471	30.13
P/S/5%	E	26	11/19/2017 10:14:03	12.7	8.75	102.5	7.78	46472	30.13
P/S/10%	A	26	11/19/2017 10:14:11	12.8	8.76	102.8	7.8	46459	30.12
P/S/10%	B	26	11/19/2017 10:15:00	12.7	8.79	102.9	7.79	46454	30.12
P/S/10%	C	26	11/19/2017 10:15:23	12.7	8.75	102.5	7.8	46583	30.21
P/S/10%	D	26	11/19/2017 10:15:39	12.6	8.68	101.5	7.78	46858	30.4
P/S/10%	E	26	11/19/2017 10:15:55	12.4	8.91	103.7	7.79	46333	30.02

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/B/3%	A	26	11/19/2017 10:16:10	12.4	8.74	101.9	7.78	46655	30.25
P/B/3%	B	26	11/19/2017 10:16:31	12.4	8.76	101.9	7.78	46478	30.12
P/B/3%	C	26	11/19/2017 10:17:04	12.4	8.85	103.2	7.81	46716	30.29
P/B/3%	D	26	11/19/2017 10:17:21	12.5	8.86	103.3	7.79	46324	30.01
P/B/3%	E	26	11/19/2017 10:17:43	12.5	8.85	103.3	7.81	46762	30.33
P/B/5%	A	26	11/19/2017 10:18:05	12.5	8.78	102.4	7.81	46794	30.35
P/B/5%	B	26	11/19/2017 10:18:21	12.5	8.79	102.5	7.79	46555	30.18
P/B/5%	C	26	11/19/2017 10:18:44	12.6	8.67	101.4	7.8	46699	30.29
P/B/5%	D	26	11/19/2017 10:19:11	12.6	8.67	101.3	7.77	46383	30.06
P/B/5%	E	26	11/19/2017 10:19:37	12.6	8.53	99.6	7.75	46349	30.03
P/B/10%	A	26	11/19/2017 10:19:57	12.5	8.67	101.2	7.77	46581	30.2
P/B/10%	B	26	11/19/2017 10:20:19	12.5	8.66	100.9	7.76	46358	30.04
P/B/10%	C	26	11/19/2017 10:20:31	12.4	8.67	101	7.76	46404	30.07
P/B/10%	D	26	11/19/2017 10:20:48	12.4	8.7	101.3	7.77	46405	30.07
P/B/10%	E	26	11/19/2017 10:21:05	12.5	8.68	101.2	7.77	46430	30.09
P/L/0%	A	27	11/20/2017 10:27:58	12.8	8.8	100.8	7.72	46581	30.21
P/L/0%	B	27	11/20/2017 10:28:11	12.7	8.91	101.9	7.72	46572	30.2
P/L/0%	C	27	11/20/2017 10:28:22	12.7	8.87	101.3	7.73	46587	30.21
P/L/0%	D	27	11/20/2017 10:28:39	12.6	8.97	102.3	7.73	46599	30.22
P/L/0%	E	27	11/20/2017 10:28:53	12.6	8.85	101	7.71	46593	30.21
P/N/0%	A	27	11/20/2017 10:29:16	12.6	8.97	102.4	7.74	46615	30.23
P/N/0%	B	27	11/20/2017 10:29:44	12.6	8.93	101.9	7.75	46618	30.23
P/N/0%	C	27	11/20/2017 10:29:54	12.6	8.9	101.6	7.75	46657	30.26
P/N/0%	D	27	11/20/2017 10:30:04	12.7	8.84	101	7.74	46631	30.24
P/N/0%	E	27	11/20/2017 10:30:14	12.8	8.7	99.6	7.72	46640	30.25
P/AC/3%	A	27	11/20/2017 10:30:24	12.9	8.69	99.6	7.73	46633	30.25
P/AC/3%	B	27	11/20/2017 10:30:39	12.9	8.79	100.8	7.74	46624	30.24
P/AC/3%	C	27	11/20/2017 10:31:03	12.7	8.9	101.7	7.76	46607	30.23
P/AC/3%	D	27	11/20/2017 10:31:26	12.6	8.9	101.5	7.77	46615	30.23
P/AC/3%	E	27	11/20/2017 10:31:42	12.6	8.87	101.2	7.77	46623	30.23
P/AC/5%	A	27	11/20/2017 10:31:53	12.6	8.89	101.4	7.76	46613	30.23
P/AC/5%	B	27	11/20/2017 10:32:10	12.6	8.83	100.6	7.75	46614	30.23
P/AC/5%	C	27	11/20/2017 10:32:23	12.6	8.86	101.1	7.76	46612	30.23
P/AC/5%	D	27	11/20/2017 10:32:38	12.7	8.71	99.5	7.74	46622	30.24
P/AC/5%	E	27	11/20/2017 10:32:52	12.7	8.73	99.7	7.74	46653	30.26
P/AC/10%	A	27	11/20/2017 10:33:05	12.7	8.8	100.6	7.75	46612	30.23
P/AC/10%	B	27	11/20/2017 10:33:20	12.7	8.6	98.3	7.73	46632	30.24
P/AC/10%	C	27	11/20/2017 10:33:38	12.8	8.81	100.9	7.77	46674	30.28
P/AC/10%	D	27	11/20/2017 10:33:55	12.9	8.7	99.8	7.75	46632	30.25
P/AC/10%	E	27	11/20/2017 10:34:25	12.7	8.72	99.6	7.76	46617	30.23
P/S/3%	A	27	11/20/2017 10:34:40	12.6	8.7	99.4	7.75	46814	30.37
P/S/3%	B	27	11/20/2017 10:39:00	12.6	8.79	100.3	7.79	46629	30.24
P/S/3%	C	27	11/20/2017 10:39:16	12.6	8.78	100.1	7.77	46672	30.27

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

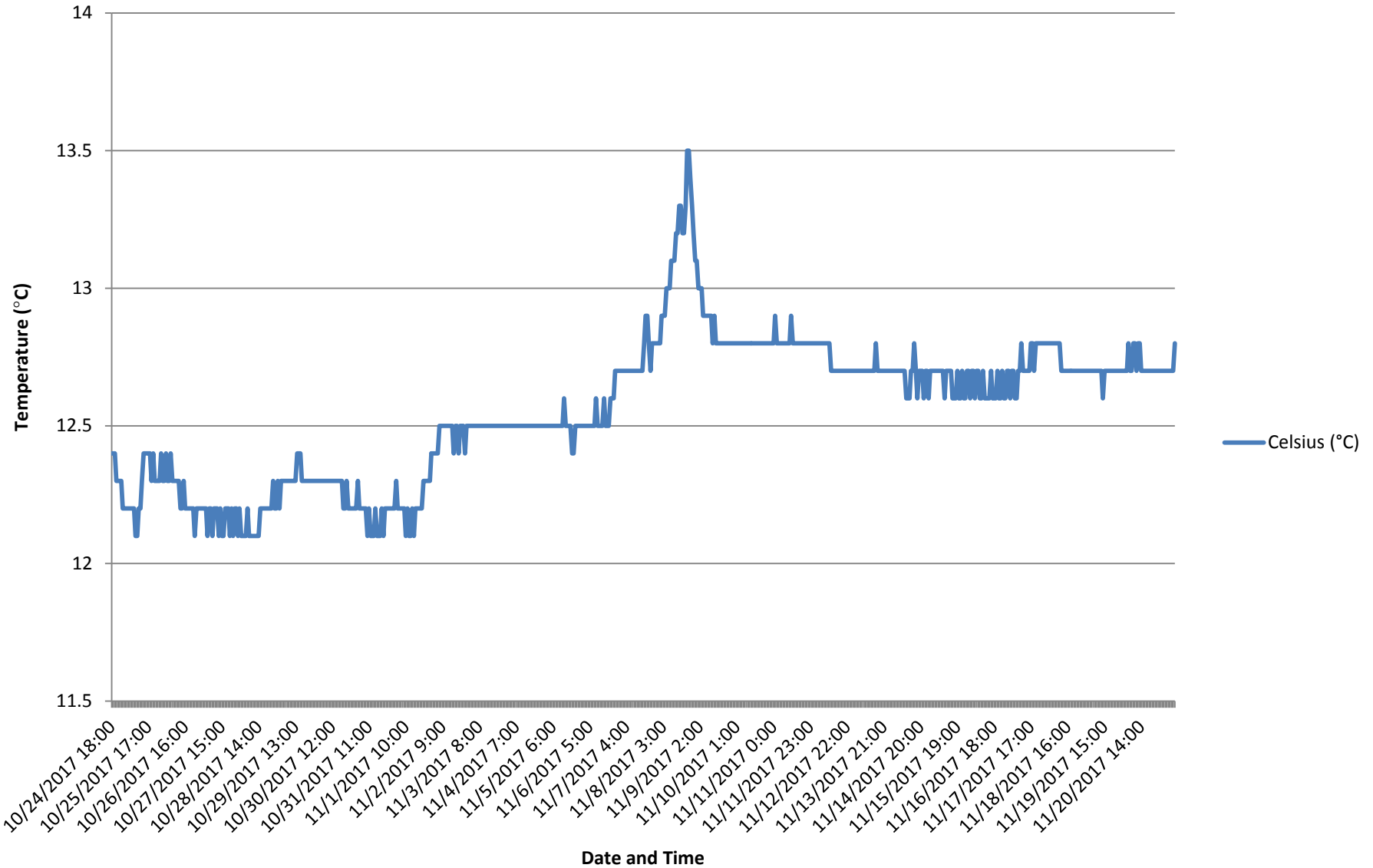
Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/S/3%	D	27	11/20/2017 10:39:30	12.6	8.68	99	7.75	46776	30.34
P/S/3%	E	27	11/20/2017 10:39:43	12.5	8.88	101	7.79	46673	30.26
P/S/5%	A	27	11/20/2017 10:40:24	12.6	8.79	100.3	7.78	46619	30.23
P/S/5%	B	27	11/20/2017 10:40:44	12.7	8.79	100.4	7.78	46639	30.25
P/S/5%	C	27	11/20/2017 10:41:01	12.6	8.89	101.4	7.8	46678	30.27
P/S/5%	D	27	11/20/2017 10:41:23	12.7	8.84	101	7.79	46634	30.24
P/S/5%	E	27	11/20/2017 10:41:36	12.7	8.74	100	7.79	46617	30.23
P/S/10%	A	27	11/20/2017 10:41:59	12.8	8.74	100.1	7.8	46644	30.26
P/S/10%	B	27	11/20/2017 10:42:44	12.7	8.75	100.1	7.8	46641	30.25
P/S/10%	C	27	11/20/2017 10:43:09	12.7	8.78	100.4	7.79	46646	30.25
P/S/10%	D	27	11/20/2017 10:43:31	12.6	8.72	99.5	7.78	46697	30.29
P/S/10%	E	27	11/20/2017 10:43:45	12.5	8.82	100.4	7.79	46645	30.24
P/B/3%	A	27	11/20/2017 10:44:02	12.5	8.75	99.6	7.78	46636	30.24
P/B/3%	B	27	11/20/2017 10:44:16	12.5	8.75	99.5	7.79	46644	30.24
P/B/3%	C	27	11/20/2017 10:45:07	12.5	8.82	100.3	7.8	46690	30.28
P/B/3%	D	27	11/20/2017 10:45:28	12.5	8.89	101.2	7.8	46599	30.21
P/B/3%	E	27	11/20/2017 10:45:42	12.5	8.9	101.3	7.8	46684	30.27
P/B/5%	A	27	11/20/2017 10:45:53	12.5	8.86	100.9	7.8	46686	30.27
P/B/5%	B	27	11/20/2017 10:46:09	12.5	8.84	100.6	7.8	46643	30.24
P/B/5%	C	27	11/20/2017 10:46:21	12.6	8.8	100.3	7.8	46663	30.26
P/B/5%	D	27	11/20/2017 10:46:50	12.7	8.7	99.4	7.78	46626	30.24
P/B/5%	E	27	11/20/2017 10:47:04	12.6	8.69	99.1	7.77	46623	30.23
P/B/10%	A	27	11/20/2017 10:47:25	12.6	8.73	99.5	7.79	46634	30.24
P/B/10%	B	27	11/20/2017 10:47:38	12.6	8.69	99.1	7.78	46622	30.23
P/B/10%	C	27	11/20/2017 10:47:55	12.5	8.66	98.6	7.78	46634	30.24
P/B/10%	D	27	11/20/2017 10:48:11	12.5	8.74	99.5	7.79	46639	30.24
P/B/10%	E	27	11/20/2017 10:48:33	12.5	8.7	99.1	7.78	46634	30.24
P/L/0%	A	28	11/21/2017 08:05:49	12.7	9.56	108.1	7.67	46244	29.96
P/L/0%	B	28	11/21/2017 08:06:12	12.6	9.48	106.9	7.68	46201	29.93
P/L/0%	C	28	11/21/2017 08:06:32	12.5	9.5	107.1	7.69	46193	29.92
P/L/0%	D	28	11/21/2017 08:06:47	12.5	9.49	106.9	7.7	46179	29.91
P/L/0%	E	28	11/21/2017 08:07:06	12.5	9.29	104.7	7.7	46144	29.88
P/N/0%	A	28	11/21/2017 08:07:20	12.5	9.33	105.1	7.7	46144	29.89
P/N/0%	B	28	11/21/2017 08:07:48	12.5	9.38	105.6	7.71	46103	29.85
P/N/0%	C	28	11/21/2017 08:08:08	12.5	9.29	104.7	7.71	46151	29.89
P/N/0%	D	28	11/21/2017 08:08:21	12.6	9.23	104.2	7.7	46236	29.95
P/N/0%	E	28	11/21/2017 08:08:38	12.7	9.07	102.6	7.7	46202	29.93
P/AC/3%	A	28	11/21/2017 08:08:54	12.8	9.08	102.8	7.7	46210	29.94
P/AC/3%	B	28	11/21/2017 08:09:11	12.9	9.1	103.3	7.71	46200	29.94
P/AC/3%	C	28	11/21/2017 08:09:44	12.6	9.2	103.9	7.72	46121	29.87
P/AC/3%	D	28	11/21/2017 08:10:06	12.6	9.21	103.9	7.72	46149	29.89
P/AC/3%	E	28	11/21/2017 08:10:24	12.5	9.23	104.1	7.73	46199	29.93
P/AC/5%	A	28	11/21/2017 08:10:34	12.5	9.21	103.8	7.73	46118	29.87

STUDY: 29633
CLIENT: Wood PLC
PROJECT: USDC Penobscot, Winterport ME
ASSAY: *Neries virens* 28 Day Survival Sediment Evaluation
TASK: Daily Water Qualities

	Temp	DO	%DO	pH	SpCond	Salinity
Mean:	12.3	8.8	98.9	7.7	46323.7	30.0
Minimum:	10.7	4.5	51.1	7.3	43786.0	28.2
Maximum:	13.4	10.2	112.1	7.9	48686.0	31.7

Field ID	Replicate	Day	DateTime M/D/Y	Temp C	DO mg/L	DO %	pH SU	SpCond uS/cm	Salinity ppt
P/AC/5%	B	28	11/21/2017 08:10:49	12.5	9.2	103.6	7.72	46115	29.86
P/AC/5%	C	28	11/21/2017 08:10:58	12.5	9.19	103.5	7.73	46141	29.88
P/AC/5%	D	28	11/21/2017 08:11:20	12.6	8.96	101.2	7.71	46145	29.89
P/AC/5%	E	28	11/21/2017 08:11:36	12.6	9.06	102.3	7.71	46163	29.9
P/AC/10%	A	28	11/21/2017 08:11:48	12.6	9.07	102.3	7.72	46118	29.87
P/AC/10%	B	28	11/21/2017 08:12:07	12.7	8.79	99.3	7.7	46116	29.87
P/AC/10%	C	28	11/21/2017 08:12:23	12.7	9.14	103.4	7.73	46217	29.94
P/AC/10%	D	28	11/21/2017 08:12:40	12.8	8.99	101.8	7.73	46148	29.9
P/AC/10%	E	28	11/21/2017 08:13:12	12.6	8.97	101.3	7.71	46178	29.91
P/S/3%	A	28	11/21/2017 08:13:35	12.5	8.94	100.9	7.68	46415	30.08
P/S/3%	B	28	11/21/2017 08:13:54	12.5	9.11	102.7	7.72	46147	29.89
P/S/3%	C	28	11/21/2017 08:14:19	12.5	9.08	102.3	7.72	46224	29.94
P/S/3%	D	28	11/21/2017 08:14:40	12.5	9	101.5	7.7	46294	29.99
P/S/3%	E	28	11/21/2017 08:15:05	12.4	9.19	103.4	7.73	46202	29.92
P/S/5%	A	28	11/21/2017 08:15:30	12.6	9.07	102.2	7.73	46130	29.88
P/S/5%	B	28	11/21/2017 08:15:49	12.6	9.06	102.2	7.73	46182	29.91
P/S/5%	C	28	11/21/2017 08:16:12	12.6	9.15	103.2	7.74	46247	29.96
P/S/5%	D	28	11/21/2017 08:16:30	12.6	9.11	102.9	7.74	46139	29.89
P/S/5%	E	28	11/21/2017 08:16:47	12.7	8.99	101.6	7.74	46148	29.89
P/S/10%	A	28	11/21/2017 08:16:59	12.7	9.07	102.7	7.75	46157	29.9
P/S/10%	B	28	11/21/2017 08:17:39	12.7	8.95	101.2	7.74	46160	29.9
P/S/10%	C	28	11/21/2017 08:17:57	12.6	9	101.6	7.75	46157	29.9
P/S/10%	D	28	11/21/2017 08:18:10	12.5	8.96	101	7.73	46204	29.93
P/S/10%	E	28	11/21/2017 08:18:21	12.4	9.04	101.6	7.74	46173	29.9
P/B/3%	A	28	11/21/2017 08:18:33	12.4	9.02	101.3	7.73	46131	29.87
P/B/3%	B	28	11/21/2017 08:18:55	12.4	8.99	101	7.74	46128	29.87
P/B/3%	C	28	11/21/2017 08:19:25	12.4	9.11	102.3	7.75	46126	29.87
P/B/3%	D	28	11/21/2017 08:19:40	12.5	9.08	102.3	7.75	46203	29.93
P/B/3%	E	28	11/21/2017 08:20:02	12.5	9.07	102.2	7.75	46292	29.99
P/B/5%	A	28	11/21/2017 08:20:16	12.4	9.12	102.7	7.76	46233	29.95
P/B/5%	B	28	11/21/2017 08:20:28	12.5	9.04	101.8	7.75	46116	29.86
P/B/5%	C	28	11/21/2017 08:20:36	12.5	8.97	101	7.75	46162	29.9
P/B/5%	D	28	11/21/2017 08:21:01	12.6	8.9	100.5	7.74	46089	29.85
P/B/5%	E	28	11/21/2017 08:21:13	12.5	8.89	100.2	7.73	46095	29.85
P/B/10%	A	28	11/21/2017 08:21:27	12.5	8.89	100.1	7.74	46106	29.86
P/B/10%	B	28	11/21/2017 08:21:43	12.5	8.9	100.2	7.74	46118	29.87
P/B/10%	C	28	11/21/2017 08:21:53	12.4	8.9	100.1	7.74	46106	29.85
P/B/10%	D	28	11/21/2017 08:22:06	12.4	8.93	100.4	7.74	46114	29.86
P/B/10%	E	28	11/21/2017 08:22:28	12.5	8.92	100.4	7.75	46109	29.86

29633 - USDC Penobscot , Winterport ME *N. virens* 28 Day Survival Evaluation



STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
1	10/24/2017 18:00	12.4
2	10/24/2017 19:00	12.4
3	10/24/2017 20:00	12.4
4	10/24/2017 21:00	12.3
5	10/24/2017 22:00	12.3
6	10/24/2017 23:00	12.3
7	10/25/2017 0:00	12.3
8	10/25/2017 1:00	12.2
9	10/25/2017 2:00	12.2
10	10/25/2017 3:00	12.2
11	10/25/2017 4:00	12.2
12	10/25/2017 5:00	12.2
13	10/25/2017 6:00	12.2
14	10/25/2017 7:00	12.2
15	10/25/2017 8:00	12.2
16	10/25/2017 9:00	12.1
17	10/25/2017 10:00	12.1
18	10/25/2017 11:00	12.2
19	10/25/2017 12:00	12.2
20	10/25/2017 13:00	12.3
21	10/25/2017 14:00	12.4
22	10/25/2017 15:00	12.4
23	10/25/2017 16:00	12.4
24	10/25/2017 17:00	12.4
25	10/25/2017 18:00	12.4
26	10/25/2017 19:00	12.3
27	10/25/2017 20:00	12.4
28	10/25/2017 21:00	12.3
29	10/25/2017 22:00	12.3
30	10/25/2017 23:00	12.3
31	10/26/2017 0:00	12.3
32	10/26/2017 1:00	12.4
33	10/26/2017 2:00	12.3
34	10/26/2017 3:00	12.3
35	10/26/2017 4:00	12.4

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
36	10/26/2017 5:00	12.3
37	10/26/2017 6:00	12.3
38	10/26/2017 7:00	12.4
39	10/26/2017 8:00	12.3
40	10/26/2017 9:00	12.3
41	10/26/2017 10:00	12.3
42	10/26/2017 11:00	12.3
43	10/26/2017 12:00	12.3
44	10/26/2017 13:00	12.2
45	10/26/2017 14:00	12.2
46	10/26/2017 15:00	12.3
47	10/26/2017 16:00	12.2
48	10/26/2017 17:00	12.2
49	10/26/2017 18:00	12.2
50	10/26/2017 19:00	12.2
51	10/26/2017 20:00	12.2
52	10/26/2017 21:00	12.2
53	10/26/2017 22:00	12.1
54	10/26/2017 23:00	12.2
55	10/27/2017 0:00	12.2
56	10/27/2017 1:00	12.2
57	10/27/2017 2:00	12.2
58	10/27/2017 3:00	12.2
59	10/27/2017 4:00	12.2
60	10/27/2017 5:00	12.2
61	10/27/2017 6:00	12.1
62	10/27/2017 7:00	12.2
63	10/27/2017 8:00	12.2
64	10/27/2017 9:00	12.1
65	10/27/2017 10:00	12.2
66	10/27/2017 11:00	12.2
67	10/27/2017 12:00	12.2
68	10/27/2017 13:00	12.1
69	10/27/2017 14:00	12.2
70	10/27/2017 15:00	12.1

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
71	10/27/2017 16:00	12.1
72	10/27/2017 17:00	12.2
73	10/27/2017 18:00	12.2
74	10/27/2017 19:00	12.2
75	10/27/2017 20:00	12.1
76	10/27/2017 21:00	12.2
77	10/27/2017 22:00	12.1
78	10/27/2017 23:00	12.2
79	10/28/2017 0:00	12.2
80	10/28/2017 1:00	12.1
81	10/28/2017 2:00	12.2
82	10/28/2017 3:00	12.1
83	10/28/2017 4:00	12.1
84	10/28/2017 5:00	12.1
85	10/28/2017 6:00	12.1
86	10/28/2017 7:00	12.2
87	10/28/2017 8:00	12.1
88	10/28/2017 9:00	12.1
89	10/28/2017 10:00	12.1
90	10/28/2017 11:00	12.1
91	10/28/2017 12:00	12.1
92	10/28/2017 13:00	12.1
93	10/28/2017 14:00	12.1
94	10/28/2017 15:00	12.2
95	10/28/2017 16:00	12.2
96	10/28/2017 17:00	12.2
97	10/28/2017 18:00	12.2
98	10/28/2017 19:00	12.2
99	10/28/2017 20:00	12.2
100	10/28/2017 21:00	12.2
101	10/28/2017 22:00	12.2
102	10/28/2017 23:00	12.3
103	10/29/2017 0:00	12.2
104	10/29/2017 1:00	12.2
105	10/29/2017 2:00	12.3

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
106	10/29/2017 3:00	12.2
107	10/29/2017 4:00	12.3
108	10/29/2017 5:00	12.3
109	10/29/2017 6:00	12.3
110	10/29/2017 7:00	12.3
111	10/29/2017 8:00	12.3
112	10/29/2017 9:00	12.3
113	10/29/2017 10:00	12.3
114	10/29/2017 11:00	12.3
115	10/29/2017 12:00	12.3
116	10/29/2017 13:00	12.3
117	10/29/2017 14:00	12.4
118	10/29/2017 15:00	12.4
119	10/29/2017 16:00	12.4
120	10/29/2017 17:00	12.3
121	10/29/2017 18:00	12.3
122	10/29/2017 19:00	12.3
123	10/29/2017 20:00	12.3
124	10/29/2017 21:00	12.3
125	10/29/2017 22:00	12.3
126	10/29/2017 23:00	12.3
127	10/30/2017 0:00	12.3
128	10/30/2017 1:00	12.3
129	10/30/2017 2:00	12.3
130	10/30/2017 3:00	12.3
131	10/30/2017 4:00	12.3
132	10/30/2017 5:00	12.3
133	10/30/2017 6:00	12.3
134	10/30/2017 7:00	12.3
135	10/30/2017 8:00	12.3
136	10/30/2017 9:00	12.3
137	10/30/2017 10:00	12.3
138	10/30/2017 11:00	12.3
139	10/30/2017 12:00	12.3
140	10/30/2017 13:00	12.3

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
141	10/30/2017 14:00	12.3
142	10/30/2017 15:00	12.3
143	10/30/2017 16:00	12.3
144	10/30/2017 17:00	12.3
145	10/30/2017 18:00	12.3
146	10/30/2017 19:00	12.2
147	10/30/2017 20:00	12.2
148	10/30/2017 21:00	12.3
149	10/30/2017 22:00	12.2
150	10/30/2017 23:00	12.2
151	10/31/2017 0:00	12.2
152	10/31/2017 1:00	12.2
153	10/31/2017 2:00	12.2
154	10/31/2017 3:00	12.2
155	10/31/2017 4:00	12.3
156	10/31/2017 5:00	12.2
157	10/31/2017 6:00	12.2
158	10/31/2017 7:00	12.2
159	10/31/2017 8:00	12.2
160	10/31/2017 9:00	12.2
161	10/31/2017 10:00	12.1
162	10/31/2017 11:00	12.2
163	10/31/2017 12:00	12.1
164	10/31/2017 13:00	12.1
165	10/31/2017 14:00	12.1
166	10/31/2017 15:00	12.2
167	10/31/2017 16:00	12.1
168	10/31/2017 17:00	12.1
169	10/31/2017 18:00	12.1
170	10/31/2017 19:00	12.2
171	10/31/2017 20:00	12.1
172	10/31/2017 21:00	12.2
173	10/31/2017 22:00	12.2
174	10/31/2017 23:00	12.2
175	11/1/2017 0:00	12.2

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
176	11/1/2017 1:00	12.2
177	11/1/2017 2:00	12.2
178	11/1/2017 3:00	12.2
179	11/1/2017 4:00	12.3
180	11/1/2017 5:00	12.2
181	11/1/2017 6:00	12.2
182	11/1/2017 7:00	12.2
183	11/1/2017 8:00	12.2
184	11/1/2017 9:00	12.2
185	11/1/2017 10:00	12.1
186	11/1/2017 11:00	12.2
187	11/1/2017 12:00	12.1
188	11/1/2017 13:00	12.1
189	11/1/2017 14:00	12.2
190	11/1/2017 15:00	12.1
191	11/1/2017 16:00	12.2
192	11/1/2017 17:00	12.2
193	11/1/2017 18:00	12.2
194	11/1/2017 19:00	12.2
195	11/1/2017 20:00	12.2
196	11/1/2017 21:00	12.3
197	11/1/2017 22:00	12.3
198	11/1/2017 23:00	12.3
199	11/2/2017 0:00	12.3
200	11/2/2017 1:00	12.3
201	11/2/2017 2:00	12.4
202	11/2/2017 3:00	12.4
203	11/2/2017 4:00	12.4
204	11/2/2017 5:00	12.4
205	11/2/2017 6:00	12.4
206	11/2/2017 7:00	12.5
207	11/2/2017 8:00	12.5
208	11/2/2017 9:00	12.5
209	11/2/2017 10:00	12.5
210	11/2/2017 11:00	12.5

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
211	11/2/2017 12:00	12.5
212	11/2/2017 13:00	12.5
213	11/2/2017 14:00	12.5
214	11/2/2017 15:00	12.5
215	11/2/2017 16:00	12.4
216	11/2/2017 17:00	12.5
217	11/2/2017 18:00	12.5
218	11/2/2017 19:00	12.4
219	11/2/2017 20:00	12.5
220	11/2/2017 21:00	12.5
221	11/2/2017 22:00	12.5
222	11/2/2017 23:00	12.4
223	11/3/2017 0:00	12.5
224	11/3/2017 1:00	12.5
225	11/3/2017 2:00	12.5
226	11/3/2017 3:00	12.5
227	11/3/2017 4:00	12.5
228	11/3/2017 5:00	12.5
229	11/3/2017 6:00	12.5
230	11/3/2017 7:00	12.5
231	11/3/2017 8:00	12.5
232	11/3/2017 9:00	12.5
233	11/3/2017 10:00	12.5
234	11/3/2017 11:00	12.5
235	11/3/2017 12:00	12.5
236	11/3/2017 13:00	12.5
237	11/3/2017 14:00	12.5
238	11/3/2017 15:00	12.5
239	11/3/2017 16:00	12.5
240	11/3/2017 17:00	12.5
241	11/3/2017 18:00	12.5
242	11/3/2017 19:00	12.5
243	11/3/2017 20:00	12.5
244	11/3/2017 21:00	12.5
245	11/3/2017 22:00	12.5

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
246	11/3/2017 23:00	12.5
247	11/4/2017 0:00	12.5
248	11/4/2017 1:00	12.5
249	11/4/2017 2:00	12.5
250	11/4/2017 3:00	12.5
251	11/4/2017 4:00	12.5
252	11/4/2017 5:00	12.5
253	11/4/2017 6:00	12.5
254	11/4/2017 7:00	12.5
255	11/4/2017 8:00	12.5
256	11/4/2017 9:00	12.5
257	11/4/2017 10:00	12.5
258	11/4/2017 11:00	12.5
259	11/4/2017 12:00	12.5
260	11/4/2017 13:00	12.5
261	11/4/2017 14:00	12.5
262	11/4/2017 15:00	12.5
263	11/4/2017 16:00	12.5
264	11/4/2017 17:00	12.5
265	11/4/2017 18:00	12.5
266	11/4/2017 19:00	12.5
267	11/4/2017 20:00	12.5
268	11/4/2017 21:00	12.5
269	11/4/2017 22:00	12.5
270	11/4/2017 23:00	12.5
271	11/5/2017 0:00	12.5
272	11/5/2017 1:00	12.5
273	11/5/2017 2:00	12.5
274	11/5/2017 3:00	12.5
275	11/5/2017 4:00	12.5
276	11/5/2017 5:00	12.5
277	11/5/2017 6:00	12.5
278	11/5/2017 7:00	12.5
279	11/5/2017 8:00	12.5
280	11/5/2017 9:00	12.5

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
281	11/5/2017 10:00	12.5
282	11/5/2017 11:00	12.5
283	11/5/2017 12:00	12.5
284	11/5/2017 13:00	12.6
285	11/5/2017 14:00	12.5
286	11/5/2017 15:00	12.5
287	11/5/2017 16:00	12.5
288	11/5/2017 17:00	12.5
289	11/5/2017 18:00	12.4
290	11/5/2017 19:00	12.4
291	11/5/2017 20:00	12.5
292	11/5/2017 21:00	12.5
293	11/5/2017 22:00	12.5
294	11/5/2017 23:00	12.5
295	11/6/2017 0:00	12.5
296	11/6/2017 1:00	12.5
297	11/6/2017 2:00	12.5
298	11/6/2017 3:00	12.5
299	11/6/2017 4:00	12.5
300	11/6/2017 5:00	12.5
301	11/6/2017 6:00	12.5
302	11/6/2017 7:00	12.5
303	11/6/2017 8:00	12.5
304	11/6/2017 9:00	12.6
305	11/6/2017 10:00	12.5
306	11/6/2017 11:00	12.5
307	11/6/2017 12:00	12.5
308	11/6/2017 13:00	12.5
309	11/6/2017 14:00	12.6
310	11/6/2017 15:00	12.5
311	11/6/2017 16:00	12.5
312	11/6/2017 17:00	12.5
313	11/6/2017 18:00	12.6
314	11/6/2017 19:00	12.6
315	11/6/2017 20:00	12.6

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
316	11/6/2017 21:00	12.7
317	11/6/2017 22:00	12.7
318	11/6/2017 23:00	12.7
319	11/7/2017 0:00	12.7
320	11/7/2017 1:00	12.7
321	11/7/2017 2:00	12.7
322	11/7/2017 3:00	12.7
323	11/7/2017 4:00	12.7
324	11/7/2017 5:00	12.7
325	11/7/2017 6:00	12.7
326	11/7/2017 7:00	12.7
327	11/7/2017 8:00	12.7
328	11/7/2017 9:00	12.7
329	11/7/2017 10:00	12.7
330	11/7/2017 11:00	12.7
331	11/7/2017 12:00	12.7
332	11/7/2017 13:00	12.7
333	11/7/2017 14:00	12.7
334	11/7/2017 15:00	12.8
335	11/7/2017 16:00	12.9
336	11/7/2017 17:00	12.9
337	11/7/2017 18:00	12.8
338	11/7/2017 19:00	12.7
339	11/7/2017 20:00	12.8
340	11/7/2017 21:00	12.8
341	11/7/2017 22:00	12.8
342	11/7/2017 23:00	12.8
343	11/8/2017 0:00	12.8
344	11/8/2017 1:00	12.8
345	11/8/2017 2:00	12.9
346	11/8/2017 3:00	12.9
347	11/8/2017 4:00	12.9
348	11/8/2017 5:00	13
349	11/8/2017 6:00	13
350	11/8/2017 7:00	13

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
351	11/8/2017 8:00	13.1
352	11/8/2017 9:00	13.1
353	11/8/2017 10:00	13.1
354	11/8/2017 11:00	13.2
355	11/8/2017 12:00	13.2
356	11/8/2017 13:00	13.3
357	11/8/2017 14:00	13.3
358	11/8/2017 15:00	13.2
359	11/8/2017 16:00	13.2
360	11/8/2017 17:00	13.3
361	11/8/2017 18:00	13.5
362	11/8/2017 19:00	13.5
363	11/8/2017 20:00	13.4
364	11/8/2017 21:00	13.3
365	11/8/2017 22:00	13.2
366	11/8/2017 23:00	13.1
367	11/9/2017 0:00	13.1
368	11/9/2017 1:00	13
369	11/9/2017 2:00	13
370	11/9/2017 3:00	13
371	11/9/2017 4:00	12.9
372	11/9/2017 5:00	12.9
373	11/9/2017 6:00	12.9
374	11/9/2017 7:00	12.9
375	11/9/2017 8:00	12.9
376	11/9/2017 9:00	12.9
377	11/9/2017 10:00	12.8
378	11/9/2017 11:00	12.9
379	11/9/2017 12:00	12.8
380	11/9/2017 13:00	12.8
381	11/9/2017 14:00	12.8
382	11/9/2017 15:00	12.8
383	11/9/2017 16:00	12.8
384	11/9/2017 17:00	12.8
385	11/9/2017 18:00	12.8

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
386	11/9/2017 19:00	12.8
387	11/9/2017 20:00	12.8
388	11/9/2017 21:00	12.8
389	11/9/2017 22:00	12.8
390	11/9/2017 23:00	12.8
391	11/10/2017 0:00	12.8
392	11/10/2017 1:00	12.8
393	11/10/2017 2:00	12.8
394	11/10/2017 3:00	12.8
395	11/10/2017 4:00	12.8
396	11/10/2017 5:00	12.8
397	11/10/2017 6:00	12.8
398	11/10/2017 7:00	12.8
399	11/10/2017 8:00	12.8
400	11/10/2017 9:00	12.8
401	11/10/2017 10:00	12.8
402	11/10/2017 11:00	12.8
403	11/10/2017 12:00	12.8
404	11/10/2017 13:00	12.8
405	11/10/2017 14:00	12.8
406	11/10/2017 15:00	12.8
407	11/10/2017 16:00	12.8
408	11/10/2017 17:00	12.8
409	11/10/2017 18:00	12.8
410	11/10/2017 19:00	12.8
411	11/10/2017 20:00	12.8
412	11/10/2017 21:00	12.8
413	11/10/2017 22:00	12.8
414	11/10/2017 23:00	12.8
415	11/11/2017 0:00	12.8
416	11/11/2017 1:00	12.9
417	11/11/2017 2:00	12.8
418	11/11/2017 3:00	12.8
419	11/11/2017 4:00	12.8
420	11/11/2017 5:00	12.8

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
421	11/11/2017 6:00	12.8
422	11/11/2017 7:00	12.8
423	11/11/2017 8:00	12.8
424	11/11/2017 9:00	12.8
425	11/11/2017 10:00	12.8
426	11/11/2017 11:00	12.9
427	11/11/2017 12:00	12.8
428	11/11/2017 13:00	12.8
429	11/11/2017 14:00	12.8
430	11/11/2017 15:00	12.8
431	11/11/2017 16:00	12.8
432	11/11/2017 17:00	12.8
433	11/11/2017 18:00	12.8
434	11/11/2017 19:00	12.8
435	11/11/2017 20:00	12.8
436	11/11/2017 21:00	12.8
437	11/11/2017 22:00	12.8
438	11/11/2017 23:00	12.8
439	11/12/2017 0:00	12.8
440	11/12/2017 1:00	12.8
441	11/12/2017 2:00	12.8
442	11/12/2017 3:00	12.8
443	11/12/2017 4:00	12.8
444	11/12/2017 5:00	12.8
445	11/12/2017 6:00	12.8
446	11/12/2017 7:00	12.8
447	11/12/2017 8:00	12.8
448	11/12/2017 9:00	12.8
449	11/12/2017 10:00	12.8
450	11/12/2017 11:00	12.8
451	11/12/2017 12:00	12.7
452	11/12/2017 13:00	12.7
453	11/12/2017 14:00	12.7
454	11/12/2017 15:00	12.7
455	11/12/2017 16:00	12.7

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
456	11/12/2017 17:00	12.7
457	11/12/2017 18:00	12.7
458	11/12/2017 19:00	12.7
459	11/12/2017 20:00	12.7
460	11/12/2017 21:00	12.7
461	11/12/2017 22:00	12.7
462	11/12/2017 23:00	12.7
463	11/13/2017 0:00	12.7
464	11/13/2017 1:00	12.7
465	11/13/2017 2:00	12.7
466	11/13/2017 3:00	12.7
467	11/13/2017 4:00	12.7
468	11/13/2017 5:00	12.7
469	11/13/2017 6:00	12.7
470	11/13/2017 7:00	12.7
471	11/13/2017 8:00	12.7
472	11/13/2017 9:00	12.7
473	11/13/2017 10:00	12.7
474	11/13/2017 11:00	12.7
475	11/13/2017 12:00	12.7
476	11/13/2017 13:00	12.7
477	11/13/2017 14:00	12.7
478	11/13/2017 15:00	12.7
479	11/13/2017 16:00	12.8
480	11/13/2017 17:00	12.7
481	11/13/2017 18:00	12.7
482	11/13/2017 19:00	12.7
483	11/13/2017 20:00	12.7
484	11/13/2017 21:00	12.7
485	11/13/2017 22:00	12.7
486	11/13/2017 23:00	12.7
487	11/14/2017 0:00	12.7
488	11/14/2017 1:00	12.7
489	11/14/2017 2:00	12.7
490	11/14/2017 3:00	12.7

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
491	11/14/2017 4:00	12.7
492	11/14/2017 5:00	12.7
493	11/14/2017 6:00	12.7
494	11/14/2017 7:00	12.7
495	11/14/2017 8:00	12.7
496	11/14/2017 9:00	12.7
497	11/14/2017 10:00	12.7
498	11/14/2017 11:00	12.6
499	11/14/2017 12:00	12.6
500	11/14/2017 13:00	12.6
501	11/14/2017 14:00	12.7
502	11/14/2017 15:00	12.7
503	11/14/2017 16:00	12.8
504	11/14/2017 17:00	12.7
505	11/14/2017 18:00	12.6
506	11/14/2017 19:00	12.7
507	11/14/2017 20:00	12.7
508	11/14/2017 21:00	12.7
509	11/14/2017 22:00	12.6
510	11/14/2017 23:00	12.7
511	11/15/2017 0:00	12.7
512	11/15/2017 1:00	12.6
513	11/15/2017 2:00	12.7
514	11/15/2017 3:00	12.7
515	11/15/2017 4:00	12.7
516	11/15/2017 5:00	12.7
517	11/15/2017 6:00	12.7
518	11/15/2017 7:00	12.7
519	11/15/2017 8:00	12.7
520	11/15/2017 9:00	12.7
521	11/15/2017 10:00	12.7
522	11/15/2017 11:00	12.6
523	11/15/2017 12:00	12.7
524	11/15/2017 13:00	12.7
525	11/15/2017 14:00	12.7

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
526	11/15/2017 15:00	12.7
527	11/15/2017 16:00	12.6
528	11/15/2017 17:00	12.6
529	11/15/2017 18:00	12.6
530	11/15/2017 19:00	12.7
531	11/15/2017 20:00	12.6
532	11/15/2017 21:00	12.6
533	11/15/2017 22:00	12.7
534	11/15/2017 23:00	12.6
535	11/16/2017 0:00	12.6
536	11/16/2017 1:00	12.7
537	11/16/2017 2:00	12.7
538	11/16/2017 3:00	12.6
539	11/16/2017 4:00	12.7
540	11/16/2017 5:00	12.7
541	11/16/2017 6:00	12.6
542	11/16/2017 7:00	12.7
543	11/16/2017 8:00	12.7
544	11/16/2017 9:00	12.6
545	11/16/2017 10:00	12.6
546	11/16/2017 11:00	12.7
547	11/16/2017 12:00	12.6
548	11/16/2017 13:00	12.6
549	11/16/2017 14:00	12.6
550	11/16/2017 15:00	12.6
551	11/16/2017 16:00	12.7
552	11/16/2017 17:00	12.6
553	11/16/2017 18:00	12.6
554	11/16/2017 19:00	12.6
555	11/16/2017 20:00	12.7
556	11/16/2017 21:00	12.6
557	11/16/2017 22:00	12.6
558	11/16/2017 23:00	12.7
559	11/17/2017 0:00	12.6
560	11/17/2017 1:00	12.6

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
561	11/17/2017 2:00	12.7
562	11/17/2017 3:00	12.7
563	11/17/2017 4:00	12.6
564	11/17/2017 5:00	12.7
565	11/17/2017 6:00	12.7
566	11/17/2017 7:00	12.6
567	11/17/2017 8:00	12.6
568	11/17/2017 9:00	12.7
569	11/17/2017 10:00	12.7
570	11/17/2017 11:00	12.8
571	11/17/2017 12:00	12.7
572	11/17/2017 13:00	12.7
573	11/17/2017 14:00	12.7
574	11/17/2017 15:00	12.7
575	11/17/2017 16:00	12.7
576	11/17/2017 17:00	12.8
577	11/17/2017 18:00	12.8
578	11/17/2017 19:00	12.7
579	11/17/2017 20:00	12.8
580	11/17/2017 21:00	12.8
581	11/17/2017 22:00	12.8
582	11/17/2017 23:00	12.8
583	11/18/2017 0:00	12.8
584	11/18/2017 1:00	12.8
585	11/18/2017 2:00	12.8
586	11/18/2017 3:00	12.8
587	11/18/2017 4:00	12.8
588	11/18/2017 5:00	12.8
589	11/18/2017 6:00	12.8
590	11/18/2017 7:00	12.8
591	11/18/2017 8:00	12.8
592	11/18/2017 9:00	12.8
593	11/18/2017 10:00	12.8
594	11/18/2017 11:00	12.8
595	11/18/2017 12:00	12.7

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
596	11/18/2017 13:00	12.7
597	11/18/2017 14:00	12.7
598	11/18/2017 15:00	12.7
599	11/18/2017 16:00	12.7
600	11/18/2017 17:00	12.7
601	11/18/2017 18:00	12.7
602	11/18/2017 19:00	12.7
603	11/18/2017 20:00	12.7
604	11/18/2017 21:00	12.7
605	11/18/2017 22:00	12.7
606	11/18/2017 23:00	12.7
607	11/19/2017 0:00	12.7
608	11/19/2017 1:00	12.7
609	11/19/2017 2:00	12.7
610	11/19/2017 3:00	12.7
611	11/19/2017 4:00	12.7
612	11/19/2017 5:00	12.7
613	11/19/2017 6:00	12.7
614	11/19/2017 7:00	12.7
615	11/19/2017 8:00	12.7
616	11/19/2017 9:00	12.7
617	11/19/2017 10:00	12.7
618	11/19/2017 11:00	12.7
619	11/19/2017 12:00	12.7
620	11/19/2017 13:00	12.7
621	11/19/2017 14:00	12.6
622	11/19/2017 15:00	12.7
623	11/19/2017 16:00	12.7
624	11/19/2017 17:00	12.7
625	11/19/2017 18:00	12.7
626	11/19/2017 19:00	12.7
627	11/19/2017 20:00	12.7
628	11/19/2017 21:00	12.7
629	11/19/2017 22:00	12.7
630	11/19/2017 23:00	12.7

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
631	11/20/2017 0:00	12.7
632	11/20/2017 1:00	12.7
633	11/20/2017 2:00	12.7
634	11/20/2017 3:00	12.7
635	11/20/2017 4:00	12.7
636	11/20/2017 5:00	12.7
637	11/20/2017 6:00	12.8
638	11/20/2017 7:00	12.7
639	11/20/2017 8:00	12.7
640	11/20/2017 9:00	12.8
641	11/20/2017 10:00	12.8
642	11/20/2017 11:00	12.7
643	11/20/2017 12:00	12.8
644	11/20/2017 13:00	12.8
645	11/20/2017 14:00	12.7
646	11/20/2017 15:00	12.7
647	11/20/2017 16:00	12.7
648	11/20/2017 17:00	12.7
649	11/20/2017 18:00	12.7
650	11/20/2017 19:00	12.7
651	11/20/2017 20:00	12.7
652	11/20/2017 21:00	12.7
653	11/20/2017 22:00	12.7
654	11/20/2017 23:00	12.7
655	11/21/2017 0:00	12.7
656	11/21/2017 1:00	12.7
657	11/21/2017 2:00	12.7
658	11/21/2017 3:00	12.7
659	11/21/2017 4:00	12.7
660	11/21/2017 5:00	12.7
661	11/21/2017 6:00	12.7
662	11/21/2017 7:00	12.7
663	11/21/2017 8:00	12.7
664	11/21/2017 9:00	12.7
665	11/21/2017 10:00	12.7

STUDY: 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot, Winterport ME

ASSAY: *N. virens* 28 Day Survival Evaluation

TASK: Hourly Temperature Data

Serial Number: Telatemp 10016267

Mean: 12.6 °C
Minimum: 12.1 °C
Maximum: 13.5 °C

Reading	Time	Celsius (°C)
666	11/21/2017 11:00	12.8

ASSAY REVIEW CHECKLIST

STUDY#: 29632 / 29633

CLIENT: Wood PLC

PROJECT: USDC Penobscot River Estuary Phase III Engineering Study

28-Day *L. plumulosus* Survival, Growth and Reproduction and *N. virens* Survival and

ASSAY: Body Burden (E3) MR 2/1/18

Analyst Data Review	Date	Initials	Comments
Chains of Custody Complete	12/12/17	BG	
Sample Receipt Complete	↓	↓	
Organism Culture Sheet(s)			
Bench Sheets Complete (dates, times, initials, etc...)			
Water Quality Data Complete	↓	↓	
Weights Reported			
Assay Acceptability Review	↓	↓	

Technical Report Review	Date	Initials	Comments
Statistical Analysis			
Survival (Growth/Rep (Lp) Surv (Nv))	12/6-8/17	MR	
Chemical	NA		
Statistical Analysis Reviewed	12/8/17	LB	
Data Acceptability Review	12/8/17	MR	
Support Documentation			
Temperature Data Logger	12/7/17	MR	
Daily WQ Data	↓	↓	
Overlying and/or Pore Water Chemistry	12/12/17	MR	
Other Chemical Analysis Data	NA		
Draft Report	12/13/17	MR	Rev. 1 1/31/18 (MR)
Final Report Reviewed	12/21/17	W	Rev. 1 2/1/18 AK
QA Audit/Review Complete			
Final Report Printed - PDF	12/21/17	MR	Rev 1 2/1/18 (MR)
Report E-mailed / Faxed	12/21/17	MR	Rev 1 2/2/18 (MR)
Report Logged Out	↓	↓	

Summary of Toxicity Test Results

Sediment – The sediment used in the toxicity test was collected from Mendall Marsh. The average total mercury concentration in the test sediment was 347.7 nanograms per gram (ng/g) (± 11.4 ng.g; $n = 3$). The average methyl mercury concentration in the test sediment was 9.7 ng/g (± 1.1 ng.g; $n = 3$). Sample ID for replicate analyses: HOMOGENIZED MENDALL MARSH 1, HOMOGENIZED MENDALL MARSH 2, HOMOGENIZED MENDALL MARSH 3.

Amphipod survival – Amphipods in the 3% biochar treatment tended to have lower survival, growth, and reproduction than the majority of the other treatments. Amphipods in the 3% SediMite™ treatment tended to have higher survival than the other treatments, including the control treatments. Mean survival ranged from 43 percent (3% biochar treatment) to 94 percent (3% SediMite™ treatment). Mean survival did not consistently increase or decrease with an increased percentage of additive. An increase in SediMite™ appeared to reduce survival when more than 3% SediMite™ was added. The other two additives did not show a difference of survival rate among the different percentages of additive treatment.

Amphipod growth – Amphipods in the control treatment typically had greater growth than those with site sediment (with or without amendments). Mean dry weight ranged from 0.577 milligrams (mg) (3% biochar treatment) to 1.44 mg (lab control) and mean dry biomass ranged from 0.336 mg (3% biochar treatment) to 1.27 mg (lab control). Amphipod growth in the 10% SediMite™ treatment and the 3% and 10% biochar treatments generally had lower mean dry weight than most of the other treatments, including the control treatments. Amphipod growth in the 3% SediMite™ treatment generally did not differ from the other treatments, including the control treatments. The addition of 3% SediMite™ and the 5% and 10% activated carbon showed amphipod growth similar to the lab control. Amphipod mean dry biomass was lower in the 3% biochar treatment than the other treatments. Growth did not consistently increase or decrease with an increased percentage of additive treatment. An increase in SediMite™ appeared to show a trend of reduced growth with more than 3% added. The other two additives did not show a difference of growth among percentages of additive treatment.

Amphipod reproduction – Amphipods in the control treatment typically had greater reproduction than those with site sediment (with or without amendments). Mean juvenile production per surviving amphipod ranged from 0.2 (3% biochar treatment) to 5 (lab control) and mean juvenile production per female amphipod ranged from 0.4 (3% biochar treatment) to 15.5 (lab control). Some of the activated carbon treatments resulted in higher reproduction than other treatments, but there was no consistent pattern amongst the treatments. Amphipod reproduction in the 5% and 10% SediMite™ treatment and the 3% biochar treatments generally had lower reproduction than most of the other treatments, including the control treatments. Amphipod reproduction in the

3% SediMite™ treatment generally did not differ from the other treatments, including the control treatments. The addition of 3% SediMite™ showed amphipod reproduction (i.e., juvenile production per surviving amphipod) similar to the lab control, however, when calculated per surviving female, this endpoint was no longer similar to the lab control. Reproduction did not consistently increase or decrease with an increased percentage of additive. An increase in SediMite™ reduced reproduction with more than 3% added. The other two additives did not show a difference of reproduction among percentages of additive in the treatment.

Polychaete survival – Survival of polychaetes was higher in the three SediMite™ treatments and the activated carbon at 5% than some treatments, but there was no consistent pattern amongst treatments. Mean survival ranged from 94 (site sediment control and 3% activated carbon) to 100 percent (3% SediMite™).

Polychaete body burden – Measurements of the methyl mercury body burden in polychaetes for each treatment and control within the 28-day toxicity test did not show a difference in concentration and was thus considered inconclusive as to which additive or dosage is more effective. Summary data for the body burden test are presented in the table below. Mendall Marsh sediment methyl mercury concentrations used in the toxicity study averaged 9.7 ng/g. Control polychaetes averaged 2.4 ng/g of methyl mercury, while the averages for polychaetes in lab control sediment, marsh sediment, and from the treatments ranged from 1.1 ng/g (3% activated carbon treatment) to 2.2 ng/g (10% biochar treatment). Polychaetes in lab control sediment averaged 1.6 ng/g and those in untreated Mendall Marsh sediment averaged 1.3 ng/g. Polychaetes in the activated carbon treatment averaged 1.1 ng/g (3%) to 2.0 ng/g (10%), polychaetes in the biochar treatment averaged 1.5 ng/g (3%) to 2.2 ng/g (10%), and polychaetes in the SediMite™ treatment averaged 1.3 ng/g (5%) to 1.6 ng/g (3% and 10%). There did not appear to be significant benefits from any of the additives. Additional testing would be recommended prior to full scale implementation of a remedy using these additives. A field scale test over an extended period of time would likely be needed to assess the effectiveness of amendments in reducing methyl mercury uptake by organisms.

BODY BURDEN OF METHYL MERCURY IN POLYCHAETES	
Penobscot River Phase III Engineering Study	
Penobscot River Estuary, Maine	
	Average Methyl Mercury Concentration (ng/g)
Control	2.4
P/L/0% ¹	1.6
P/N/0% ²	1.3
P/AC/3% ²	1.1
P/AC/5% ²	1.9
P/AC/10% ²	2.0
P/B/3% ²	1.5
P/B/5% ²	1.8
P/B/10% ²	2.2
P/S/3% ²	1.6
P/S/5% ²	1.3
P/S/10% ²	1.6

Notes:

1. Exposed to Lab Control Sediment
2. Exposed to Mendell Marsh Sediment

AC = activated carbon

B = biochar

ng/g = nanograms per gram

S = Sedimite™

APPENDIX C

Penobscot River Dewatering Bench-Scale Study Report And Analytical Results For Samples Sent to Kemron

APPENDIX C-1

Penobscot River Dewatering Bench-Scale Study Report

PENOBSCOT RIVER DEWATERING BENCH-SCALE STUDY REPORT

KEMRON PROJECT #: SH0661

February 12, 2018

Prepared for:



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Portland, ME 04101
207-828-3605 (Phone)

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Mark Clark
Senior Technologist

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1.0 INTRODUCTION

KEMRON Environmental Services, Inc. (KEMRON) is pleased to present AMEC Foster Wheeler (AMEC) with the results of the dewatering study performed on materials from the Penobscot River River Site located in Penobscot River, Maine. The purpose of the dewatering study was to evaluate Belt Filter Press, Centrifuge, Recessed Plate and Geotube dewatering techniques in order to increase the material percent solids and density for potential disposal. In addition, KEMRON evaluated the ability of commonly available reagents and additives capable of increasing the percent solids and allowing the material to pass paint filter for potential off-site disposal. The following sections of this report include information regarding the protocols followed during each phase of the study as well as the results of the testing performed. Table imbedded in the text are meant for a convenient reference to the reader. Complete tables are provided in the appendix. This report should be reviewed in its entirety including all attachments prior to making decisions concerning a remedial approach. This study is intended to suggest what will occur in the field but does not guarantee the same results.

2.0 MATERIAL RECEIPT AND CHARACTERIZATION

On October 6, 2017, KEMRON received:

- three (3) 5-gallon buckets of site sediment labeled FFBU_60WCH_BULKSEDIMENT_092817 (FFBU)
- four (4) 5-gallon buckets of site sediment labeled VN_25WCH_BULKSEDIMENT_092817 (VN).
- eleven (11) buckets labeled as FFBU_60WCH_BULKRIVERWATER_092717
- nine (9) buckets labeled as VN_25WCH_BULKRIVERWATER_092717

Note that two buckets were labeled as FFBU_60WCH_BULKRIVERWATER_092717 (8 of 10) These buckets were placed aside and not used as a part of the dewatering study.

All materials were logged into KEMRON's sample tracking database and placed in secure, refrigerated storage maintained at a temperature of 4 degrees Celsius (°C). Copies of the chain of custody are provided in **Appendix A**.

KEMRON understands the individual site sediment and water materials were homogenized and containerized prior to shipment and therefore were not homogenized upon receipt. Under direction of AMEC, KEMRON composited the two individual site sediments at a 1:1 ratio. Specifically, KEMRON combined equal quantities of the FFBU and VN sediment and homogenized by paddle mixing for 3 minutes. KEMRON labeled the composite sediment as FFBU-VN-Composite. KEMRON followed the same procedure to composite the FFBU and VN river water. Throughout the study, KEMRON prepared enough sediment and water composites necessary to complete each phase of testing.

After compositing the site sediments, KEMRON performed the following untreated physical properties testing on the untreated sediment in order to establish a baseline of physical properties to determine dewatering treatment effectiveness, and to ensure the materials provided are similar to those anticipated at the site.

<u>Parameter</u>	<u>Method</u>
Moisture Content	ASTM D2216
Grain Size Distribution	ASTM D422
Atterberg Limits	ASTM D4318
USCS Classification	ASTM D2487
Loss on Ignition (Organic Content)	ASTM D2974
Bulk Density	ASTM D7263

The results of untreated characterization testing are presented in **Table 1**. Copies of the physical properties testing data sheets are included in **Appendix B**. The following is a summary of the information presented in Table 1:

TABLE 1
UNTREATED PHYSICAL PROPERTIES TESTING

TESTING PARAMETER	TEST METHOD	UNIT	SAMPLE ID
			FFBU-VN-Composite
Moisture Content	ASTM D2216		
ASTM Moisture Content		%	177.32
Percent Solids		%	36.06
Loss on Ignition (Organic Content)	ASTM D2974		
Average Moisture Content		%	178.70
Average Loss on Ignition		%	13.98
Bulk Unit Weight	ASTM D7263	pcf	79.6
Atterburg Limits	ASTM D4318 Method B		
Liquid Limit			60
Plastic Limit			32
Plasticity Index			28
Particle Size Distribution	ASTM D422		
Gravel		%	0.3
Sand		%	13.9
Silt		%	73.2
Clay		%	12.6
Sample Description	ASTM D2487		Dark brown elastic silt
Sample Classification	ASTM D2487		MH

Notes:

% = Percent

pcf = pounds per cubic foot

Sample descriptions based on the Unified Classification System.

Sample color determined by the Munsell Soil Color Charts.

Review of the data in **Table 1** shows the composite sediment is composed mainly of silt at 73.2 percent (%) and is classified as MH with a description of dark brown elastic silt with a percent solids of approximately 36%. Loss on Ignition testing resulted in an organic content of 13.98%. The bulk unit weight was determined to be 79.6 pounds per cubic foot (lb/ft³). In addition to the untreated physical properties testing listed above, KEMRON also submitted aliquots of the untreated sediment composite and water composite to Eurofins located in Bothell, WA for Total Mercury analysis by EPA Method 1631E. All analytical results are provided directly to AMEC and are not included in this report.

3.0 POLYMER EVALUATIONS

On October 12, 2017, KEMRON developed one (1) gallon of the simulated raw hydraulic dredge (RHD) material at approximately 10% solids as directed by AMEC. KEMRON forwarded the prepared slurry to WaterSolve, a polymer distributor and expert in polymer applications and testing. WaterSolve conducted a series of jar tests in order to determine the most effective polymers (coagulants and flocculants included) and dosage for the site material. Polymer effectiveness was determined by visual observations such as sediment floc, water release rate, and water clarity. Results of the polymer evaluations conclude that a single product application of Testing indicated that the polymer "Solve 137" at a dosing rate of 2.9 pounds per dry ton (lbs/dry-ton). WaterSolve also recommended a potential increase in polymer dosage (possibly up to 5% or more) when mechanical dewatering applications are used. KEMRON conducted a series of jar tests to evaluate the polymer effectiveness at increased dosing rates of +2.5% and +5.0%. KEMRON observed there to be little difference in the settling rate and water clarity with the increased polymer dosing rates. Therefore, KEMRON continued to use the recommended dosage of 2.9 lb/dry-ton throughout the duration of the study. Complete polymer evaluation reports from WaterSolve are provided in **Appendix C**. Contact information for WaterSolve is included below:

Doug Walker
WaterSolve
5031 - 68th Street SE
Caledonia, MI 49316
T: (616) 575-8693

4.0 MECHANICAL DEWATERING EVALUATIONS

KEMRON evaluated three (3) mechanical dewatering technologies including the Belt Filter Press, Centrifugation and Recessed Plate. Testing was conducted on the FFBU-VN-Composite sediment diluted to approximately 10% solids by adding river water from the composited FFBU and VN river water to simulate RHD material. KEMRON performed the mechanical dewatering evaluations on four different material conditions including raw hydraulic dredge (RHD), bulk polymer treatment (BPT), bulk pre-screening (BPS), and bulk screening polymer treatment (BSPT). The polymer dosage, as determined in Section 3.0, remained consistent throughout the treatability study, where applicable. Bulk screening was performed by passing the RHD material through a #10 sieve with nominal sieve opening of 0.0787 inches. KEMRON observed approximately 10% by mass of the material to be retained on the #10 sieve. The retained

material was composed mostly of wood fibers with a small amount of soil adhering to the wood waste. After screening, the wood waste was disposed of and not used for any further testing.

4.1 Crown Belt Press Testing

The Crown Belt Press is an instrument designed to simulate the action of a sludge dewatering belt filter press. The press permits rapid evaluation of conditioners and belt materials for a given application. The Crown Belt Press removes water from treated material in a fashion comparable to a full-scale press and allows for the collection of data pertinent to the belt press process. KEMRON performed the Crown Belt Press testing using the Red Twill belt filter media provided by National Filter Media. KEMRON observed on past similar projects and material type, that the Red Twill media performs very effectively while allowing the filter cake to release from the media without leaving behind residual. For each test, KEMRON used a 500 milliliter (mL) aliquot of the prepared slurry containing approximately 9% solids and conditioned the slurry with the recommended polymer dosage. The conditioned slurry was poured through the gravity drain funnel and filter media provided with the crown belt press. KEMRON timed the release of water until water no longer dripped through the funnel. KEMRON removed the filter cake from the gravity drain funnel and placed it between the belt press media.

Each belt press test consisted of three squeezes of increasing belt tension to simulate the different treatment zones of a typical belt filter press. KEMRON conducted the first squeeze by slowly increasing the belt tension until either the material began to overflow the belt pair or significant dewatering was observed. Once the belt tension stabilized, KEMRON recorded the peak tension in pounds (lbs). The belt tension was released and a second squeeze was conducted by rapidly increasing the belt tension until dewatering occurred and the peak tension was recorded. The third and final squeeze was conducted in the same manner. Upon completion of three squeezes KEMRON removed the pressed cake from the belt and performed moisture content, bulk density, pocket penetrometer strength and shear strength, specific gravity, unconfined compressive strength (UCS) and paint filter testing. KEMRON recorded the amount of effluent released during the gravity drain as well as after each squeeze. The collected effluent was then combined and sampled for total mercury analysis by EPA 1631E. Note that crown belt press testing was not performed on the RHD material or the BPS material because the belt press requires the use of a polymer to create the filter cake during the gravity drainage process. A summary of the testing described above is provided in **Table 2** below

AMEC FW
PENOBSCOT RIVER DEWATERING STUDY
KEMRON PROJECT NO. SH0661

TABLE 2
Summary of Crown Belt Press Testing

Sample Identification	Feed Volume (mL)	Gravity Drain Effluent Collected (mL)	Belt Tension (lbs)	Effluent Collected (mL)	Cake Evaluations										
					ASTM D2216	ASTM D7263	Cake Pocket Penetrometer (TSF)	Cake Shear Strength (Kg/cm ²)	Paint Filter Test (Pass/Fail)	ASTM D854	Unconfined Compressive Strength ASTM D2166				
					Cake Percent Solids (%)	Cake Density (lb/ft ³)				Specific Gravity	Moisture Content (%)	Bulk Density (lb/ft ³)	Dry Density (lb/ft ³)	UCS (lb/in ²)	
DEW-SED-02-RHD*															
DEW-SED-02-BPT	500	350	99	56	46.79	85.2	0.0	1.6	Pass	2.62	113.82	85.0	39.8	0.9	
			136	65											
			207	75											
DEW-SED-02-BPS*															
DEW-SED-02-BSPT	500	350	76	45	46.66	84.4	0.0	1.1	Pass	2.63				F	
			130	50											
			202	56											

Notes:
* = Testing not conducted on Raw Hydraulic Dredge and Bulk Pre-screened material due to no filter cake forming during gravity drain procedure
Testing conducted using Red Twill belt press material provided by National Filter Media
TSF=tons per square foot
psi=pounds per square inch
% = percent
Kg/cm²=kilograms per square centimeter
mL=milliliters
min=minutes
lbs/ft³=pounds per cubic foot
Shear Strength measured using a laboratory vane shear apparatus
F = Failed, Sample fails under its own weight
RHD = Raw Hydraulic Dredge
BPT = Bulk Polymer Treatment
BPS = Bulk Pre-Screening
BSPT = Bulk Screening Polymer Treatment

The results presented in **Table 2** show both the BPT and BSPT test sample released the same quantity of water during the gravity drain phase of testing. The BPT sample released more water at similar belt tensions compared to the BSPT sample. This could be due to the presence wood waste in the BPT material retaining additional water. Both pressed materials exhibited similar percent solids of approximately 46%. The density of the filter cakes ranged from 84.4 to 85.2 lb/ft³. Neither filter cake material showed any pocket penetrometer strength showed shear strength of 1.1 kilograms per square centimeter (Kg/cm²) for the BSPT and 1.6 Kg/cm² for the BPT material. Both materials passed paint filter testing. UCS testing resulted in a UCS strength of 0.9 pounds per square inch (lb/in²) for the BPT material while the BSPT material failed under its own weight when removed from the sample mold. Complete data sheets for the Crown Belt Press testing can be found in **Appendix D**. Contact information for the evaluated belt press materials is provided below:

National Filter Media/Filter Belts
12 Winada Drive, Winthrop, ME 04364
1-800-321-5223

4.2 Centrifugation Testing

KEMRON performed centrifuge testing on the 9% solids slurry material using all four material conditions. KEMRON placed 1,000 mL aliquots of the prepared slurry into Teflon bottles and where necessary conditioned them with the appropriate polymer and dosage. The samples were centrifuged for a period of 10 minutes at a 1,500 rotations per minute (RPM). After treatment, the water was decanted from the top of the settled sediment and collected for Total Mercury analysis by EPA Method 1631E. The settled sediment was then removed from the bottom of the bottle and subjected to the following testing: moisture content, bulk density, pocket penetrometer strength and shear strength, specific gravity, unconfined compressive strength (UCS) and paint filter testing. The results of the testing described above is summarized in **Table 3** below.

AMEC FW
PENOBSCOTT DEWATERING STUDY
KEMRON PROJECT NO. SH0661

TABLE 3
Summary of Centrifuge Testing

Sample Identification	Rotational Speed (rpm)	Feed Volume (mL)	Testing Duration (min)	Effluent Collected (mL)	Cake Evaluations									
					ASTM D2216	ASTM D7263	Cake Pocket Penetrometer (TSF)	Cake Shear Strength (Kg/cm ²)	Paint Filter Test (Pass/Fail)	ASTM D854	Unconfined Compressive Strength ASTM D2166			
					Cake Percent Solids (%)	Cake Density (lb/ft ³)				Specific Gravity	Moisture Content (%)	Bulk Density (lb/ft ³)	Dry Density (lb/ft ³)	UCS (lb/in ²)
DEW-SED-03-RHD	1,500	1,000	10	820	41.13	82.1	0.0	0.05	Pass	2.61				F
DEW-SED-03-BPT	1,500	1,000	10	850	42.99	80.9	0.0	0.15	Pass	2.60				F
DEW-SED-03-BPS	1,500	1,000	10	822	40.60	81.5	0.0	0.10	Fail	2.61				F
DEW-SED-03-BSPT	1,500	1,000	10	850	41.70	80.7	0.0	0.15	Pass	2.61				F

Notes:
TSF=tons per square foot
psi=pounds per square inch
% = percent
Kg/cm²=kilograms per square centimeter
mL=milliliters
min=minutes
lbs/ft³=pounds per cubic foot
Shear Strength measured using a laboratory vane shear apparatus
F = Failed, Sample fails under its own weight
RHD = Raw Hydraulic Dredge
BPT = Bulk Polymer Treatment
BPS = Bulk Pre-Screening
BSPT = Bulk Screening Polymer Treatment

Table 3 shows the materials without polymer treatment (RHD and BPS) exhibited lower percent solids after centrifuging. Percent solids for all the materials ranged from 40.60 to 42.99%. Filter cake density ranged from 80.7 to 82.1 lb/ft³. All of the material exhibited a pocket penetrometer strength of 0.0 tons per square foot (TSF). Shear strength values ranged from 0.05 Kg/cm² to 0.15 Kg/cm² with the BPT and BSPT material exhibiting the highest shear strength. The RHD, BPT, and BSPT material passed paint filter testing while the BPS material failed. All centrifuged materials failed UCS testing. Complete centrifuge testing data sheets can be found in **Appendix E**.

4.3 Recessed Plate (Baroid Filter Press) Testing

Baroid Filter Press testing is a dewatering simulation where positive pressure is applied to the site material. This testing is considered a viable simulation to evaluate dewatering applications such as plate and frame treatments. Filter press testing was performed at a positive pressure of 100 pounds per square inch (psi). Each stainless steel Baroid Filter Press chamber was lined with a Micronics Filter Cloth Style 9844. The provided filter cloth was a polypropylene mono/multi satin weave with a 3.3-3.4 cubic feet per minute (CFM) air flow rate. KEMRON evaluated the filter press on all four material conditions. KEMRON measure 400 mL of the test slurry and, where applicable, added the appropriate polymer and dosage. The slurry was then poured into the test chamber and sealed. A single positive 100 pounds per square inch (psi) air pressure was introduced into the chamber to force any free liquid from the test material. The air pressure was applied until breakthrough occurred. After air breakthrough occurred, KEMRON removed the filter cake from the test chamber and each filter cake evaluated for moisture content, bulk density, pocket penetrometer strength and shear strength, specific gravity, unconfined compressive strength (UCS) and paint filter testing. KEMRON also collected and submitted an aliquot of the effluent water to Eurofins for Total Mercury analysis by EPA Method 1631E. A summary of the filter press testing results can be found in **Table 4** below. Contact information for the evaluated filter media is provided below:

Ryan S. Nickerson
Micronics Inc.
200 West Road
Portsmouth, NH 03801
(P) 603-433-1299 Ext. 3037
(F) 603-433-6673
ryan.nickerson@micronicsinc.com

AMEC FW
PENOBSCOT RIVER DEWATERING STUDY
KEMRON PROJECT NO. SH0661

TABLE 4
Summary of Filter Press Testing

Sample Identification	Test Pressure (psi)	Feed Volume (mL)	Breakthrough Time (min)	Effluent Collected (mL)	Cake Evaluations									
					ASTM D2216	ASTM D7263	Cake Pocket Penetrometer (TSF)	Cake Shear Strength (Kg/cm ²)	Paint Filter Test (Pass/Fail)	Specific Gravity	Unconfined Compressive Strength ASTM D2166			
					Cake Percent Solids (%)	Cake Density (lb/ft ³)					Moisture Content (%)	Bulk Density (lb/ft ³)	Dry Density (lb/ft ³)	UCS (lb/in ²)
DEW-SED-04-RHD	100	400	57	355	47.06	78.1	0.0	1.0	Pass	2.61				F
DEW-SED-04-BPT	100	400	2	318	34.87	82.2	0.0	0.0	Fail	2.62				F
DEW-SED-04-BPS	100	400	73	365	52.48	85.8	0.0	0.9	Pass	2.61	90.75	85.5	44.8	1.2
DEW-SED-04-BSPT	100	400	2	320	32.56	72.4	0.0	0.0	Fail	2.62				F

Notes:

All testing was performed using Micronics Polypropylene Mono/Multi Satin 3.3-4.4 CFM Filter Cloth Style 8944
TSF=tons per square foot
psi=pounds per square inch
% = percent
Kg/cm²=kilograms per square centimeter
mL=milliliters
min=minutes
lbs/ft³=pounds per cubic foot
Shear Strength measured using a laboratory vane shear apparatus
F = Failed, Sample fails under its own weight
RHD = Raw Hydraulic Dredge
BPT = Bulk Polymer Treatment
BPS = Bulk Pre-Screening
BSPT = Bulk Screening Polymer Treatment

The results summarized in **Table 4** show the polymer treated materials (BPT and BSPT) had a faster air breakthrough time compared to the RHD and BPS materials. However, the BPT and BSPT materials were determined to have a lower percent solids after treatment. Both the BPT and BSPT materials failed paint filter testing, exhibited no pocket penetrometer strength and showed no shear strength. The BPS material resulted in the highest percent solids, density and an UCS of 1.2 lb/in². All other filter press materials failed UCS testing. However, the BPS material displayed the longest air breakthrough time of 73 minutes. The RHD filter press material was determined to have the highest shear strength of 1.0 Kg/cm². Complete testing data sheets can be found in **Appendix F**.

5.0 GEOTEXTILE FABRIC TESTING

KEMRON performed both the Rapid Dewatering Test (RDT) and GeoTube Dewatering Test (GDT) in accordance with Tencate procedures. Testing was performed on the BPT (Bulk Polymer Treated) and BSPT (Bulk Screened Polymer Treated) materials. The RDT is designed to provide an indication if dewatering with GeoTubes is feasible. GeoTubes are also used to evaluate the efficiency of polymers, measure the volume of effluent filtrate for the treated sediment, record time for filtration and analyze the quality of effluent water.

5.1 Rapid Dewatering Testing (RDT)

KEMRON performed RDT testing using GeoTube GT 500 fabric provided by Tencate. GeoTube 500 fabric is recommended by Tencate because it is the most commonly used fabric for dewatering sediment materials. RDT tests consisted of a 1,000 mL aliquot of prepared slurry at approximately 9% solids. KEMRON treated the slurry with the appropriate polymer and dosage recommended by WaterSolve and poured the conditioned slurry through the GT 500 fabric. Effluent drainage was timed and the amount of effluent collected was recorded after 1 minute of draining and again after 60 minutes. After 60 minutes, KEMRON sampled and submitted an aliquot of the effluent to Eurofins for Total Mercury analysis by EPA Method 1631E. KEMRON did not perform any physical properties testing on the resultant filter cake because the RDT does not produce the same quality of sediment a full scale GeoTube application is capable of producing.

5.2 GeoTube Dewatering Testing (GDT)

KEMRON performed the GDT testing using GeoTube GT 500 fabric bags provided by Tencate. GDT testing was performed on the BPT (Bulk Polymer Treated) and BSPT (Bulk Screened Polymer Treated) materials diluted to approximately a 10% solids slurry using site water. Each slurry was generated following the procedure outlined in section 4.0 above. KEMRON passed fifteen (15) gallons of conditioned slurry through the GT 500 bags. The sediment was allowed to drain for a period of 24 hours prior to performing physical properties testing on the dewatered sediment. KEMRON also collected an aliquot of the filtrate and forwarded it to Eurofins for Total Mercury analysis by EPA Method 1631E. The results of the physical properties testing performed on the dewatered sediment are provided in **Table 5** below.

AMEC FW
PENOBSCOT RIVER DEWATERING STUDY
KEMRON PROJECT NO. SH0661

TABLE 5
Summary of Geotextile Fabric Testing

Sample Identification	Feed Volume (Gallons)	Cake Evaluations									
		ASTM D2216	ASTM D7263	Cake Pocket Penetrometer (TSF)	Cake Shear Strength (Kg/cm ²)	Paint Filter Test (Pass/Fail)	Specific Gravity	Unconfined Compressive Strength ASTM D2166			
		Cake Percent Solids (%)	Cake Density (lb/ft ³)					Moisture Content (%)	Bulk Density (lb/ft ³)	Dry Density (lb/ft ³)	UCS (lb/in ²)
DEW-SED-05-BPTGDT	15	35.21	80.8	0.0	0.15	Pass	2.61				F
DEW-SED-05-BSPTGDT	15	46.21	83.8	0.0	0.10	Pass	2.63				F

Notes:

TSF=tons per square foot

psi=pounds per square inch

% = percent

Kg/cm²=kilograms per square centimeter

lbs/ft³=pounds per cubic foot

Shear Strength measured using a laboratory vane shear apparatus

F = Failed, Sample fails under its own weight

BPT= Bulk Polymer Treated

BSPT = Bulk Screened Polymer Treated

GDT = GeoTube Dewatering Test

The results presented in **Table 5** indicate both dewatered material passed paint filter testing after 24 hours of draining. The percent solids were determined to be 35.21% and 46.21% for the BPT and BSPT materials, respectively. Both materials failed UCS testing and showed no pocket penetrometer strength. The BPT exhibited a shear strength of 0.15 Kg/cm² while the BSPT was determined to have a slightly lower shear strength of 0.10 Kg/cm². The filter cake density was determined to be 80.8 and 83.8 lb/ft³ for the BPT and BSPT materials, respectively. Data sheets for the geotextile testing have been provided in **Appendix G**.

6.0 GRAVITY DRAINAGE TESTING

KEMRON performed gravity drainage testing on the FFBU-VN-Composite sediment at the as- received moisture content. Gravity drainage testing was performed to evaluate the reduction in moisture that may be achieved by allowing the site material to gravity drain while stockpiled during field operations. In order to simulate the process on the laboratory scale, testing was performed by allowing a known quantity of the untreated material to drain via gravity through a porous filter paper media with a particle retention size of 25 microns. This filter size has historically been used by KEMRON for similar gravity drain materials. KEMRON placed approximately 1,000 grams (g) of the FFBU-VN-Composite material in a pre-weighed funnel lined with the filter media and allowed it to drain for a period of 24 hours. After 24 hours, KEMRON performed moisture content, pocket penetrometer, shear strength, and painter filter testing. Results of the gravity drainage testing are presented in **Table 6**.

Sample Identification	Initial Soil Mass (g)	Final Soil Mass (g)	Effluent Collected (mL)	Cake Evaluations			
				ASTM D2216	Cake Pocket Penetrometer (TSF)	Cake Shear Strength (Kg/cm ²)	Paint Filter Test (Pass/Fail)
				Cake Percent Solids (%)			
DEW-SED-06	985.11	892.66	87	39.70	0.0	0.00	Fail
Notes:							
Gravity Drainage Testing conducted for 24 Hours							
g = grams							
mL = milliliter							
TSF=tons per square foot							
% = percent							
Kg/cm ² =kilograms per square centimeter							
Shear Strength measured using a laboratory vane shear apparatus							

The results presented in **Table 6** indicate a slight increase in percent solids over the 24-hour testing period. The percent solids in the gravity drained sediment was determined to increase from 36.06%to 39.70%. The resultant sediment did not show any pocket penetrometer strength or shear strength. The gravity drained material also failed paint filter testing after 24 hours. Gravity drainage testing data sheets can be found in **Appendix H**.

7.0 SOLIDIFICATION EVALUAIONS

KEMRON performed solidification evaluations in order to evaluate potential readily available reagents and addition rates capable of improving the physical properties of the site sediment, mainly passing paint filter by reducing any free liquids in the sediment while maintaining a relatively soil like consistency and a minimal increase in treated material volume. The paint filter test is commonly used to determine if a material could be transported and disposed of at an off-site location without releasing any liquids during material transportation. All mixtures were performed on the FBU-VN-Composite sediment at the “as receive” moisture content and percent solids. KEMRON evaluated the following reagents during this phase of the study:

Reagent

Type I Portland cement
Lime Kiln Dust (LKD)

Supplier

Lafarge North America, Oswego, NY
Sheppard Materials, Ravena, NY

7.1 Solidification Evaluations

KEMRON prepared a total of 10 mixtures to perform solidification evaluations. These mixtures were designed to evaluate moisture content, percent solids, bulk specific gravity, volumetric expansion, pH, and paint filter.

All reagent materials were introduced into the untreated material dry. Each mixture was prepared using a Hobart-type bench top kitchen mixer with a paddle-type mixing arm. Mixtures were prepared by placing an aliquot of the untreated material into the 6-quart stainless steel mixing chamber. The appropriate reagents were then added dry and blended for a period of approximately 60-90 seconds at a rate of approximately 60 RPM. Treatment utilizing this mixer is intended to simulate potential full-scale remediation options, to the extent possible on the bench-scale. This approach is routinely utilized by KEMRON to simulate a wide range of potential full-scale remediation approaches, including both ex-situ and in-situ applications. All reagent additions were calculated on a by-weight basis according to the quantity of untreated material utilized. For example, in a mixture with 5% Portland cement, for every 100 g of untreated material, 5g of Portland cement was added to the untreated material.

The following is a summary of treated material curing techniques, testing performed on the treated samples, and a brief description of the protocols utilized for the solidification evaluations:

- The 10 mixtures were poured in 2”x 4” cylindrical molds (measuring 2 inches in diameter and 4 inches in length) and tapped on a hard surface using a moderate effort to remove air voids. The compacted samples are allowed to cure at ambient temperature (68°F to 72°F) in moisture-sealed containers.
- After 3 days of curing, the volumetric expansion of the mixes were evaluated. The expansion samples were developed by calculating the height of 100g of untreated material in 2”x4” cylindrical mold using the density. The reagent slurry was then added at the appropriate addition rate to the untreated material, blended and the mixture was allowed to cure for 3 days. After 3 days, the height of the mixture was measured and recorded. The volumetric expansion was calculated and recorded on the individual mix design sheet. Volumetric expansion data is noted individually on the mixture design sheets provided in **Appendix I** and are summarized in **Table 7**. Note that KEMRON also

performed volumetric expansion testing after 24 hours of curing on mixtures 0611-001 through 0661-005. KEMRON felt it appropriate to measure the volumetric expansion of these samples because they passed paint filter after 24 hours of curing.

- Moisture content testing was performed in accordance with ASTM D2216 by placing three representative aliquots of the treated material in three, pre-weighed, aluminum tins. The weight of each tin containing the material was recorded and the tins were placed in an oven maintained at a constant temperature of $110\pm 5^{\circ}\text{C}$ and dried overnight. After the material was dried, the weight of each tin was recorded and the moisture content calculated. The results of the moisture content testing are presented in **Table 7**, and the data sheets are provided in **Appendix J**.
- Bulk Specific Gravity testing was performed in accordance with SM2710F. At each cure interval, KEMRON weighted and recorded a 2"x4" mold filled with the treated sediment material. The weight of sediment was then divided by the weight of the same volume of distilled water at 4°C .
- Paint Filter testing was performed in accordance with EPA Method 9095 by placing an aliquot of the treated Material in a funnel lined with a paint filter and placed on top of a 50 milliliter graduated cylinder. Enough of the untreated material was placed in the funnel until it was full (approximately 100g). The material was then allowed to sit in the funnel for 5 minutes. If there was any liquid on the bottom of the graduated cylinder after 5 minutes, the material was said to contain free liquids, therefore failing the paint filter test. If no liquid was on the bottom of the graduated cylinder, then the material is designated as passing the paint filter test. The result of the paint filter test is presented in **Table 7** and the data sheets are provided in **Appendix J**.
- Material pH testing was performed in accordance with EPA Method 9045 by placing aliquot of the treated Material in deionized water at a 1:1 soil to water ratio and agitating for five minutes. After 5 minutes, the mixture was placed in the centrifuge to aid in separation of the solids and liquid. The pH of the separated distilled water was then measured using a calibrated pH meter. The results of the pH testing are presented in **Table 7** and the data sheets are provided in **Appendix J**.

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TABLE 7

Summary of Solidification Evaluations
Mixture Designs, Volumetric Expansion, Bulk Specific Gravity, Moisture Content, pH, Paint Filter

KEMRON Sample Number	Untreated Material Type	Reagent Type	Reagent Addition % by Wet Soil wt.	Cure Day	Volumetric Expansion (%)	Bulk Unit Weight (lb/ft ³)	Bulk Specific Gravity SM2710F	Moisture Content ASTM D2216		pH EPA Method 9045	Paint Filter Testing EPA Method 9095
								Moisture Content (%)	Percent Solids (%)		
										pH (S.U.)	Pass/Fail
0661-001	FFBU-VN-Composite	Type I Portland Cement	4.0	1	4.21	80.7	1.29	161.77	38.21	12.11	Pass
				2		80.0	1.28	156.88	38.93	12.14	
				3	4.25	79.7	1.28	154.06	39.36	12.27	
				7		80.1	1.28	155.65	39.12	12.51	
0661-002	FFBU-VN-Composite	Type I Portland Cement	8.0	1	5.28	81.8	1.31	138.02	42.01	12.36	Pass
				2		81.8	1.31	139.98	41.67	12.42	
				3	4.18	81.4	1.31	146.08	40.64	12.57	
				7		81.9	1.31	134.39	42.67	12.93	
0661-003	FFBU-VN-Composite	Type I Portland Cement	12.0	1	5.95	83.8	1.34	129.34	43.60	12.40	Pass
				2		84.2	1.35	125.96	44.26	12.45	
				3	6.47	84.1	1.35	128.02	43.86	12.65	
				7		83.7	1.34	122.82	44.88	12.96	
0661-004	FFBU-VN-Composite	Type I Portland Cement	16.0	1	8.38	85.1	1.36	110.05	47.71	12.46	Pass
				2		85.0	1.36	114.03	46.72	12.57	
				3	8.74	84.9	1.36	115.00	46.51	12.72	
				7		85.1	1.36	113.37	46.87	13.01	
0661-005	FFBU-VN-Composite	Type I Portland Cement	20.0	1	11.31	87.5	1.40	105.35	48.71	12.40	Pass
				2		86.8	1.39	102.91	49.28	12.53	
				3	10.16	87.1	1.40	101.71	49.58	12.70	
				7		87.1	1.40	100.03	50.00	13.04	
0661-006	FFBU-VN-Composite	Lime Kiln Dust	4.0	1		78.2	1.25	152.32	39.63	12.32	Fail
				2		77.3	1.24	153.07	39.51	12.38	Fail
				3	5.50	79.0	1.27	154.21	39.34	12.51	Fail
				7		78.9	1.26	151.58	39.75	12.72	Fail
0661-007	FFBU-VN-Composite	Lime Kiln Dust	8.0	1		80.3	1.29	139.67	41.73	12.47	Fail
				2		79.8	1.28	137.74	42.06	12.49	Fail
				3	7.50	80.3	1.29	139.86	41.69	12.65	Fail
				7		80.0	1.28	128.01	43.88	12.89	Fail
0661-008	FFBU-VN-Composite	Lime Kiln Dust	12.0	1		81.9	1.31	124.38	44.57	12.43	Fail
				2		81.7	1.31	125.96	44.26	12.51	Fail
				3	7.97	81.5	1.31	124.03	44.64	12.62	Fail
				7		81.9	1.31	123.95	44.65	12.91	Fail
0661-009	FFBU-VN-Composite	Lime Kiln Dust	16.0	1		83.9	1.34	114.14	46.70	12.47	Fail
				2		83.7	1.34	113.66	46.80	12.51	Fail
				3	9.62	84.4	1.35	114.05	46.72	12.55	Fail
				7		83.8	1.34	109.93	47.64	13.03	Fail
0661-010	FFBU-VN-Composite	Lime Kiln Dust	20.0	1		85.3	1.37	105.05	48.77	12.50	Fail
				2		85.5	1.37	106.06	48.53	12.54	Fail
				3	13.19	86.5	1.39	104.38	48.96	12.66	Fail
				7		85.7	1.37	103.19	49.22	13.05	Pass

Notes:
 % = Percent
 Wt= Weight
 s.u. = standard units
 lb/ft³ = pounds per cubic foot
 = Grey Shading, Testing not conducted

The data presented in **Table 7** indicates that the five mixtures utilizing Portland cement performed more favorably than the mixtures containing LKD. The Portland cement mixtures all passed paint filter testing after 24 hours of curing. The only mixture using LKD to pass paint filter was the 20% addition rate after 7 days. The percent solids for the 10 mixtures ranged from 38% to 50% and did not appear to change with respect to cure time. The pH testing revealed that the pH of the treated materials appeared to increase over time. All of the treated materials exhibited a pH of greater than 12.5 standard units (s.u.) after 7 days of curing. The bulk specific gravity for the treated materials ranged from 1.28 to 1.40 in the Portland cement mixtures and 1.24 to 1.39 in the LKD mixtures. Volumetric expansion values ranged from 4.21% to 11.31% in the Portland cement mixtures after 24 hours of curing. After 72 hours of curing, the volumetric expansion ranged from 4.18% to 10.16% in the Portland cement mixtures and 5.50% to 13.19% in the LKD mixtures.

8.0 CONCLUSIONS

KEMRON evaluated the effectiveness of multiple dewatering techniques on the Penobscot River site sediment materials. KEMRON evaluated mechanical dewatering technologies including Crown Belt Press, Centrifugation, and Recessed Plate. In addition, KEMRON evaluated geotextile fabric and gravity drainage technologies. KEMRON also evaluated the ability of commonly available reagents and additives capable of increasing the percent solids and allowing the material to pass paint filter for potential disposal. The results of the dewatering evaluations suggest multiple treatment options may be capable of achieving the treatment goals. However, results presented in this treatability study suggest what may happen in the field, but KEMRON does not guarantee the same results.

Prior to performing dewatering evaluations, KEMRON evaluated the untreated physical properties of the site material. The FFBU-VN-Composite was determined to be composed mainly of silt and was classified as an MH with a description of dark brown elastic silt. The composite material exhibited an organic content of 13.98% and a percent solids of 36.06%.

KEMRON submitted one (1) gallon of the RHD slurry at approximately 10% solids to WaterSolve located in Caledonia, MI to identify the most effective polymer and dosage for the site material. WaterSolve determined a single product application of Solve 137 at a dosage of 2.9 lb/dry-ton produced the best floc and water clarity. WaterSolve also recommended an increase dosage for mechanical dewatering applications, however KEMRON determined an increase in polymer dosage significantly alter the sediment floc or water clarity. KEMRON performed all dewatering evaluations using the recommended polymer does, where applicable.

Crown Belt Press testing was performed on the BPT and BSPT materials. KEMRON performed the Crown Belt press testing using the Red Twill belt filter media provided by National Filter Media. Using 500 mL aliquots, KEMRON conditioned the slurry with the appropriate dosage of polymer. After allowing the material to gravity drain, KEMRON applied three squeezes with each squeeze greater in tension than the previous. Tension was applied manually until either the material began to overflow the belt pair or significant dewatering was observed. The results of testing show both materials produce similar percent solids and were able to pass paint filter. Neither material exhibited strength by UCS or pocket penetrometer. Shear strength was observed to be 1.1 Kg/cm² and 1.6 Kg/cm² in the BPT and BSPT materials, respectively. Belt filter press technology appears to require the use of polymer in order to create a material capable of belt dewatering. The resultant filter cake passed paint filter testing with and without removing the wood waste from the material.

Centrifugation testing was performed on all four material conditions. KEMRON performed the centrifugation testing at 1,500 RPM for a period of 10 minutes. After centrifuging, the RHD and BPS materials exhibited the lowest percent solids. The RHD, BPT, and BSPT materials passed paint filter while the BPS material failed. All materials failed UCS testing and showed no pocket penetrometer strength. Shear strength values ranged from 0.05 Kg/cm² to 0.15 Kg/cm². Centrifugation technology appears to provide multiple options for full scale treatment. Treatment involving centrifugation does not appear to require the use of polymer to create a material that passes paint filter and the removal of wood waste does not appear required. However, polymer treatment does suggest to further increase the percent solids of the sediment material.

Filter Press testing was conducted at a positive pressure of 100 psi. Positive pressure was applied until air breakthrough occurred or the recovery of liquid ceased. Filter press tests were performed using a Micronics Filter Cloth Style 9844. Results of the filter press tests show that the RHD and BPS materials achieved the highest percent solids compared to the BPT and BSPT materials. The BPT and BSPT materials also failed paint filter testing. The BPS material produced the highest percent solids however, the air breakthrough time of 73 minutes was also the longest. In the laboratory setting, the Baroid filter press simulation did not show to be as effective as some other technologies when polymer treatment was used. The resultant filter cakes did not pass paint filter and therefore not recommended for offsite transportation and disposal. Treatments with the baroid filter press not utilizing polymer treatment show the better treatment effectiveness when the wood waste was removed from the material. However, the filter cake still passed the paint filter test with the wood waste in the material. KEMRON only performed Baroid filter press testing at one pressure of 100psi using one filter media. Historically, KEMRON simulates pressures ranging from 75 psi to 100 psi. Evaluating different pressures or filter media may provide different results than observed in this treatability study.

GeoTube technology shows the ability to effectively dewater the site sediment resulting in a sediment material capable of being transported for offsite disposal (i.e. passing paint filter). RDT testing was performed on the BPT and BSPT materials to evaluate the quickly screen for polymer effectiveness. KEMRON also performed GDT testing on the BPT and BSPT materials. After allowing 15 gallons of test slurry to drain for 24 hours, the materials passed paint filter at a percent solids of 35.21% and 46.21% for the BPT and BSPT materials, respectively. Neither material exhibited strength by pocket penetrometer or UCS testing. However, the BPT and BSPT materials showed a shear strength of 0.15 Kg/cm² and 0.10 Kg/cm², respectively.

Gravity drainage testing was conducted on the FFBU-VN-Composite material at the as received moisture content to evaluate the reduction in moisture that may be achieved by allowing the material to drain while stockpiled during field operations. KEMRON allowed a 1,000 g aliquot of material to gravity drain for 24 hours. After 24 hours the material failed paint filter testing and did not exhibit any pocket penetrometer or shear strength. The percent solids was increased from 36.06% to 39.70%. The results of this treatability study does not reveal the material drains sufficiently in 24 hours to meet the required criteria for off site disposal. Based on the behavior of the material during the treatability study, gravity drainage does not appear to be an effective dewatering technology for off site disposal.

KEMRON evaluated the ability of potential readily available reagents and addition rates capable of improving the physical properties of the site material, mainly passing paint filter and reducing any free liquids in the sediment while maintaining a relatively soil like consistency and a minimal increase in treated material volume. KEMRON evaluated Type I Portland cement and LKD at addition rates of 4%, 8%, 12%, 16%, and 20%. Results indicate the mixtures

utilizing Portland cement reduce the amount of free liquid more effectively than the LKD. All Portland cement mixture passed paint filter testing after 24 hours of curing. The pH testing indicated the treated material pH may increase with extended curing. All treated material exhibited a pH of greater than 12.5 s.u. after 7 days of curing. Performing ex-situ solidification of the mechanically dredged sediments appears to achieving a material capable of being transported for disposal with an addition rate of 4% Portland cement. The amended material demonstrated improved physical characteristics and pass paint filter testing. However, solidification increase the volume of material for disposal. An advantage to the solidification treatment is that water treatment/management is not expected to be needed as it potentially would be required for other dewatering technologies. An addition of 4% Portland cement showed an approximate 4% increase in soil volume. Increasing the addition rate will also increase the volume of material. The pH of the solidified sediment material was below 12.5 s.u. after one day of curing. However, after additional curing, the pH increased to 12.51 s.u. in the 4% Portland cement mixture. This suggests that the material may require hazardous disposal rather than non-hazardous disposal.

This report should be reviewed in its entirety including all attachments prior to making decisions concerning a remedial approach. This study is intended to suggest what will occur in the field but does not guarantee the same results.

Tables

**AMEC FOSTER WHEELER
PENOBSCOT RIVER DEWATERING
KEMRON PROJECT No. SH0661**

**TABLE 1
UNTREATED PHYSICAL PROPERTIES TESTING**

TESTING PARAMETER	TEST METHOD	UNIT	SAMPLE ID
			FFBU-VN-Composite
Moisture Content	ASTM D2216		
ASTM Moisture Content		%	177.32
Percent Solids		%	36.06
Loss on Ignition (Organic Content)	ASTM D2974		
Average Moisture Content		%	178.70
Average Loss on Ignition		%	13.98
Bulk Unit Weight	ASTM D7263	pcf	79.6
Atterburg Limits	ASTM D4318 Method B		
Liquid Limit			60
Plastic Limit			32
Plasticity Index			28
Particle Size Distribution	ASTM D422		
Gravel		%	0.3
Sand		%	13.9
Silt		%	73.2
Clay		%	12.6
Sample Description	ASTM D2487		Dark brown elastic silt
Sample Classification	ASTM D2487		MH

Notes:

% = Percent

pcf = pounds per cubic foot

Sample descriptions based on the Unified Classification System.

Sample color determined by the Munsell Soil Color Charts.

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Sample Identification	Feed Volume (mL)	Gravity Drain Effluent Collected (mL)	Belt Tension (lbs)	Effluent Collected (mL)	Summary of Critical Filter Press Testing			Cake Evaluations						
					ASTM D2216	ASTM D7263	Cake Pocket Penetrometer (TSF)	Cake Shear Strength (Kg/cm ²)	Paint Filter Test (Pass/Fail)	ASTM D854	Unconfined Compressive Strength ASTM D2166			
					Cake Percent Solids (%)	Cake Density (lb/ft ³)				Specific Gravity	Moisture Content (%)	Bulk Density (lb/ft ³)	Dry Density (lb/ft ³)	UCS (lb/in ²)
DEW-SED-02-RHD*														
DEW-SED-02-BPT	500	350	99	56	46.79	85.2	0.0	1.6	Pass	2.62	113.82	85.0	39.8	0.9
			136	65										
			207	75										
DEW-SED-02-BPS*														
DEW-SED-02-BSPT	500	350	76	45	46.66	84.4	0.0	1.1	Pass	2.63				F
			130	50										
			202	56										

Notes:
* = Testing not conducted on Raw Hydraulic Dredge and Bulk Pre-screened material due to no filter cake forming during gravity drain procedure
Testing conducted using Red Twill belt press material provided by National Filter Media
TSF=tons per square foot
psi=pounds per square inch
% = percent
Kg/cm²=kilograms per square centimeter
mL=milliliters
min=minutes
lbs/ft³=pounds per cubic foot
Shear Strength measured using a laboratory vane shear apparatus
F = Failed, Sample fails under its own weight
RHD = Raw Hydraulic Dredge
BPT = Bulk Polymer Treatment
BPS = Bulk Pre-Screening
BSPT = Bulk Screening Polymer Treatment

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Sample Identification	Rotational Speed (rpm)	Feed Volume (mL)	Testing Duration (min)	Effluent Collected (mL)	Summary of Filter Testing			Cake Evaluations						
					ASTM D2216	ASTM D7263	Cake Pocket Penetrometer (TSF)	Cake Shear Strength (Kg/cm ²)	Paint Filter Test (Pass/Fail)	ASTM D854	Unconfined Compressive Strength ASTM D2166			
					Cake Percent Solids (%)	Cake Density (lb/ft ³)				Specific Gravity	Moisture Content (%)	Bulk Density (lb/ft ³)	Dry Density (lb/ft ³)	UCS (lb/in ²)
DEW-SED-03-RHD	1,500	1,000	10	820	41.13	82.1	0.0	0.05	Pass	2.61				F
DEW-SED-03-BPT	1,500	1,000	10	850	42.99	80.9	0.0	0.15	Pass	2.60				F
DEW-SED-03-BPS	1,500	1,000	10	822	40.60	81.5	0.0	0.10	Fail	2.61				F
DEW-SED-03-BSPT	1,500	1,000	10	850	41.70	80.7	0.0	0.15	Pass	2.61				F

Notes:

- TSF=tons per square foot
- psi=pounds per square inch
- % = percent
- Kg/cm²=kilograms per square centimeter
- mL=milliliters
- min=minutes
- lbs/ft³=pounds per cubic foot
- Shear Strength measured using a laboratory vane shear apparatus
- F = Failed, Sample fails under its own weight
- RHD = Raw Hydraulic Dredge
- BPT = Bulk Polymer Treatment
- BPS = Bulk Pre-Screening
- BSPT = Bulk Screening Polymer Treatment

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Sample Identification	Test Pressure (psi)	Feed Volume (mL)	Breakthrough Time (min)	Effluent Collected (mL)	Summary of Filter Press Testing		Cake Evaluations							
					ASTM D2216	ASTM D7263	Cake Pocket Penetrometer (TSF)	Cake Shear Strength (Kg/cm ²)	Paint Filter Test (Pass/Fail)	Specific Gravity	Unconfined Compressive Strength ASTM D2166			
					Cake Percent Solids (%)	Cake Density (lb/ft ³)					Moisture Content (%)	Bulk Density (lb/ft ³)	Dry Density (lb/ft ³)	UCS (lb/in ²)
DEW-SED-04-RHD	100	400	57	355	47.06	78.1	0.0	1.0	Pass	2.61				F
DEW-SED-04-BPT	100	400	2	318	34.87	82.2	0.0	0.0	Fail	2.62				F
DEW-SED-04-BPS	100	400	73	365	52.48	85.8	0.0	0.9	Pass	2.61	90.75	85.5	44.8	1.2
DEW-SED-04-BSPT	100	400	2	320	32.56	72.4	0.0	0.0	Fail	2.62				F

Notes:

All testing was performed using Micronics Polypropylene Mono/Multi Satin 3.3-4.4 CFM Filter Cloth Style 8944
 TSF=tons per square foot
 psi=pounds per square inch
 % = percent
 Kg/cm²=kilograms per square centimeter
 mL=milliliters
 min=minutes
 lbs/ft³=pounds per cubic foot
 Shear Strength measured using a laboratory vane shear apparatus
 F = Failed, Sample fails under its own weight
 RHD = Raw Hydraulic Dredge
 BPT = Bulk Polymer Treatment
 BPS = Bulk Pre-Screening
 BSPT = Bulk Screening Polymer Treatment

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TABLE 5

Sample Identification	Feed Volume (Gallons)	Summary of Geotextile Fabric Testing Evaluations									
		ASTM D2216	ASTM D7263	Cake Pocket Penetrometer (TSF)	Cake Shear Strength (Kg/cm ²)	Paint Filter Test (Pass/Fail)	Specific Gravity	Unconfined Compressive Strength ASTM D2166			
		Cake Percent Solids (%)	Cake Density (lb/ft ³)					Moisture Content (%)	Bulk Density (lb/ft ³)	Dry Density (lb/ft ³)	UCS (lb/in ²)
DEW-SED-05-RHDGDT	15	35.21	80.8	0.0	0.15	Pass	2.61				F
DEW-SED-05-BPSGDT	15	46.21	83.8	0.0	0.10	Pass	2.63				F

Notes:

TSF=tons per square foot

psi=pounds per square inch

% = percent

Kg/cm²=kilograms per square centimeter

lbs/ft³=pounds per cubic foot

Shear Strength measured using a laboratory vane shear apparatus

F = Failed, Sample fails under its own weight

RHD = Raw Hydraulic Dredge

BPS = Bulk Pre-Screening

GDT = GeoTube Dewatering Test

AMEC FW
PENOBSCOT RIVER
DEWATERING STUDY
KEMRON PROJECT NO.
SH0661

Sample Identification	Initial Soil Mass (g)	Final Soil Mass (g)	Summary of Gravity Drainage Testing		Cake Evaluations		
			Effluent Collected (mL)	ASTM D2216	Cake Pocket Penetrometer (TSF)	Cake Shear Strength (Kg/cm ²)	Paint Filter Test (Pass/Fail)
				Cake Percent Solids (%)			
DEW-SED-06	985.11	892.66	87	39.70	0.0	0.00	Fail

Notes:

Gravity Drainage Testing conducted for 24 Hours

g = grams

mL = milliliter

TSF=tons per square foot

% = percent

Kg/cm²=kilograms per square centimeter

Shear Strength measured using a laboratory vane shear apparatus

AMEC FW
PENOBSCOT RIVER DEWATERING STUDY
KEMRON Project No. SH0661

TABLE 7

Summary of Solidification Evaluations
Mixture Designs, Volumetric Expansion, Bulk Specific Gravity, Moisture Content, pH, Paint Filter

KEMRON Sample Number	Untreated Material Type	Reagent Type	Reagent Addition % by Wet Soil wt.	Cure Day	Volumetric Expansion (%)	Bulk Unit Weight (lb/ft ³)	Bulk Specific Gravity SM2710F	Moisture Content ASTM D2216		pH EPA Method 9045 pH (S.U.)	Paint Filter Testing EPA Method 9095 Pass/Fail
								Moisture Content (%)	Percent Solids (%)		
0661-001	FFBU-VN-Composite	Type I Portland Cement	4.0	1	4.21	80.7	1.29	161.77	38.21	12.11	Pass
				2		80.0	1.28	156.88	38.93	12.14	
				3	4.25	79.7	1.28	154.06	39.36	12.27	
				7		80.1	1.28	155.65	39.12	12.51	
0661-002	FFBU-VN-Composite	Type I Portland Cement	8.0	1	5.28	81.8	1.31	138.02	42.01	12.36	Pass
				2		81.8	1.31	139.98	41.67	12.42	
				3	4.18	81.4	1.31	146.08	40.64	12.57	
				7		81.9	1.31	134.39	42.67	12.93	
0661-003	FFBU-VN-Composite	Type I Portland Cement	12.0	1	5.95	83.8	1.34	129.34	43.60	12.40	Pass
				2		84.2	1.35	125.96	44.26	12.45	
				3	6.47	84.1	1.35	128.02	43.86	12.65	
				7		83.7	1.34	122.82	44.88	12.96	
0661-004	FFBU-VN-Composite	Type I Portland Cement	16.0	1	8.38	85.1	1.36	110.05	47.71	12.46	Pass
				2		85.0	1.36	114.03	46.72	12.57	
				3	8.74	84.9	1.36	115.00	46.51	12.72	
				7		85.1	1.36	113.37	46.87	13.01	
0661-005	FFBU-VN-Composite	Type I Portland Cement	20.0	1	11.31	87.5	1.40	105.35	48.71	12.40	Pass
				2		86.8	1.39	102.91	49.28	12.53	
				3	10.16	87.1	1.40	101.71	49.58	12.70	
				7		87.1	1.40	100.03	50.00	13.04	
0661-006	FFBU-VN-Composite	Lime Kiln Dust	4.0	1		78.2	1.25	152.32	39.63	12.32	Fail
				2		77.3	1.24	153.07	39.51	12.38	Fail
				3	5.50	79.0	1.27	154.21	39.34	12.51	Fail
				7		78.9	1.26	151.58	39.75	12.72	Fail
0661-007	FFBU-VN-Composite	Lime Kiln Dust	8.0	1		80.3	1.29	139.67	41.73	12.47	Fail
				2		79.8	1.28	137.74	42.06	12.49	Fail
				3	7.50	80.3	1.29	139.86	41.69	12.65	Fail
				7		80.0	1.28	128.01	43.88	12.89	Fail
0661-008	FFBU-VN-Composite	Lime Kiln Dust	12.0	1		81.9	1.31	124.38	44.57	12.43	Fail
				2		81.7	1.31	125.96	44.26	12.51	Fail
				3	7.97	81.5	1.31	124.03	44.64	12.62	Fail
				7		81.9	1.31	123.95	44.65	12.91	Fail
0661-009	FFBU-VN-Composite	Lime Kiln Dust	16.0	1		83.9	1.34	114.14	46.70	12.47	Fail
				2		83.7	1.34	113.66	46.80	12.51	Fail
				3	9.62	84.4	1.35	114.05	46.72	12.55	Fail
				7		83.8	1.34	109.93	47.64	13.03	Fail
0661-010	FFBU-VN-Composite	Lime Kiln Dust	20.0	1		85.3	1.37	105.05	48.77	12.50	Fail
				2		85.5	1.37	106.06	48.53	12.54	Fail
				3	13.19	86.5	1.39	104.38	48.96	12.66	Fail
				7		85.7	1.37	103.19	49.22	13.05	Pass

Notes:
% = Percent
Wt= Weight
s.u. = standard units
lb/ft³ = pounds per cubic foot
= Grey Shading, Testing not conducted

Appendix A: Material Chain of Custody

Environmental Analysis Request/Chain of Custody

Client: Amec Foster Wheeler / 511 Congress St. Suite 200 Portland, ME 04101				Matrix				Analyses Requested						For Lab Use Only							
Project Name/#: USDC Penobscot		PN #: 3616166052.02A.0531		<input type="checkbox"/> Tissue		<input type="checkbox"/> Ground		<input type="checkbox"/> Surface		Preservation Codes						SF #: _____					
Project Manager: Rod Pendleton		P.O. #:		<input type="checkbox"/> Sediment		<input type="checkbox"/> Potable		<input type="checkbox"/> NPDES								SCR #: _____					
Sampler: BW/MW/TG/JC/DF		PWSID #:		<input type="checkbox"/> Soil		<input type="checkbox"/> Water		<input type="checkbox"/> Other: _____													
Phone #:		Quote #:		<input checked="" type="checkbox"/> Composite		<input type="checkbox"/> NPDES		<input type="checkbox"/> Tissue													
State where samples were collected: ME		For Compliance: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Collection		Grab		Composite		Soil		Water		Other: _____		Total # of Containers		Bulk Sediment, 5 gal pail, 4 deg C		Remarks	
Sample Identification		Date																				Time
1	FFBU_60WCH_BULKSEDIMENT_092817	092817			X	X				3	X										
2	VN_25WCH_BULKSEDIMENT_092818	092817			X	X				4	X										
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					
Turnaround Time Requested (TAT) (please check):				Standard <input type="checkbox"/>		Rush <input type="checkbox"/>		Relinquished by:		Date		Time		Received by:		Date		Time			
(Rush TAT is subject to laboratory approval and surcharges.)								<i>Kamryn Lasey</i>		9/30/17		1220		<i>[Signature]</i>		9-30-17		1220			
Notes:								<i>R. Rios</i>		10-6-17		0845		<i>[Signature]</i>		10-6-17		0845			
FedEx # _____ AFW Courier _____								Relinquished by:		Date		Time		Received by:		Date		Time			
# of Coolers _____								Relinquished by:		Date		Time		Received by:		Date		Time			
Sample disposal - Hold Equipment Blanks 1-4 until 30 days after delivery of report								Relinquished by:		Date		Time		Received by:		Date		Time			
Report and EDD to: denise.king@amecfw.com / 978-692-6633								Relinquished by:		Date		Time		Received by:		Date		Time			
Data Package Options (please check if required)				High <input type="checkbox"/>		Standard <input checked="" type="checkbox"/>		Relinquished by Commercial Carrier:				Temperature upon receipt _____ °C									
EDD Required? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				If yes, format: _____		UPS _____ FedEx _____ Other _____															

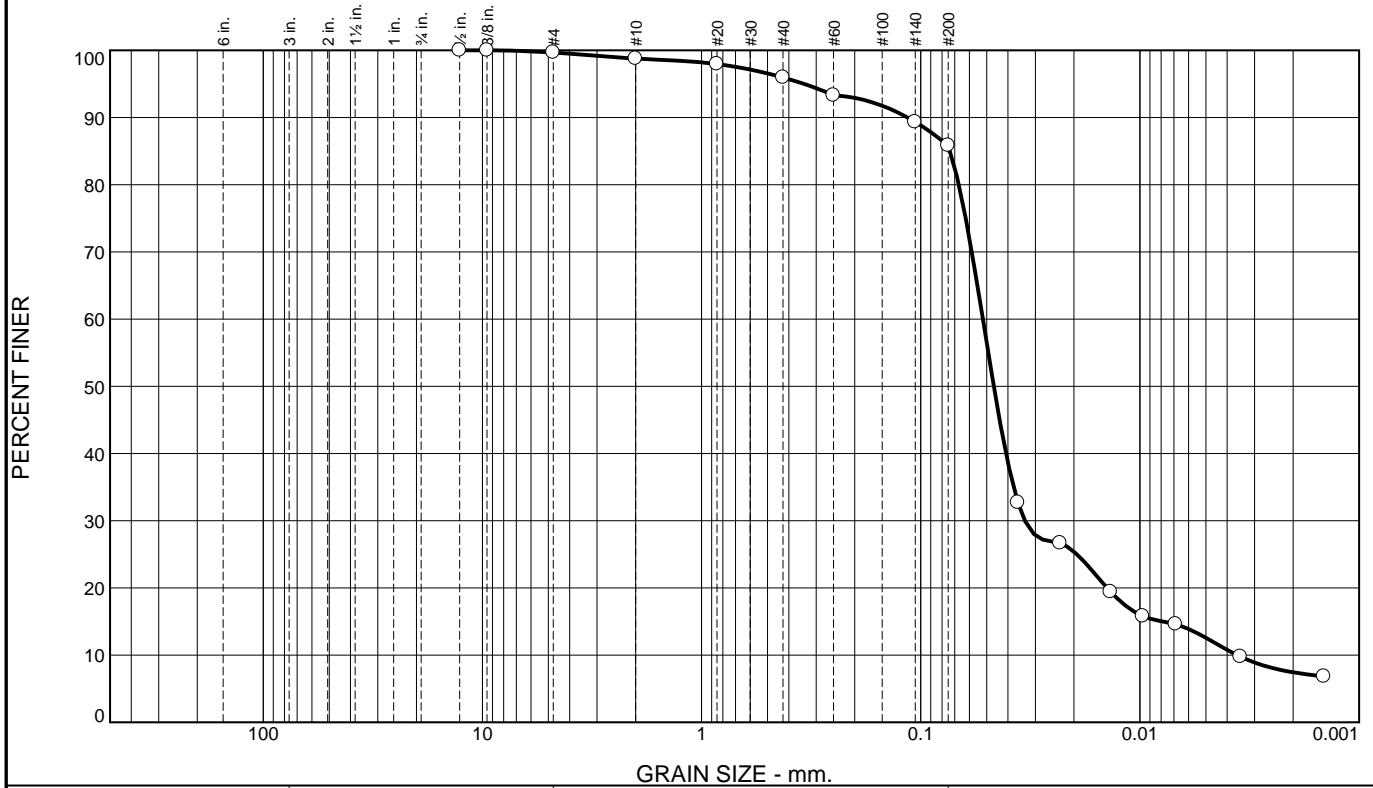
Environmental Analysis Request/Chain of Custody

Amec Foster Wheeler - NC

Client: Amec Foster Wheeler / 511 Congress St. Suite 200 Portland, ME 04101				Matrix		Analyses Requested				For Lab Use Only							
Project Name#: USDC Penobscot		PN #: 3616166052.02A.0531		<input type="checkbox"/> Soil	<input type="checkbox"/> Sediment	<input type="checkbox"/> Tissue	Preservation Codes				SF #: _____						
Project Manager: Rod Pendleton		P.O. #: C012505850		<input type="checkbox"/> Potable	<input type="checkbox"/> Ground	<input checked="" type="checkbox"/> Surface					SCR #: _____						
Sampler: MW/DF/JC		PWSID #:		<input type="checkbox"/> Water	<input type="checkbox"/> NPDES	<input type="checkbox"/> Other: _____											
Phone #:		Quote #:		Total # of Containers		Bulk River Water - See Client work order for analysis				Preservation Codes							
State where samples were collected: <u>ME</u>		For Compliance: Yes <input type="checkbox"/> No <input type="checkbox"/>								H = HCl		T = Thiosulfate		Remarks			
						N = HNO ₃		B = NaOH									
						S = H ₂ SO ₄		P = H ₂ PO ₄									
						O = Other											
Collection		Sample Identification															
		Date	Time	Grab	Composite												
		1	1630	X	X	10	X										
		2	1530	X	X	10	X										
		3															
		4															
		5															
		6															
		7															
		8															
		9															
		10															
		11															
		12															
		13															
		14															
		15															
Turnaround Time Requested (TAT) (please check):				Standard <input type="checkbox"/> Rush <input checked="" type="checkbox"/>		Relinquished by:		Date		Time		Received by:		Date		Time	
(Rush TAT is subject to laboratory approval and surcharges.)						Amec Foster Wheeler		9/30/17		1220		R. King		9-30-17		1220	
Notes:						Relinquished by:		Date		Time		Received by:		Date		Time	
FedEx # _____ AFW Courier _____				# of Coolers _____		R. King		10-6-17		0845		J. King		10-6-17		0845	
Sample disposal - Hold Equipment Blanks 1-4 until 30 days after delivery of report				Report and EDD to: denise.king@amectw.com / 978-692-6633		Relinquished by:		Date		Time		Received by:		Date		Time	
						Relinquished by:		Date		Time		Received by:		Date		Time	
Data Package Options (please check if required)				High <input type="checkbox"/> Standard <input checked="" type="checkbox"/>		Relinquished by Commercial Carrier:		Date		Time		Received by:		Date		Time	
EDD Required? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				If yes, format: _____		UPS _____ FedEx _____ Other _____		Date		Time		Received by:		Date		Time	
																Temperature upon receipt _____ °C	

Appendix B:
Untreated Physical Properties
Testing Data Sheets

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.9	2.9	10.1	73.2	12.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5	100.0		
0.375	100.0		
#4	99.7		
#10	98.8		
#20	97.9		
#40	95.9		
#60	93.3		
#140	89.3		
#200	85.8		
0.0360 mm.	32.7		
0.0231 mm.	26.7		
0.0136 mm.	19.4		
0.0097 mm.	15.8		
0.0069 mm.	14.6		
0.0035 mm.	9.8		
0.0014 mm.	6.8		

* (no specification provided)

Soil Description

Dark brown elastic silt

Atterberg Limits

PL= 32 LL= 60 PI= 28

Coefficients

D₉₀= 0.1150 D₈₅= 0.0735 D₆₀= 0.0521
D₅₀= 0.0464 D₃₀= 0.0335 D₁₅= 0.0079
D₁₀= 0.0036 C_u= 14.46 C_c= 5.98

Classification

USCS= MH AASHTO= A-7-5(28)

Remarks

Sample Number: FFBU-VN-Composite

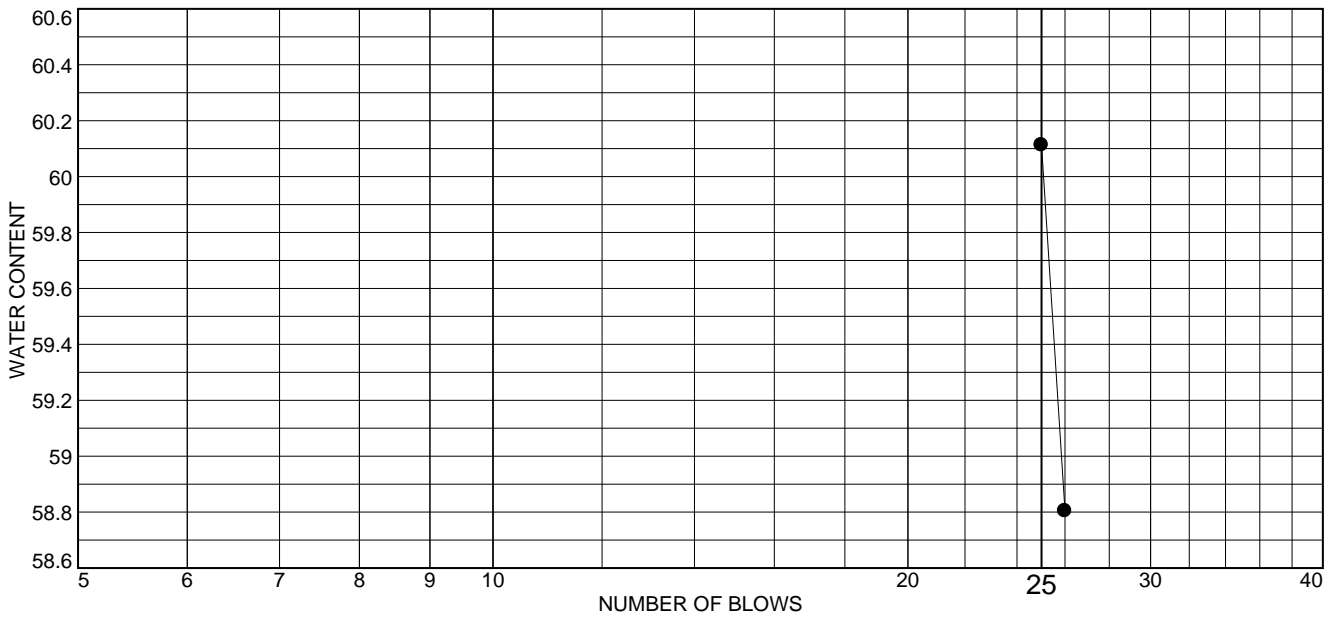
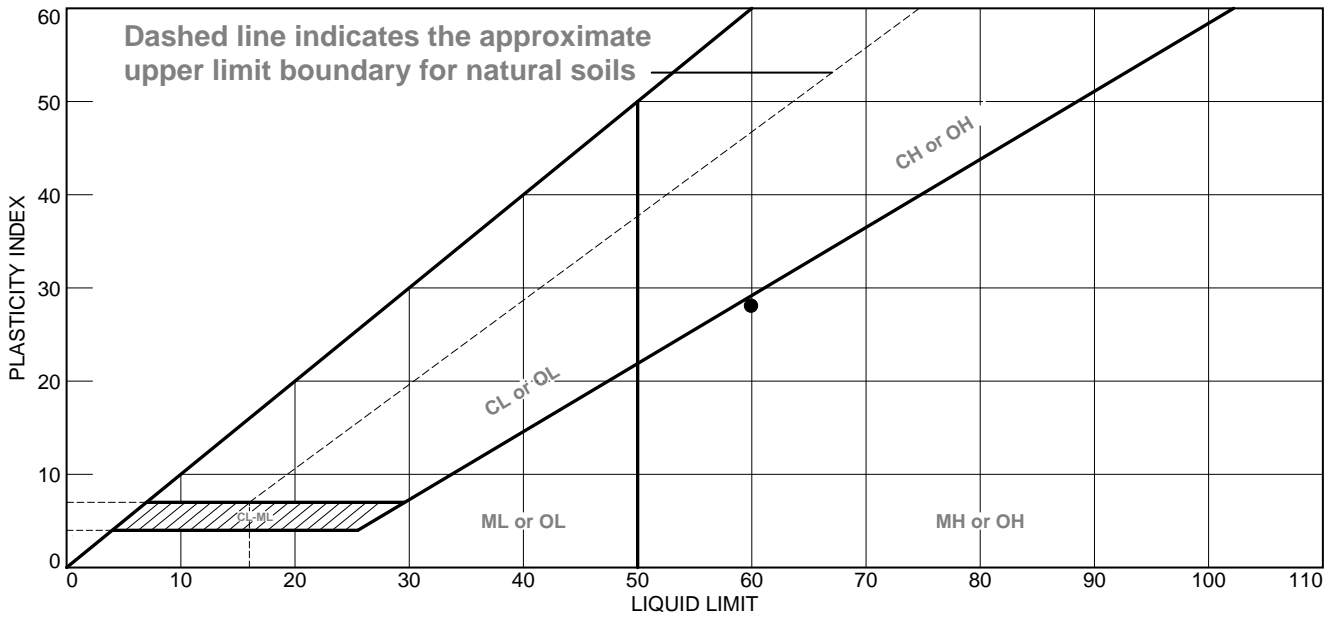
Date: 10/10/2017

KEMRON Environmental Services Inc. Atlanta, Georgia	Client: AMEC Foster Wheeler Project: Penobscot River Dewatering Project No: SH0661
Figure B694_GR	

Tested By: JDM

Checked By: TAJ

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Dark brown elastic silt	60	32	28	95.9	85.8	MH

Project No. SH0661 **Client:** AMEC Foster Wheeler
Project: Penobscot River
 Dewatering
Sample Number: FFBU-VN-Composite
KEMRON Environmental Services Inc.
Atlanta, Georgia

Remarks:

Figure B694_AT

LOSS ON IGNITION
(ORGANIC CONTENT)
ASTM D2974

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: FFUB-VN-Composite Sediment
TESTING DATE: 10/10/17
TESTED BY: CKB
TRACKING CODE: B694_LI

MOISTURE CONTENT / LOSS ON IGNITION			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	62.4069 g	68.5818 g	63.3500 g
3. WT WET SOIL + TARE	114.0064 g	117.5013 g	114.0186 g
4. WT DRY SOIL + TARE	80.8853 g	86.2101 g	81.4880 g
5. WT WATER, W _w	33.121 g	31.291 g	32.531 g
6. WT DRY SOIL, W _s	18.478 g	17.628 g	18.138 g
7. WT FINAL SOIL + TARE	78.2911 g	83.7908 g	78.9178 g
8. WT FINAL SOIL, W _f	15.884 g	15.209 g	15.568 g
9. WT ORGANICS, W _o	2.594 g	2.419 g	2.570 g
10. MOISTURE CONTENT(ASTM)	179.24 %	177.51 %	179.35 %
11. LOSS ON IGNITION	14.04 %	13.72 %	14.17 %
12. AVERAGE MOISTURE CONTENT	178.70 %		
13. AVERAGE LOSS ON IGNITION	13.98 %		

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: FFUB-VN-Composite Sediment
TESTING DATE: 10/10/17
TESTED BY: CKB
TRACKING CODE: B694_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0444 g	1.0894 g	1.0455 g
3. WT WET SOIL + TARE	33.4190 g	35.9303 g	30.3218 g
4. WT DRY SOIL + TARE	12.7537 g	13.5976 g	11.6167 g
5. WT WATER, W _w	20.6653 g	22.3327 g	18.7051 g
6. WT DRY SOIL, W _s	11.7093 g	12.5082 g	10.5712 g
7. ASTM MOISTURE CONTENT	176.49 %	178.54 %	176.94 %
8. PERCENT SOLIDS	36.17 %	35.90 %	36.11 %
9. AVERAGE ASTM MOISTURE CONTENT	177.32 %		
10. AVERAGE PERCENT SOLIDS	36.06 %		

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: FFUB-VN-Composite Sediment
TESTING DATE: 10/10/17
TESTED BY: CKB
TRACKING CODE: B694_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)	18.12 g	18.12 g	18.12 g
3. WT OF MOLD + SOIL	280.44 g	280.65 g	280.98 g
4. WT OF WET SOIL, W	262.32 g	262.53 g	262.86 g
5. DIAMETER OF SPECIMEN, D	2.00 in	2.00 in	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in	4.00 in	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³	12.57 in ³	12.57 in ³
8. BULK UNIT WEIGHT	79.5 pcf	79.6 pcf	79.7 pcf
9. BULK SPECIFIC GRAVITY	1.3	1.3	1.3
10. AVERAGE BULK UNIT WEIGHT	79.6 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.3		

Appendix C:
WaterSolve Polymer Evaluation
Report

DEWATERING PERFORMANCE TRIAL
KEMRON ENVIRONMENTAL SERVICES,
INC Penobscot River DEWATERING

For:
James Moyer
KEMRON ENVIRONMENTAL SERVICES, INC
1349-A Ellsworth Industrial Blvd.
Atlanta, GA 30318

By:
WaterSolve, LLC
5031 68th St., SE
Caledonia, MI 49316
www.gowatersolve.com
616-575-8693



October 24, 2017

1. Scope of Work

WaterSolve, LLC was tasked to perform a Geotube® dewatering performance trial and cone tests on a sample labelled FFBU-VN-SLURRY. The objectives of these dewatering trials were to identify chemical conditioning program(s), identify polymer flocculent(s), and dosing rate(s) for a potential Geotube® dewatering application. The objectives of subsequent cone tests were to measure total solids (TS) of the flocculated, contained, and dewatered residual after passage through the GT500D Geotube® fabric.

2. Materials & Methods

A gallon sample collected from the Penobscot River dewatering project was received at WaterSolve's Laboratory (Caledonia, MI) on October 13, 2017. Samples of residual were homogenized and 150-mL samples were placed in graduated, glass jars.

Several polymers (emulsions) were "made-down" at a 0.5% concentration for this dewatering trial. Polymer (67 to 200-ppm) was added to a sample with a 10-mL plastic syringe and moderately tumbled five to seven times. Observations of water release rate, water clarity, and flocculent appearance were recorded on appropriate data sheets (Appendix A). Polymer(s) that flocculated and dewatered these residuals most effectively were re-evaluated with lower doses in order to isolate the most efficient dewatering and flocculating polymer(s). A Hach DR 2800 was used to measure TSS (Total Suspended Solids) after the samples were poured through the Geotube® GT500D fabric with a measurable limit of up to 750-mg/L suspended solids.

Percent total solids (dry weight) of the initial residual sample and dewatered cake sample (captured on GT500D Geotube® fabric) were measured.

3. Results

Chemical conditioning with 137 was determined to flocculate and dewater the residual most effectively compared to the other products (Appendix A). Water release volume and flocculent appearance were excellent when a 4-mL dose of Solve 137 (133-ppm, 2.9-lbs/dry ton) was added to a 150-mL sample.

The provided sample was 9.3-percent dry weight solids. When a 1,000-mL sample was conditioned with Solve 137 and passed through the Geotube® GT500D fabric, percent solids increased to 29.8-percent after sixty minutes of drying time (Appendix C). From this 1,000-mL conditioned sample, 650-mL and 850-mL of water was released in minute and sixty minutes, respectively, after passage through the fabric. The TSS of the filtrate was 35-mg/L.

4. Recommendations

We recommend a product application of Solve 137 (2.9-lbs/dry ton dose) for dewatering the “FFBU-VN-SLURRY” in a Geotube® application in order to pass a paint filter test for subsequent disposal. Solve 137 is required to be made-down at 0.5-percent with a polymer make-down unit or aged in batch/feed tanks prior to injection into the residual line. Moderate to high mixing energy is required between the polymer introduction points and the Geotube® containers (e.g., three to five bends in the discharge line and/or inline static mixers). We would anticipate an increase in the Solve 137 dosage, possibly up to 5% more, if mechanical (belt filter press or centrifuge) technologies are used for dewatering.


Expected time to being able pass a Paint Filter Test is unpredictable in a Geotube® container from these bench-scale experiments. An onsite or laboratory hanging bag or Geotube® dewatering trial (GDT) may be used and is recommended if the timeline for achieving project goals of dry weight solids and if Geotube® filtrate characteristics are in question for this application. Additional dewatering evaluations over time are recommended if project objectives for consolidation are greater than passing a Paint Filter Test.

Due to potential variability of the material, daily on-site testing and chemical conditioning verification are recommended during pumping operations.

WaterSolve LLC does not make any implied warranty of any kind. Customer is solely responsible for determining the means and methods of the Product(s) use and whether or not Product(s) is suitable or desirable for Customer's intended uses. Customer agrees not to make any claim against Watersolve LLC based upon, or arising out of or relating to any advice or any technical information given to the Customer by Watersolve LLC for information purposes only and shall indemnify and hold Watersolve LLC harmless from any and all claims asserted by any third party arising out of or related to the Customer's use of Watersolve LLC's Product(s). Any technical information if given by Watersolve LLC to the Customer is without any consideration and use of such information by Customer be at consumer's own risk and shall not relieve the Customer from ultimate liability to ensure Product(s) are used properly per Project and Product(s) specifications.

Appendix A – Dewatering Sheets

Page _____ of _____



WaterSolve, LLC
Clearly thinking about your water treatment!

DEWATERING PERFORMANCE TRIAL

Customer: KEMRON
Location: PENOBSCOT
Equipment in Service:

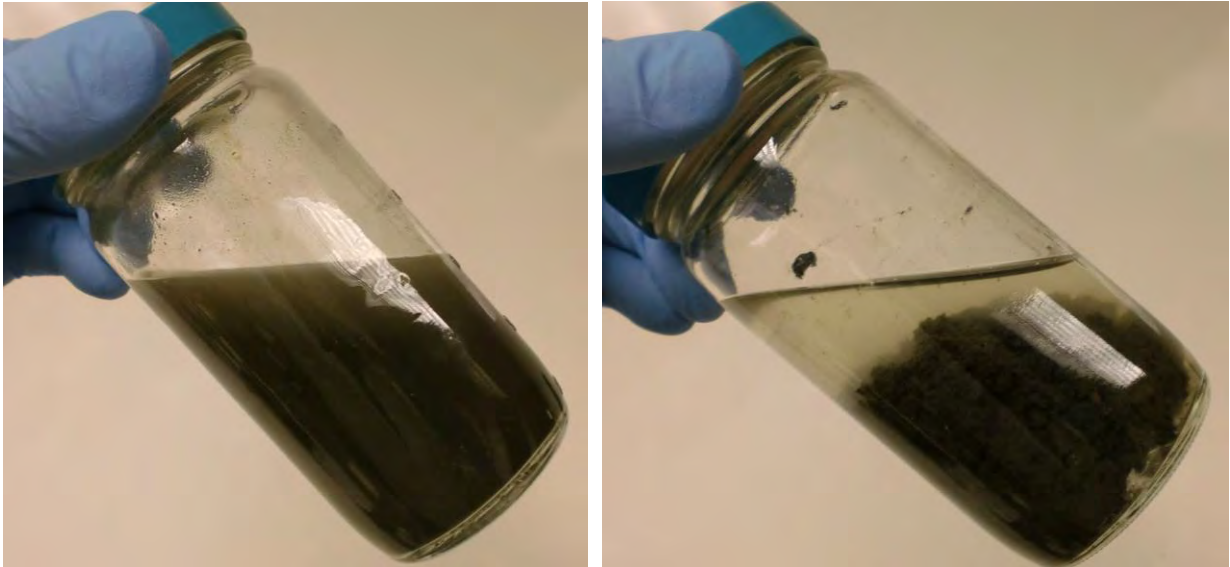
Date: 10/23/17
Analyst: Dan W

1=Best 6=Worst

Jar Number	Polymer Name	Polymer Dosage (mL)	Sample Size (mL)	Water Rel. Rate (1-6)	Water Clarity (1-6)	Floc Appearance (1-6)	Comments
Polymer make-down concentration = <u>0.5</u> %							
Dilution of test sample = <u>Ø</u>							
1							
2	9248	2mL	150mL	4	2	4	
3	9248	4mL	150mL	2-3	1-2	2-3	
4	9248	6mL	150mL	1-2	1-2	1-2	GOOD FLOC FOR GEOTUBE APPLICATION
5	9370	2mL	150mL	4	4	4	
6	9370	4mL	150mL	6	6	6	
7	9700	6mL	150mL	4	6	6	
8	9248	5mL	150mL	2	1-2	2	
9	9222	5mL	150mL	2-3	2-3	2-3	
10	9253	5mL	150mL	2	1-2	2-3	
11	9244	5mL	150mL	2	1-2	2	
12	127	5mL	150mL	1-2	1-2	2	
13	137	5mL	150mL	1-2	2	1-2	over feed
14	137	3mL	150mL	2	1-2	2	
15	137	4mL	150mL	1-2	1-2	1-2	+ Best Product so far
16	2130	4mL	150mL	3	2	3	
17	2160	4mL	150mL	2	1-2	2	
18	2160	4mL	150mL	2	2	3	
19	2180	4mL	150mL	1-2	1-2	2-3	2ND BEST
20							
21	137	4mL	150mL	1-2	1-2	1-2	Recommended Product AND RATE (137/4m)
22							
23							
24							
25							
26							
27							
28							

Cone Test / RDT: 100 mL sample conditioned with 27 mL of 137 poured thru GT500D Geotube® filter.
 Filtrate Quality: TSS: 35 mg/L Turbidity: _____ NTU
 Filtrate collected @ 1 min: 650 mL @ 60 min: 800 mL

Appendix B – Photographs



One hundred fifty milliliter sample prior to conditioning (Left). One hundred fifty milliliter sample conditioned with Solve 137 (Right).



A one thousand milliliter sample conditioned with Solve 137 was poured through the GT500D Geotube® fabric. The captured cake (Left) and filtrate (Right) are shown above.

Appendix C – Percent Solids

Total Solids Determination - Percent Dry Weight

Customer Name/Application KEMRON PENOBSCOTT

Date 10/23/19 Technician Dan W Oven Temperature 105°C

Sample ID RAW SAMPLE Dish Number 1 Dilution Ø

Dish (dry) = 47.648 g Dish, Sample (wet) = 151.646 g Dish, Sample (dry) = 57.300 g

Dish, sample (wet) – Dish (dry) = 103.998 (A) Dish, sample (dry) – Dish (dry) = 9.652 (B)

Total Solids $B \div A \times 100 =$ 9.3 % Dry Weight Solids

Sample ID CONE TEST CAKE Dish Number 2 Dilution Ø

Dish (dry) = 48.444 g Dish, Sample (wet) = 167.814 g Dish, Sample (dry) = 84.010 g

Dish, sample (wet) – Dish (dry) = 119.370 (A) Dish, sample (dry) – Dish (dry) = 35.566 (B)

Total Solids $B \div A \times 100 =$ 29.8 % Dry Weight Solids

Sample ID _____ Dish Number _____ Dilution _____

Dish (dry) = _____ g Dish, Sample (wet) = _____ g Dish, Sample (dry) = _____ g

Dish, sample (wet) – Dish (dry) = _____ (A) Dish, sample (dry) – Dish (dry) = _____ (B)

Total Solids $B \div A \times 100 =$ _____ % Dry Weight Solids

Sample ID _____ Dish Number _____ Dilution _____

Dish (dry) = _____ g Dish, Sample (wet) = _____ g Dish, Sample (dry) = _____ g

Dish, sample (wet) – Dish (dry) = _____ (A) Dish, sample (dry) – Dish (dry) = _____ (B)

Total Solids $B \div A \times 100 =$ _____ % Dry Weight Solids

Sample ID _____ Dish Number _____ Dilution _____

Dish (dry) = _____ g Dish, Sample (wet) = _____ g Dish, Sample (dry) = _____ g

Dish, sample (wet) – Dish (dry) = _____ (A) Dish, sample (dry) – Dish (dry) = _____ (B)

Total Solids $B \div A \times 100 =$ _____ % Dry Weight Solids

Appendix D – CHAIN OF CUSTODY RECORD SDS - Available upon request.

CHAIN OF CUSTODY

Work Order: _____

Date: 10/12/17

Page 1 of 1

KEMRON
ENVIRONMENTAL SERVICES
www.KEMRON.com

KEMRON ENVIRONMENTAL SERVICES, INC.
1359-A Elsworth Industrial Boulevard, Atlanta, GA 30318
TEL: (404) 636-0928 FAX: (404) 636-7162

No. of Containers	SAMPLE ID	SAMPLED		GRAB	COMPOSITE	MATRIX	PRESERVATIVE	RECEIVED BY:	DATE/TIME:	RELINQUISHED BY:	DATE/TIME:	PROJECT NAME:	PROJECT No.	PROJECT INFORMATION:	SPECIAL INSTRUCTIONS/COMMENTS:	REMARKS
		DATE	TIME														DATE/TIME:	DATE/TIME:	PROJECT INFORMATION:
1	FBI-VN-Surry	10/12	1030	X		W	vine	James Meyer	10/12 1525	James Meyer	10/12 1525	Pendiscot Dewatering	SH06e1			

Evolution
Polymers

Turnaround Time Request (Business Days): _____

SEND REPORT TO: Jorolan@Kemron.com

Appendix D:
Crown Belt Press Testing Data
Sheets

GRAVITY DRAINAGE AND PRESSURE TEST DATA SHEET

(Crown Press)

PROJECT: Penobscot River Dewatering
PROJECT NO.: SH0661
SAMPLE NO.: DEW-SED-02-BPT
TESTING DATE: 11/15/2017
TESTED BY: JDM
TRACKING CODE: B717_CrownPress

Initial Volume			Gravity Drainage		Pressure Expression		Cake Diameter			
Feed (ml)	Polymer (ml)	Total (ml)	Final Time (min)	Final Gravity Filtrate (ml)	Pressure (lbs)	Effluent Collected (ml)	Axis 1 (in)	Axis 2 (in)	Axis 3 (in)	Axis 4 (in)
500	13.5	513.5	15	350	99	56	5.2845	5.1005	4.8935	4.9915
					136	65				
					207	75				

Measure Cake Solids	Initial Cake Diameter (n)	Final Cake Diameter (in)	Migration Factor
46.79	3.9755	5.0675	1.092

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B717_GS
SAMPLE NO: DES-SED-02-BPT

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	3
3. TEMPERATURE	20.0 °C
4. WT. FLASK & WATER	175.84 g
5. WT. WATER, FLASK & SOIL	205.35 g
6. WT OF SOIL	29.51 g
7. CALIBRATION WATER & FLASK	350.86 g
8. DEAIRED SAMPLE	369.11 g
9. SPECIFIC GRAVITY	2.62
10. CORRECTION FACTOR K	1.0000
11. Gs @ 20 °C	2.62

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-02-BPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B717_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9440 g	0.9534 g	0.9608 g
3. WT WET SOIL + TARE	6.7579 g	10.3259 g	9.5446 g
4. WT DRY SOIL + TARE	3.6760 g	5.2469 g	5.0442 g
5. WT WATER, W _w	3.0819 g	5.0790 g	4.5004 g
6. WT DRY SOIL, W _s	2.7320 g	4.2935 g	4.0834 g
7. ASTM MOISTURE CONTENT	112.81 %	118.30 %	110.21 %
8. PERCENT SOLIDS	46.99 %	45.81 %	47.57 %
9. AVERAGE ASTM MOISTURE CONTENT	113.77 %		
10. AVERAGE PERCENT SOLIDS	46.79 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-02-BPT
TESTING METHOD: EPA 9095

TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B717_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	101.64 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-02-BPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B717_PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DES-SED-02-BPT						
DAY	0						
POCKET PEN	0.0						

UNCONFINED COMPRESSION TEST

ASTM D 2166

PROJECT: Penobscot River Dewatering
 PROJECT No.: SH0661
 SAMPLE No.: DEW-SED-02-BPT
 TESTING DATE: 20-Nov-17
 TESTED BY: JDM

LOADING RATE: 0.0400 in./min
 TRACKING CODE: B717_US

MOISTURE CONTENT (Dry Basis)

1. MOISTURE TIN NO.	
2. WT MOISTURE TIN (tare weight)	111.53 g
3. WT WET SOIL + TARE	193.98 g
4. WT DRY SOIL + TARE	150.09 g
5. WT WATER, W _w	43.89 g
6. WT DRY SOIL, W _s	38.56 g
7. MOISTURE CONTENT, W	113.82 %

SOIL SPECIMEN DIMENSIONS

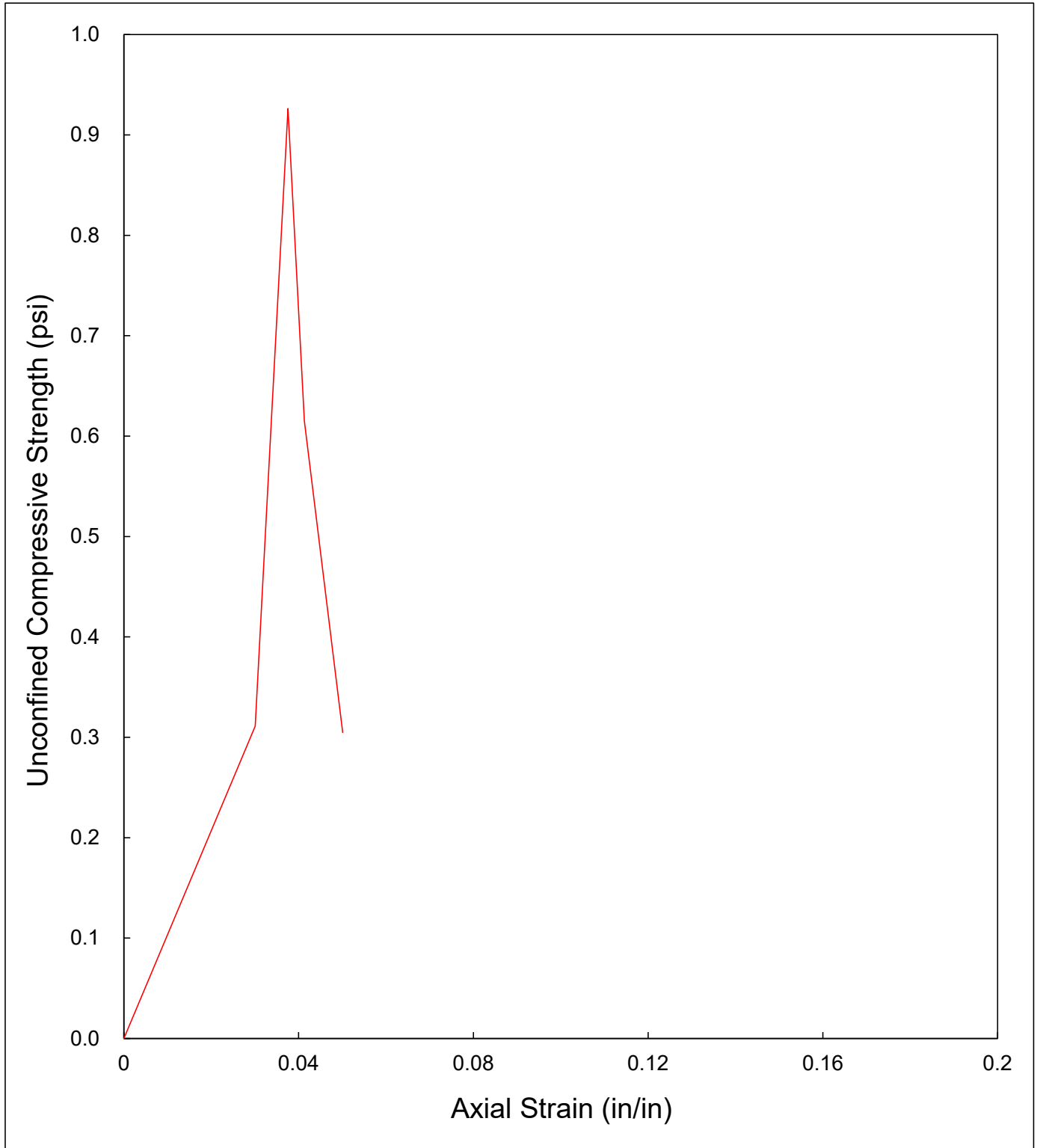
	DIAMETER	LENGTH
No. 1	2.02 in.	4.13 in.
No. 2	2.00 in.	3.91 in.
No. 3	1.96 in.	3.94 in.
Average	1.99 in.	3.99 in.

SPECIMEN CONDITIONS

Initial Specimen WT, W_o	277.83 g
Initial Area, A _o	3.12 in ²
Initial Volume, V _o	12.45 in ³
Initial Bulk Unit Weight,	85.0 lb/ft ³
Initial Dry Unit Weight	39.8 lb/ft ³
15 % Strain (0.15 L _o)	0.60 in.
UCS	0.9 lb/in ²

COMPRESSIVE LOAD (lbs.)	DIAL GAGE READING (in.)	SPECIMEN DEFORMATION (in.)	CORRECTED AREA (in ²)	AXIAL STRAIN (in/in)	UNCONFINED COMPRESSIVE STRENGTH (lb/in ²)
0	0.000	0.000	3.117	0.0000	0.0
1	0.120	0.120	3.214	0.0301	0.3
2	0.135	0.135	3.226	0.0338	0.6
3	0.150	0.150	3.239	0.0376	0.9
2	0.165	0.165	3.251	0.0413	0.6
1	0.200	0.200	3.281	0.0501	0.3

UNCONFINED COMPRESSION TESTING
Sample No. DEW-SED-02-BPT



UNCONFINED COMPRESSION TEST

ASTM D 2166
SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-02-BPT
TESTING DATE: 20-Nov-17 LOADING RATE: 0.0400 in./min
TESTED BY: JDM TRACKING CODE: B717_US

TESTING PARAMETER AND RESULTS	
MOISTURE CONTENT	113.8 %
BULK UNIT WEIGHT	85.0 lb/ft ³
DRY UNIT WEIGHT	39.8 lb/ft ³
UCS *	0.9 lb/in ²

* UCS - UNCONFINED COMPRESSIVE STRENGTH

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-02-BPT
TESTING DATE: 11/21/17
TESTED BY: JDM
TRACKING CODE: B717_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)			
3. WT OF MOLD + SOIL	277.83 g	277.83 g	277.83 g
4. WT OF WET SOIL, W	277.83 g	277.83 g	277.83 g
5. DIAMETER OF SPECIMEN, D	2.02 g	2.00 in	1.96 in
6. HEIGHT OF SPECIMEN, H	4.13 in	3.91 in	3.94 in
7. VOLUME OF SPECIMEN	13.22 in ³	12.22 in ³	11.91 in ³
8. BULK UNIT WEIGHT	80.0 pcf	86.6 pcf	88.9 pcf
9. BULK SPECIFIC GRAVITY	1.3	1.4	1.4
10. AVERAGE BULK UNIT WEIGHT	85.2 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.4		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/21/17
TESTED BY: JDM
TRACKING CODE: B717_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-02-BPT	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	8	
DIVISIONS MOVED	8	
SHEAR STRENGTH (TSF)	1.6	

GRAVITY DRAINAGE AND PRESSURE TEST DATA SHEET

(Crown Press)

PROJECT: Penobscot River Dewatering
PROJECT NO.: SH0661
SAMPLE NO.: DEW-SED-02-BSPT
TESTING DATE: 11/15/2017
TESTED BY: JDM
TRACKING CODE: B719_CrownPress

Initial Volume			Gravity Drainage		Pressure Expression		Cake Diameter			
Feed (ml)	Polymer (ml)	Total (ml)	Final Time (min)	Final Gravity Filtrate (ml)	Pressure (lbs)	Effluent Collected (ml)	Axis 1 (in)	Axis 2 (in)	Axis 3 (in)	Axis 4 (in)
500	13.5	513.5	20	350	76	45	5.2935	5.0740	4.7385	4.9685
					130	50				
					202	56				

Measure Cake Solids	Initial Cake Diameter (n)	Final Cake Diameter (in)	Migration Factor
46.66	3.9740	5.0186	1.0446

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B719_GS
SAMPLE NO: DES-SED-02-BSPT

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	3
3. TEMPERATURE	21.5 °C
4. WT. FLASK & WATER	184.66 g
5. WT. WATER, FLASK & SOIL	209.55 g
6. WT OF SOIL	24.89 g
7. CALIBRATION WATER & FLASK	350.77 g
8. DEAIRED SAMPLE	366.20 g
9. SPECIFIC GRAVITY	2.63
10. CORRECTION FACTOR K	0.9996
11. Gs @ 20 °C	2.63

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-02-BSPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B719_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9434 g	0.9426 g	0.9670 g
3. WT WET SOIL + TARE	11.7905 g	12.3023 g	10.0790 g
4. WT DRY SOIL + TARE	6.0491 g	6.1216 g	5.2774 g
5. WT WATER, W _w	5.7414 g	6.1807 g	4.8016 g
6. WT DRY SOIL, W _s	5.1057 g	5.1790 g	4.3104 g
7. ASTM MOISTURE CONTENT	112.45 %	119.34 %	111.40 %
8. PERCENT SOLIDS	47.07 %	45.59 %	47.30 %
9. AVERAGE ASTM MOISTURE CONTENT	114.40 %		
10. AVERAGE PERCENT SOLIDS	46.66 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-02-BSPT
TESTING METHOD: EPA 9095

TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B719_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.75 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-02-BSPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B719_PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DES-SED-02-BSPT						
DAY	0						
POCKET PEN	0.0						

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
 PROJECT No.: SH0661
 SAMPLE No.: DEW-SED-02-BSPT
 TESTING DATE: 11/21/17
 TESTED BY: JDM
 TRACKING CODE: B719_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)			
3. WT OF MOLD + SOIL	254.41 g	254.41 g	254.41 g
4. WT OF WET SOIL, W	254.41 g	254.41 g	254.41 g
5. DIAMETER OF SPECIMEN, D	1.98 g	1.96 in	1.96 in
6. HEIGHT OF SPECIMEN, H	3.80 in	3.78 in	3.76 in
7. VOLUME OF SPECIMEN	11.64 in ³	11.44 in ³	11.37 in ³
8. BULK UNIT WEIGHT	83.3 pcf	84.7 pcf	85.2 pcf
9. BULK SPECIFIC GRAVITY	1.3	1.4	1.4
10. AVERAGE BULK UNIT WEIGHT	84.4 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.4		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/21/17
TESTED BY: JDM
TRACKING CODE: B719_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-02-BSPT	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	5.5	
DIVISIONS MOVED	5.5	
SHEAR STRENGTH (TSF)	1.1	

Appendix E:
Centrifuge Testing Data Sheets

CENTRIFUGATION TESTING

REPORT FORM

PROJECT: Penobscot River Dewatering
 PROJECT No.: SH0661
 SAMPLE No.: DEW-SED-03-RHD
 MATERIAL TYPE: FFBU-VN-Slurry
 TESTING DATE: 11/15/2017
 TESTED BY: JDM
 TRACKING CODE: B720_Centrifuge

TESTING CONDITIONS	
1. CONDITIONER	None
2. RUN TIME (min)	10
3. INITIAL MATERIAL VOLUME (mL)	1000.00
4. CENTRIFUGE SPEED (rpm)	1500.00
5. SUPERNATANT VOLUME (ml)	820.0
6. CAKE WEIGHT (g)	285.17

FEED PERCENT SOLIDS			
1. SAMPLE No.	A		
2. TARE, WT	29.09	g	
3. TOTAL SAMPLE + TARE, WT	75.05	g	
4. DRY SOLIDS + TARE, WT	33.22	g	
5. PERCENT SOLIDS	8.99	%	

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B720_GS
SAMPLE NO: DEW-SED-03-RHD

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	3
3. TEMPERATURE	19.0 °C
4. WT. FLASK & WATER	176.20 g
5. WT. WATER, FLASK & SOIL	202.35 g
6. WT OF SOIL	26.15 g
7. CALIBRATION WATER & FLASK	350.92 g
8. DEAIRED SAMPLE	367.06 g
9. SPECIFIC GRAVITY	2.61
10. CORRECTION FACTOR K	1.0002
11. Gs @ 20 °C	2.61

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-RHD
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B720_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9754 g	0.9467 g	0.9539 g
3. WT WET SOIL + TARE	11.5097 g	11.0962 g	7.7477 g
4. WT DRY SOIL + TARE	5.5178 g	4.9314 g	3.7403 g
5. WT WATER, W _w	5.9919 g	6.1648 g	4.0074 g
6. WT DRY SOIL, W _s	4.5424 g	3.9847 g	2.7864 g
7. ASTM MOISTURE CONTENT	131.91 %	154.71 %	143.82 %
8. PERCENT SOLIDS	43.12 %	39.26 %	41.01 %
9. AVERAGE ASTM MOISTURE CONTENT	143.48 %		
10. AVERAGE PERCENT SOLIDS	41.13 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-RHD
TESTING METHOD: EPA 9095

TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B720_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.33 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-RHD
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B720_PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DEW-SED-03-RHD						
DAY	0						
POCKET PEN	0.0						

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-RHD
TESTING DATE: 11/21/17
TESTED BY: JDM
TRACKING CODE: B720_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)			
3. WT OF MOLD + SOIL	266.78 g	266.78 g	266.78 g
4. WT OF WET SOIL, W	266.78 g	266.78 g	266.78 g
5. DIAMETER OF SPECIMEN, D	1.99 in	1.99 in	1.99 in
6. HEIGHT OF SPECIMEN, H	3.98 in	3.99 in	3.99 in
7. VOLUME OF SPECIMEN	12.33 in ³	12.45 in ³	12.36 in ³
8. BULK UNIT WEIGHT	82.4 pcf	81.6 pcf	82.2 pcf
9. BULK SPECIFIC GRAVITY	1.3	1.3	1.3
10. AVERAGE BULK UNIT WEIGHT	82.1 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.3		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/21/17
TESTED BY: JDM
TRACKING CODE: B720_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-03-RHD	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	0.25	
DIVISIONS MOVED	0.25	
SHEAR STRENGTH (TSF)	0.05	

CENTRIFUGATION TESTING

REPORT FORM

PROJECT: Penobscot River Dewatering
 PROJECT No.: SH0661
 SAMPLE No.: DEW-SED-03-BPT
 MATERIAL TYPE: FFBU-VN-Slurry
 TESTING DATE: 11/15/2017
 TESTED BY: JDM
 TRACKING CODE: B721_Centrifuge

TESTING CONDITIONS	
1. CONDITIONER	27mL Solve 137
2. RUN TIME (min)	10
3. INITIAL MATERIAL VOLUME (mL)	1000.00
4. CENTRIFUGE SPEED (rpm)	1500.00
5. SUPERNATANT VOLUME (ml)	850.0
6. CAKE WEIGHT (g)	275.73

FEED PERCENT SOLIDS			
1. SAMPLE No.	A		
2. TARE, WT	29.09	g	
3. TOTAL SAMPLE + TARE, WT	75.05	g	
4. DRY SOLIDS + TARE, WT	33.22	g	
5. PERCENT SOLIDS	8.99	%	

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B721_GS
SAMPLE NO: DEW-SED-03-BPT

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	3
3. TEMPERATURE	20.0 °C
4. WT. FLASK & WATER	178.22 g
5. WT. WATER, FLASK & SOIL	200.99 g
6. WT OF SOIL	22.77 g
7. CALIBRATION WATER & FLASK	350.86 g
8. DEAIRED SAMPLE	364.87 g
9. SPECIFIC GRAVITY	2.60
10. CORRECTION FACTOR K	1.0000
11. Gs @ 20 °C	2.60

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B721_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9886 g	0.9849 g	0.9918 g
3. WT WET SOIL + TARE	20.7398 g	14.6177 g	13.6309 g
4. WT DRY SOIL + TARE	9.4334 g	6.6066 g	6.6755 g
5. WT WATER, W _w	11.3064 g	8.0111 g	6.9554 g
6. WT DRY SOIL, W _s	8.4448 g	5.6217 g	5.6837 g
7. ASTM MOISTURE CONTENT	133.89 %	142.50 %	122.37 %
8. PERCENT SOLIDS	42.76 %	41.24 %	44.97 %
9. AVERAGE ASTM MOISTURE CONTENT	132.92 %		
10. AVERAGE PERCENT SOLIDS	42.99 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BPT
TESTING METHOD: EPA 9095

TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B721_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.12 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B721_PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DEW-SED-03-BPT						
DAY	0						
POCKET PEN	0.0						

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BPT
TESTING DATE: 11/21/17
TESTED BY: JDM
TRACKING CODE: B721_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)			
3. WT OF MOLD + SOIL	267.59 g	267.59 g	267.59 g
4. WT OF WET SOIL, W	267.59 g	267.59 g	267.59 g
5. DIAMETER OF SPECIMEN, D	2.01 in	2.01 in	2.00 in
6. HEIGHT OF SPECIMEN, H	3.99 in	3.98 in	3.98 in
7. VOLUME OF SPECIMEN	12.71 in ³	12.60 in ³	12.51 in ³
8. BULK UNIT WEIGHT	80.2 pcf	80.9 pcf	81.5 pcf
9. BULK SPECIFIC GRAVITY	1.3	1.3	1.3
10. AVERAGE BULK UNIT WEIGHT	80.9 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.3		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/21/17
TESTED BY: JDM
TRACKING CODE: B721_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-03-BPT	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	0.75	
DIVISIONS MOVED	0.75	
SHEAR STRENGTH (TSF)	0.15	

CENTRIFUGATION TESTING

REPORT FORM

PROJECT: Penobscot River Dewatering
 PROJECT No.: SH0661
 SAMPLE No.: DEW-SED-03-BPS
 MATERIAL TYPE: FFBU-VN-Slurry
 TESTING DATE: 11/15/2017
 TESTED BY: JDM
 TRACKING CODE: B722_Centrifuge

TESTING CONDITIONS	
1. CONDITIONER	None
2. RUN TIME (min)	10
3. INITIAL MATERIAL VOLUME (mL)	1000.00
4. CENTRIFUGE SPEED (rpm)	1500.00
5. SUPERNATANT VOLUME (ml)	822.0
6. CAKE WEIGHT (g)	293.53

FEED PERCENT SOLIDS			
1. SAMPLE No.	A		
2. TARE, WT	29.09	g	
3. TOTAL SAMPLE + TARE, WT	75.05	g	
4. DRY SOLIDS + TARE, WT	33.22	g	
5. PERCENT SOLIDS	8.99	%	

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B722_GS
SAMPLE NO: DEW-SED-03-BPS

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	3
3. TEMPERATURE	19.5 °C
4. WT. FLASK & WATER	182.01 g
5. WT. WATER, FLASK & SOIL	206.88 g
6. WT OF SOIL	24.87 g
7. CALIBRATION WATER & FLASK	350.89 g
8. DEAIRED SAMPLE	366.22 g
9. SPECIFIC GRAVITY	2.61
10. CORRECTION FACTOR K	1.0000
11. Gs @ 20 °C	2.61

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BPS
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B722_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9950 g	0.9525 g	0.9402 g
3. WT WET SOIL + TARE	13.8604 g	14.0719 g	15.5078 g
4. WT DRY SOIL + TARE	6.3584 g	6.2069 g	6.7752 g
5. WT WATER, W _w	7.5020 g	7.8650 g	8.7326 g
6. WT DRY SOIL, W _s	5.3634 g	5.2544 g	5.8350 g
7. ASTM MOISTURE CONTENT	139.87 %	149.68 %	149.66 %
8. PERCENT SOLIDS	41.69 %	40.05 %	40.05 %
9. AVERAGE ASTM MOISTURE CONTENT	146.41 %		
10. AVERAGE PERCENT SOLIDS	40.60 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BPS
TESTING METHOD: EPA 9095

TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B722_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.99 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.15 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BPS
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B722_PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DEW-SED-03-BPS						
DAY	0						
POCKET PEN	0.0						

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BPS
TESTING DATE: 11/21/17
TESTED BY: JDM
TRACKING CODE: B722_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)			
3. WT OF MOLD + SOIL	264.89 g	264.89 g	264.89 g
4. WT OF WET SOIL, W	264.89 g	264.89 g	264.89 g
5. DIAMETER OF SPECIMEN, D	1.99 in	1.99 in	1.98 in
6. HEIGHT OF SPECIMEN, H	3.99 in	3.99 in	4.00 in
7. VOLUME OF SPECIMEN	12.46 in ³	12.40 in ³	12.32 in ³
8. BULK UNIT WEIGHT	81.0 pcf	81.4 pcf	81.9 pcf
9. BULK SPECIFIC GRAVITY	1.3	1.3	1.3
10. AVERAGE BULK UNIT WEIGHT	81.5 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.3		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/21/17
TESTED BY: JDM
TRACKING CODE: B722_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-03-BPS	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	0.5	
DIVISIONS MOVED	0.5	
SHEAR STRENGTH (TSF)	0.1	

CENTRIFUGATION TESTING

REPORT FORM

PROJECT: Penobscot River Dewatering
 PROJECT No.: SH0661
 SAMPLE No.: DEW-SED-03-BSPT
 MATERIAL TYPE: FFBU-VN-Slurry
 TESTING DATE: 11/15/2017
 TESTED BY: JDM
 TRACKING CODE: B723_Centrifuge

TESTING CONDITIONS	
1. CONDITIONER	27 mL Solve 137
2. RUN TIME (min)	10
3. INITIAL MATERIAL VOLUME (mL)	1000.00
4. CENTRIFUGE SPEED (rpm)	1500.00
5. SUPERNATANT VOLUME (ml)	850.0
6. CAKE WEIGHT (g)	232.36

FEED PERCENT SOLIDS			
1. SAMPLE No.	A		
2. TARE, WT	29.09	g	
3. TOTAL SAMPLE + TARE, WT	75.05	g	
4. DRY SOLIDS + TARE, WT	33.22	g	
5. PERCENT SOLIDS	8.99	%	

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 11/21/2017
TESTED BY: JDM
TRACKING CODE: B723_GS
SAMPLE NO: DEW-SED-03-BSPT

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	3
3. TEMPERATURE	17.5 °C
4. WT. FLASK & WATER	168.99 g
5. WT. WATER, FLASK & SOIL	199.01 g
6. WT OF SOIL	30.02 g
7. CALIBRATION WATER & FLASK	351.01 g
8. DEAIRED SAMPLE	369.51 g
9. SPECIFIC GRAVITY	2.61
10. CORRECTION FACTOR K	1.0004
11. Gs @ 20 °C	2.61

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BSPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B723_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9837 g	1.0200 g	1.0160 g
3. WT WET SOIL + TARE	15.8228 g	13.4431 g	17.2078 g
4. WT DRY SOIL + TARE	7.2229 g	6.2095 g	7.6990 g
5. WT WATER, W _w	8.5999 g	7.2336 g	9.5088 g
6. WT DRY SOIL, W _s	6.2392 g	5.1895 g	6.6830 g
7. ASTM MOISTURE CONTENT	137.84 %	139.39 %	142.28 %
8. PERCENT SOLIDS	42.05 %	41.77 %	41.27 %
9. AVERAGE ASTM MOISTURE CONTENT	139.84 %		
10. AVERAGE PERCENT SOLIDS	41.70 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BSPT
TESTING METHOD: EPA 9095

TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B723_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.25 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BSPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B723_PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DEW-SED-03-BSPT						
DAY	0						
POCKET PEN	0.0						

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-03-BSPT
TESTING DATE: 11/21/17
TESTED BY: JDM
TRACKING CODE: B723_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)			
3. WT OF MOLD + SOIL	263.17 g	263.17 g	263.17 g
4. WT OF WET SOIL, W	263.17 g	263.17 g	263.17 g
5. DIAMETER OF SPECIMEN, D	2.00 in	2.00 in	1.97 in
6. HEIGHT OF SPECIMEN, H	3.99 in	3.99 in	3.99 in
7. VOLUME OF SPECIMEN	12.59 in ³	12.55 in ³	12.16 in ³
8. BULK UNIT WEIGHT	79.6 pcf	79.9 pcf	82.5 pcf
9. BULK SPECIFIC GRAVITY	1.3	1.3	1.3
10. AVERAGE BULK UNIT WEIGHT	80.7 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.3		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/21/17
TESTED BY: JDM
TRACKING CODE: B723_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-03-BSPT	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	0.75	
DIVISIONS MOVED	0.75	
SHEAR STRENGTH (TSF)	0.15	

Appendix F:
Recessed Plate (Filter Press) Testing
Data Sheets

FILTER PRESS TEST

REPORT FORM

PROJECT: Penobscot River Dewatering
 PROJECT No.: SH0661
 SAMPLE No.: DEW-SED-04-RHD
 MATERIAL TYPE: FFBU-VN-Slurry
 TESTING DATE: 10/31/2017
 TESTED BY: JDM
 TRACKING CODE: B724_FP

TESTING CONDITIONS	
1. CONDITIONER	None
2. RUN TIME (min)	57
3. INITIAL MATERIAL VOLUME (mL)	400
4. GAGE PRESSURE (psi)	100
5. FILTRATE VOLUME (ml)	355
6. CAKE WEIGHT (g)	67.93
7. CAKE THICKNESS (in)	0.4598

FEED PERCENT SOLIDS			
1. SAMPLE No.	A		
2. TARE, WT	29.09	g	
3. TOTAL SAMPLE + TARE, WT	75.05	g	
4. DRY SOLIDS + TARE, WT	33.22	g	
5. PERCENT SOLIDS	8.99	%	N/A

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 10/31/2017
TESTED BY: JDM
TRACKING CODE: B724_GS
SAMPLE NO: DEW-SED-04-RHD

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	1
3. TEMPERATURE	18.0 °C
4. WT. FLASK & WATER	205.95 g
5. WT. WATER, FLASK & SOIL	229.66 g
6. WT OF SOIL	23.71 g
7. CALIBRATION WATER & FLASK	355.13 g
8. DEAIRED SAMPLE	369.75 g
9. SPECIFIC GRAVITY	2.61
10. CORRECTION FACTOR K	1.0004
11. Gs @ 20 °C	2.61

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-RHD
TESTING DATE: 10/31/17
TESTED BY: JDM
TRACKING CODE: B724_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0975 g	1.0629 g	1.0621 g
3. WT WET SOIL + TARE	19.2851 g	22.9623 g	19.0422 g
4. WT DRY SOIL + TARE	9.7012 g	11.4104 g	9.4450 g
5. WT WATER, W _w	9.5839 g	11.5519 g	9.5972 g
6. WT DRY SOIL, W _s	8.6037 g	10.3475 g	8.3829 g
7. ASTM MOISTURE CONTENT	111.39 %	111.64 %	114.49 %
8. PERCENT SOLIDS	47.31 %	47.25 %	46.62 %
9. AVERAGE ASTM MOISTURE CONTENT	112.51 %		
10. AVERAGE PERCENT SOLIDS	47.06 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-RHD
TESTING METHOD: EPA Method 9095

TESTING DATE: 10/31/2017
TESTED BY: JDM
TRACKING CODE: B724_PF

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	101.57 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-RHD
TESTING DATE: 10/31/17
TESTED BY: JDM
TRACKING CODE: B724_PP

POCKET PENETROMETER							
SAMPLE NO.	DEW-SED-04-RHD						
DAY	0						
POCKET PEN	0.0						

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-RHD
TESTING DATE: 10/31/17
TESTED BY: JDM
TRACKING CODE: B724_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)	0.00 g	0.00 g	0.00 g
3. WT OF MOLD + SOIL	67.93 g	67.93 g	67.93 g
4. WT OF WET SOIL, W	67.93 g	67.93 g	67.93 g
5. DIAMETER OF SPECIMEN, D	3.04 in	3.03 in	3.03 in
6. HEIGHT OF SPECIMEN, H	0.44 in	0.48 in	0.46 in
7. VOLUME OF SPECIMEN	3.22 in ³	3.41 in ³	3.32 in ³
8. BULK UNIT WEIGHT	80.4 pcf	75.8 pcf	78.0 pcf
9. BULK SPECIFIC GRAVITY	1.3	1.2	1.3
10. AVERAGE BULK UNIT WEIGHT	78.1 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.3		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 10/31/17
TESTED BY: JDM
TRACKING CODE: B724_VaneShear

POCKET VANE SHEAR	
SAMPLE NO.	DEW-SED-04-RHD
DEPTH (FT)	N/A
FOOT SIZE (S,M,L)	L
INITIAL DIAL READING	0
FINIAL DIAL READING	5
DIVISIONS MOVED	5
SHEAR STRENGTH (TSF)	1

Notes:

FILTER PRESS TEST REPORT FORM

PROJECT: Penobscot River Dewatering
 PROJECT No.: SH0661
 SAMPLE No.: DEW-SED-04-BPT
 MATERIAL TYPE: FFBU-VN-Slurry
 TESTING DATE: 11/16/2017
 TESTED BY: JDM
 TRACKING CODE: B725_FP

TESTING CONDITIONS	
1. CONDITIONER	10.8 mL Solve 137
2. RUN TIME (min)	2
3. INITIAL MATERIAL VOLUME (mL)	400
4. GAGE PRESSURE (psi)	100
5. FILTRATE VOLUME (ml)	318
6. CAKE WEIGHT (g)	127.96
7. CAKE THICKNESS (in)	0.9003

FEED PERCENT SOLIDS			
1. SAMPLE No.	A		
2. TARE, WT	29.09	g	
3. TOTAL SAMPLE + TARE, WT	75.05	g	
4. DRY SOLIDS + TARE, WT	33.22	g	
5. PERCENT SOLIDS	8.99	%	N/A

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 11/21/2017
TESTED BY: JDM
TRACKING CODE: B725_GS
SAMPLE NO: DEW-SED-04-BPT

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	3
3. TEMPERATURE	18.5 °C
4. WT. FLASK & WATER	177.23 g
5. WT. WATER, FLASK & SOIL	201.56 g
6. WT OF SOIL	24.33 g
7. CALIBRATION WATER & FLASK	350.95 g
8. DEAIRED SAMPLE	365.99 g
9. SPECIFIC GRAVITY	2.62
10. CORRECTION FACTOR K	1.0002
11. Gs @ 20 °C	2.62

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B725_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9576 g	1.0320 g	0.9406 g
3. WT WET SOIL + TARE	9.6033 g	12.2356 g	8.0961 g
4. WT DRY SOIL + TARE	3.9485 g	4.8905 g	3.4859 g
5. WT WATER, W _w	5.6548 g	7.3451 g	4.6102 g
6. WT DRY SOIL, W _s	2.9909 g	3.8585 g	2.5453 g
7. ASTM MOISTURE CONTENT	189.07 %	190.36 %	181.13 %
8. PERCENT SOLIDS	34.59 %	34.44 %	35.57 %
9. AVERAGE ASTM MOISTURE CONTENT	186.85 %		
10. AVERAGE PERCENT SOLIDS	34.87 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BPT
TESTING METHOD: EPA 9095

TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B725_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.05 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.10 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B725_PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DEW-SED-04-BPT						
DAY	0						
POCKET PEN	0.0						

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BPT
TESTING DATE: 11/16/17
TESTED BY: JDM
TRACKING CODE: B725_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)			
3. WT OF MOLD + SOIL	127.96 g	127.96 g	127.96 g
4. WT OF WET SOIL, W	127.96 g	127.96 g	127.96 g
5. DIAMETER OF SPECIMEN, D	2.85 in	2.89 in	2.96 in
6. HEIGHT OF SPECIMEN, H	0.93 in	0.86 in	0.91 in
7. VOLUME OF SPECIMEN	5.92 in ³	5.61 in ³	6.31 in ³
8. BULK UNIT WEIGHT	82.4 pcf	86.8 pcf	77.3 pcf
9. BULK SPECIFIC GRAVITY	1.3	1.4	1.2
10. AVERAGE BULK UNIT WEIGHT	82.2 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.3		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B725_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-04-BPT	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	0	
DIVISIONS MOVED	0	
SHEAR STRENGTH (TSF)	0	

FILTER PRESS TEST REPORT FORM

PROJECT: Penobscot River Dewatering
 PROJECT No.: SH0661
 SAMPLE No.: DEW-SED-04-BPS
 MATERIAL TYPE: FFBU-VN-Slurry
 TESTING DATE: 11/16/2017
 TESTED BY: JDM
 TRACKING CODE: B726_FP

TESTING CONDITIONS	
1. CONDITIONER	None
2. RUN TIME (min)	73
3. INITIAL MATERIAL VOLUME (mL)	400
4. GAGE PRESSURE (psi)	100
5. FILTRATE VOLUME (ml)	365
6. CAKE WEIGHT (g)	65.61
7. CAKE THICKNESS (in)	0.401

FEED PERCENT SOLIDS			
1. SAMPLE No.	A		
2. TARE, WT	29.09	g	
3. TOTAL SAMPLE + TARE, WT	75.05	g	
4. DRY SOLIDS + TARE, WT	33.22	g	
5. PERCENT SOLIDS	8.99	%	N/A

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 11/21/2017
TESTED BY: JDM
TRACKING CODE: B726_GS
SAMPLE NO: DEW-SED-04-BPS

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	3
3. TEMPERATURE	19.0 °C
4. WT. FLASK & WATER	200.55 g
5. WT. WATER, FLASK & SOIL	225.97 g
6. WT OF SOIL	25.42 g
7. CALIBRATION WATER & FLASK	350.92 g
8. DEAIRED SAMPLE	366.61 g
9. SPECIFIC GRAVITY	2.61
10. CORRECTION FACTOR K	1.0002
11. Gs @ 20 °C	2.61

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BPS
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B726_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9487 g	0.9527 g	0.9423 g
3. WT WET SOIL + TARE	13.8645 g	11.7447 g	13.8950 g
4. WT DRY SOIL + TARE	7.7168 g	6.6595 g	7.6964 g
5. WT WATER, W _w	6.1477 g	5.0852 g	6.1986 g
6. WT DRY SOIL, W _s	6.7681 g	5.7068 g	6.7541 g
7. ASTM MOISTURE CONTENT	90.83 %	89.11 %	91.78 %
8. PERCENT SOLIDS	52.40 %	52.88 %	52.14 %
9. AVERAGE ASTM MOISTURE CONTENT	90.57 %		
10. AVERAGE PERCENT SOLIDS	52.48 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BPS
TESTING METHOD: EPA 9095

TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B726_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	101.57 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

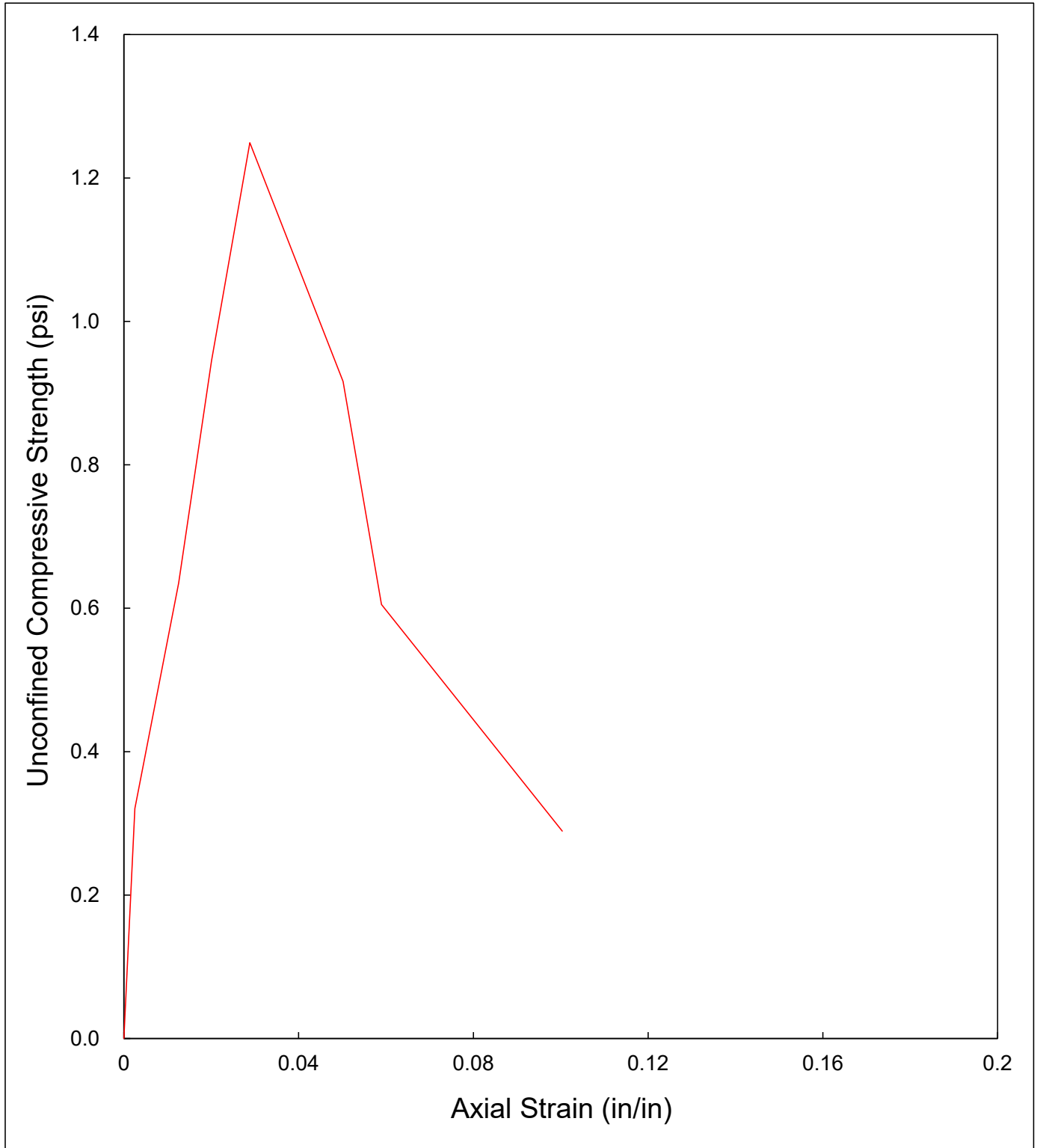
POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BPS
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B726_PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DEW-SED-04-BPS						
DAY	0						
POCKET PEN	0.0						

UNCONFINED COMPRESSION TESTING
Sample No. DEW-SED-04-BPS



UNCONFINED COMPRESSION TEST

ASTM D 2166
SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BPS
TESTING DATE: 20-Nov-17
TESTED BY: JDM

LOADING RATE: 0.0400 in./min
TRACKING CODE: B726_US

TESTING PARAMETER AND RESULTS	
MOISTURE CONTENT	90.7 %
BULK UNIT WEIGHT	85.5 lb/ft ³
DRY UNIT WEIGHT	44.8 lb/ft ³
UCS *	1.2 lb/in ²

* UCS - UNCONFINED COMPRESSIVE STRENGTH

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BPS
TESTING DATE: 11/16/17
TESTED BY: JDM
TRACKING CODE: B726_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)			
3. WT OF MOLD + SOIL	65.61 g	65.61 g	65.61 g
4. WT OF WET SOIL, W	65.61 g	65.61 g	65.61 g
5. DIAMETER OF SPECIMEN, D	3.05 g	3.03 in	3.05 in
6. HEIGHT OF SPECIMEN, H	0.38 in	0.41 in	0.41 in
7. VOLUME OF SPECIMEN	2.78 in ³	2.97 in ³	3.00 in ³
8. BULK UNIT WEIGHT	90.1 pcf	84.1 pcf	83.3 pcf
9. BULK SPECIFIC GRAVITY	1.4	1.3	1.3
10. AVERAGE BULK UNIT WEIGHT	85.8 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.4		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B726_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-04-BPS	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	4.5	
DIVISIONS MOVED	4.5	
SHEAR STRENGTH (TSF)	0.9	

FILTER PRESS TEST REPORT FORM

PROJECT: Penobscot River Dewatering
 PROJECT No.: SH0661
 SAMPLE No.: DEW-SED-04-BSPT
 MATERIAL TYPE: FFBU-VN-Slurry
 TESTING DATE: 11/16/2017
 TESTED BY: JDM
 TRACKING CODE: B727_FP

TESTING CONDITIONS	
1. CONDITIONER	10.8 mL Solve 137
2. RUN TIME (min)	2
3. INITIAL MATERIAL VOLUME (mL)	400
4. GAGE PRESSURE (psi)	100
5. FILTRATE VOLUME (ml)	320
6. CAKE WEIGHT (g)	111.92
7. CAKE THICKNESS (in)	0.899

FEED PERCENT SOLIDS			
1. SAMPLE No.	A		
2. TARE, WT	29.09	g	
3. TOTAL SAMPLE + TARE, WT	75.05	g	
4. DRY SOLIDS + TARE, WT	33.22	g	
5. PERCENT SOLIDS	8.99	%	N/A

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 11/21/2017
TESTED BY: JDM
TRACKING CODE: B727_GS
SAMPLE NO: DEW-SED-04-BSPT

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	3
3. TEMPERATURE	20.5 °C
4. WT. FLASK & WATER	198.45 g
5. WT. WATER, FLASK & SOIL	228.01 g
6. WT OF SOIL	29.56 g
7. CALIBRATION WATER & FLASK	350.83 g
8. DEAIRED SAMPLE	369.12 g
9. SPECIFIC GRAVITY	2.62
10. CORRECTION FACTOR K	0.9998
11. Gs @ 20 °C	2.62

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BSPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B727_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9533 g	0.9541 g	0.9524 g
3. WT WET SOIL + TARE	12.4258 g	12.6360 g	12.6148 g
4. WT DRY SOIL + TARE	4.7487 g	4.7922 g	4.6543 g
5. WT WATER, W _w	7.6771 g	7.8438 g	7.9605 g
6. WT DRY SOIL, W _s	3.7954 g	3.8381 g	3.7019 g
7. ASTM MOISTURE CONTENT	202.27 %	204.37 %	215.04 %
8. PERCENT SOLIDS	33.08 %	32.86 %	31.74 %
9. AVERAGE ASTM MOISTURE CONTENT	207.23 %		
10. AVERAGE PERCENT SOLIDS	32.56 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BSPT
TESTING METHOD: EPA 9095

TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B727_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.14 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.12 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BSPT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B727_PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DEW-SED-04-BSPT						
DAY	0						
POCKET PEN	0.0						

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-04-BSPT
TESTING DATE: 11/16/17
TESTED BY: JDM
TRACKING CODE: B727_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)			
3. WT OF MOLD + SOIL	111.92 g	111.92 g	111.92 g
4. WT OF WET SOIL, W	111.92 g	111.92 g	111.92 g
5. DIAMETER OF SPECIMEN, D	3.01 g	2.94 in	2.80 in
6. HEIGHT OF SPECIMEN, H	1.02 in	0.88 in	0.80 in
7. VOLUME OF SPECIMEN	7.24 in ³	5.97 in ³	4.91 in ³
8. BULK UNIT WEIGHT	58.9 pcf	71.4 pcf	86.8 pcf
9. BULK SPECIFIC GRAVITY	0.9	1.1	1.4
10. AVERAGE BULK UNIT WEIGHT	72.4 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.2		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B727_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-04-BSPT	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	0	
DIVISIONS MOVED	0	
SHEAR STRENGTH (TSF)	0	

Appendix G:
Geotextile Fabric Testing Data
Sheets

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B729_GS
SAMPLE NO: DEW-SED-05-BPTGDT

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	3
3. TEMPERATURE	20.5 °C
4. WT. FLASK & WATER	199.65 g
5. WT. WATER, FLASK & SOIL	222.36 g
6. WT OF SOIL	22.71 g
7. CALIBRATION WATER & FLASK	350.83 g
8. DEAIRED SAMPLE	364.85 g
9. SPECIFIC GRAVITY	2.61
10. CORRECTION FACTOR K	0.9998
11. Gs @ 20 °C	2.61

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-05-BPTGDT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B729_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9755 g	1.0095 g	0.9472 g
3. WT WET SOIL + TARE	13.8326 g	17.4308 g	19.3440 g
4. WT DRY SOIL + TARE	5.5516 g	6.8513 g	7.2875 g
5. WT WATER, W _w	8.2810 g	10.5795 g	12.0565 g
6. WT DRY SOIL, W _s	4.5761 g	5.8418 g	6.3403 g
7. ASTM MOISTURE CONTENT	180.96 %	181.10 %	190.16 %
8. PERCENT SOLIDS	35.59 %	35.57 %	34.46 %
9. AVERAGE ASTM MOISTURE CONTENT	184.07 %		
10. AVERAGE PERCENT SOLIDS	35.21 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-05-BPTGDT
TESTING METHOD: EPA 9095

TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B729_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.78 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-05-BPTGDT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B729 PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DEW-SED-05-RHDGDT						
DAY	0						
POCKET PEN	0.0						

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-05-BPTGDT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B729_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)	18.12 g	18.12 g	18.12 g
3. WT OF MOLD + SOIL	285.66 g	283.99 g	284.53 g
4. WT OF WET SOIL, W	267.54 g	265.87 g	266.41 g
5. DIAMETER OF SPECIMEN, D	2.00 in	2.00 in	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in	4.00 in	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³	12.57 in ³	12.57 in ³
8. BULK UNIT WEIGHT	81.1 pcf	80.6 pcf	80.8 pcf
9. BULK SPECIFIC GRAVITY	1.3	1.3	1.3
10. AVERAGE BULK UNIT WEIGHT	80.8 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.3		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B729_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-05-BPTGDT	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	0.75	
DIVISIONS MOVED	0.75	
SHEAR STRENGTH (TSF)	0.15	

SOLID SPECIFIC GRAVITY

ASTM D 854
DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
TESTING DATE: 11/21/2017
TESTED BY: JDM
TRACKING CODE: B731_GS
SAMPLE NO: DEW-SED-05-BPSGDT

SOLID SPECIFIC GRAVITY	
1. SAMPLE NUMBER	
2. FLASK NUMBER	3
3. TEMPERATURE	19.0 °C
4. WT. FLASK & WATER	185.99 g
5. WT. WATER, FLASK & SOIL	213.89 g
6. WT OF SOIL	27.90 g
7. CALIBRATION WATER & FLASK	350.92 g
8. DEAIRED SAMPLE	368.20 g
9. SPECIFIC GRAVITY	2.63
10. CORRECTION FACTOR K	1.0002
11. Gs @ 20 °C	2.63

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-05-BSPTGDT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B731_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9766 g	0.9385 g	0.9910 g
3. WT WET SOIL + TARE	22.6864 g	20.4362 g	25.3026 g
4. WT DRY SOIL + TARE	11.1345 g	9.9462 g	12.0887 g
5. WT WATER, W _w	11.5519 g	10.4900 g	13.2139 g
6. WT DRY SOIL, W _s	10.1579 g	9.0077 g	11.0977 g
7. ASTM MOISTURE CONTENT	113.72 %	116.46 %	119.07 %
8. PERCENT SOLIDS	46.79 %	46.20 %	45.65 %
9. AVERAGE ASTM MOISTURE CONTENT	116.42 %		
10. AVERAGE PERCENT SOLIDS	46.21 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-05-BSPTGDT
TESTING METHOD: EPA 9095

TESTING DATE: 11/20/2017
TESTED BY: JDM
TRACKING CODE: B731_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.16 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-05-BSPTGDT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B731_PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DEW-SED-05-BPSGDT						
DAY	0						
POCKET PEN	0.0						

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-05-BSPTGDT
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B731_UW

UNIT WEIGHT (DENSITY)			
1. SAMPLE NO.	A	B	C
2. WT OF MOLD (tare weight)	18.15 g	18.15 g	18.15 g
3. WT OF MOLD + SOIL	295.11 g	294.65 g	294.38 g
4. WT OF WET SOIL, W	276.96 g	276.50 g	276.23 g
5. DIAMETER OF SPECIMEN, D	2.00 in	2.00 in	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in	4.00 in	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³	12.57 in ³	12.57 in ³
8. BULK UNIT WEIGHT	84.0 pcf	83.8 pcf	83.7 pcf
9. BULK SPECIFIC GRAVITY	1.3	1.3	1.3
10. AVERAGE BULK UNIT WEIGHT	83.8 pcf		
11. AVERAGE BULK SPECIFIC GRAVITY	1.3		

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/20/17
TESTED BY: JDM
TRACKING CODE: B731_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-05-BSPTGDT	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	0.5	
DIVISIONS MOVED	0.5	
SHEAR STRENGTH (TSF)	0.10	

Appendix H:
Gravity Drainage Testing Data
Sheets

GRAVITY DRAINAGE TESTING

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-06
MATERIAL TYPE: FFBU-VN-Composite
TESTING DATE: 11/27/2017
TESTED BY: JDM
TRACKING CODE: B794_GD

SET-UP INFORMATION	
GRAVITY DRAINAGE TESTING	
1. FUNNEL	143.53 g
2. FUNNEL + SOIL (INITIAL)	1128.64 g
3. FUNNEL + SOIL (FINAL)	1036.20 g
4. BEAKER	526.28 g
5. BEAKER + EFFLUENT	614.50 g
6. SOIL (INITIAL)	985.11 g
7. SOIL (FINAL)	892.67 g
8. EFFLUENT	88.22 g

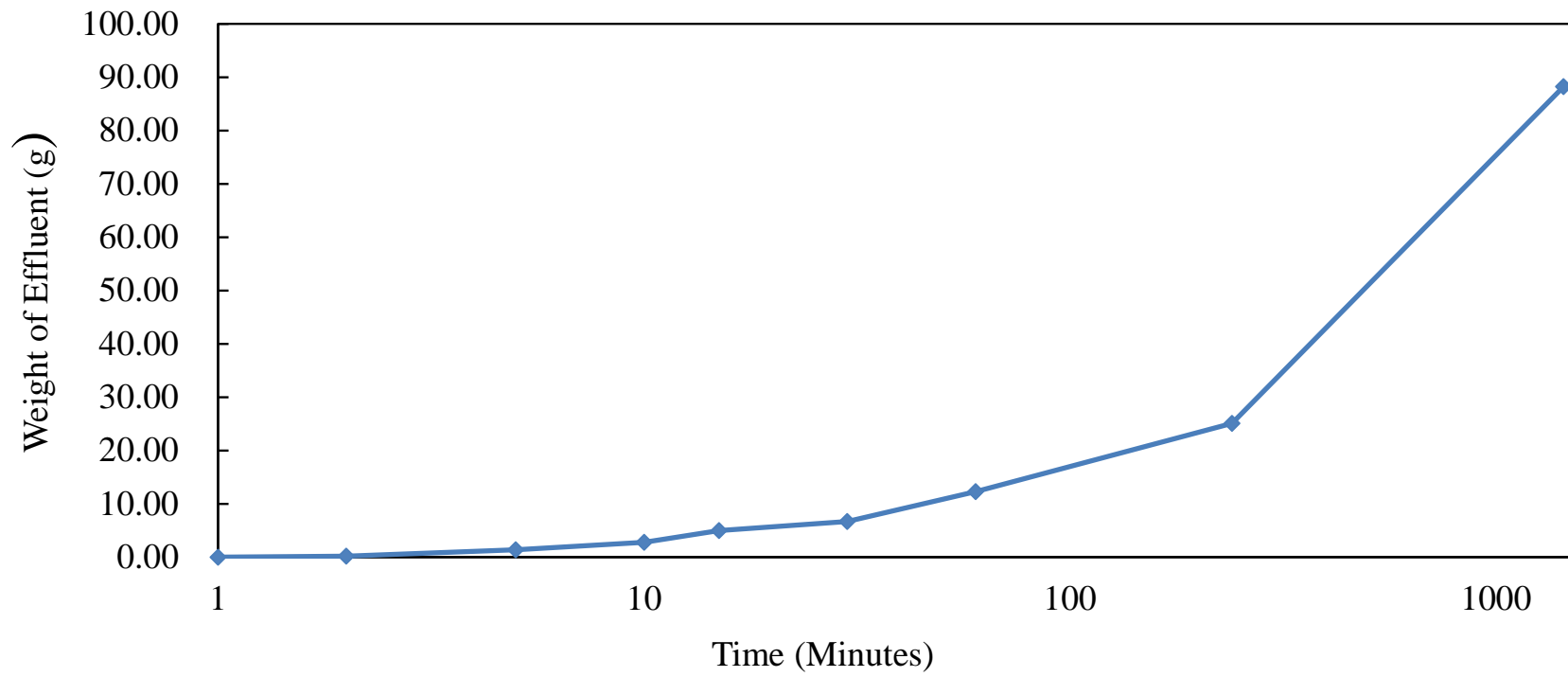
MONITORING INFORMATION		
TIME (MIN)	EFFLUENT (g)	VISUAL OBSERVATIONS
1	0.00	
2	0.20	Effluent beginning to collect in flask
5	1.40	
10	2.80	Effluent slightly yellow in color
15	5.00	
30	6.70	
60	12.30	
240	25.10	
1440	88.22	Effluent yellow in color, 87mL collected

AMEC FW
Penobscot River DEWATERING
KEMRON PROJECT No. SH0661

FIGURE 1

DEW-SED-06 Gravity Drainage

Effluent Collected vs. Time



MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-06
TESTING DATE: 11/28/17
TESTED BY: JDM
TRACKING CODE: B794_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0386 g	1.0832 g	1.0515 g
3. WT WET SOIL + TARE	23.2399 g	24.6516 g	19.8503 g
4. WT DRY SOIL + TARE	9.9172 g	10.4623 g	8.4440 g
5. WT WATER, W _w	13.3227 g	14.1893 g	11.4063 g
6. WT DRY SOIL, W _s	8.8786 g	9.3791 g	7.3925 g
7. ASTM MOISTURE CONTENT	150.05 %	151.29 %	154.30 %
8. PERCENT SOLIDS	39.99 %	39.80 %	39.32 %
9. AVERAGE ASTM MOISTURE CONTENT	151.88 %		
10. AVERAGE PERCENT SOLIDS	39.70 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-06
TESTING METHOD: EPA 9095

TESTING DATE: 11/28/2017
TESTED BY: JDM
TRACKING CODE: B794_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.94 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.15 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

POCKET PENETROMETER

DATA SHEET

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: DEW-SED-06
TESTING DATE: 11/28/17
TESTED BY: JDM
TRACKING CODE: B794_PocketPenetrometer

POCKET PENETROMETER							
SAMPLE NO.	DES-SED-06						
DAY	0	3	5	7	14	21	28
POCKET PEN	0.0						

POCKET VANE SHEAR

REPORT FORM

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0664
TESTING DATE: 11/28/17
TESTED BY: JDM
TRACKING CODE: B794_VaneShear

POCKET VANE SHEAR		
SAMPLE NO.	DEW-SED-06	
DEPTH (FT)	-	
FOOT SIZE (S,M,L)	L	
INITIAL DIAL READING	0	
FINIAL DIAL READING	0	
DIVISIONS MOVED	0	
SHEAR STRENGTH (TSF)	0	

Appendix I:
Solidification Evaluations Mixture
Design Data Sheets

MIX DEVELOPMENT DATA SHEET

PROJECT: Penobscot River Dewatering MIX No. 0661-001
 PROJECT No.: SH0661
 MIXING DATE: 26-Dec-17 MIXED BY: JDM

UNTREATED MATERIAL TYPE	FFBU-VN-Composite	
WEIGHT OF UNTREATED MATERIAL	1,400 g	
REAGENT TYPE AND LOT NUMBER	ADDITION RATE	WEIGHT
Type I Portland Cement	4.00 %	56.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
Water Addition	0 %	0.0 g

OBSERVATIONS / NOTES
 Moisture Content @ 24, 48, 72 Hours & 7 Days
 Paint Filter @ 24, 48, 72 Hours & 7 Days
 Bulk Specific Gravity @ 24, 48, 72 Hours & 7 Days
 pH @ 24, 48, 72 Hours & 7 Days
 Volumetric Expansion @ 72 Hours

VOLUMETRIC EXPANSION		24 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.5876
VOLUMETRIC EXPANSION (%):	4.21	
VOLUMETRIC EXPANSION		72 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.5882
VOLUMETRIC EXPANSION (%):	4.25	

MIX DEVELOPMENT DATA SHEET

PROJECT:	Penobscot River Dewatering	MIX No.
PROJECT No.:	SH0661	0661-002
MIXING DATE:	26-Dec-17	MIXED BY: <u> JDM </u>

UNTREATED MATERIAL TYPE	FFBU-VN-Composite	
WEIGHT OF UNTREATED MATERIAL	1,400 g	
REAGENT TYPE AND LOT NUMBER	ADDITION RATE	WEIGHT
Type I Portland Cement	8.00 %	112.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
Water Addition	0 %	0.0 g

OBSERVATIONS / NOTES

Moisture Content @ 24, 48, 72 Hours & 7 Days
 Paint Filter @ 24, 48, 72 Hours & 7 Days
 Bulk Specific Gravity @ 24, 48, 72 Hours & 7 Days
 pH @ 24, 48, 72 Hours & 7 Days
 Volumetric Expansion @ 72 Hours

VOLUMETRIC EXPANSION		24 Hours
INITIAL HEIGHT (in):	1.5236	FINAL HEIGHT (in):
		1.6039
VOLUMETRIC EXPANSION (%):	5.27	
VOLUMETRIC EXPANSION		72 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.5871
VOLUMETRIC EXPANSION (%):	4.18	

MIX DEVELOPMENT DATA SHEET

PROJECT:	Penobscot River Dewatering	MIX No.
PROJECT No.:	SH0661	0661-003
MIXING DATE:	26-Dec-17	MIXED BY: <u> JDM </u>

UNTREATED MATERIAL TYPE	FFBU-VN-Composite	
WEIGHT OF UNTREATED MATERIAL	1,400 g	
REAGENT TYPE AND LOT NUMBER	ADDITION RATE	WEIGHT
Type I Portland Cement	12.00 %	168.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
Water Addition	0 %	0.0 g

OBSERVATIONS / NOTES

Moisture Content @ 24, 48, 72 Hours & 7 Days
 Paint Filter @ 24, 48, 72 Hours & 7 Days
 Bulk Specific Gravity @ 24, 48, 72 Hours & 7 Days
 pH @ 24, 48, 72 Hours & 7 Days
 Volumetric Expansion @ 72 Hours

VOLUMETRIC EXPANSION		24 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.6141
VOLUMETRIC EXPANSION (%):	5.95	
VOLUMETRIC EXPANSION		72 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.6220
VOLUMETRIC EXPANSION (%):	6.47	

MIX DEVELOPMENT DATA SHEET

PROJECT:	Penobscot River Dewatering	MIX No.
PROJECT No.:	SH0661	0661-004
MIXING DATE:	26-Dec-17	MIXED BY: <u> JDM </u>

UNTREATED MATERIAL TYPE	FFBU-VN-Composite	
WEIGHT OF UNTREATED MATERIAL	1,400 g	
REAGENT TYPE AND LOT NUMBER	ADDITION RATE	WEIGHT
Type I Portland Cement	16.00 %	224.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
Water Addition	0 %	0.0 g

OBSERVATIONS / NOTES

Moisture Content @ 24, 48, 72 Hours & 7 Days
 Paint Filter @ 24, 48, 72 Hours & 7 Days
 Bulk Specific Gravity @ 24, 48, 72 Hours & 7 Days
 pH @ 24, 48, 72 Hours & 7 Days
 Volumetric Expansion @ 72 Hours

VOLUMETRIC EXPANSION		24 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.651
VOLUMETRIC EXPANSION (%):	8.38	
VOLUMETRIC EXPANSION		72 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.6566
VOLUMETRIC EXPANSION (%):	8.74	

MIX DEVELOPMENT DATA SHEET

PROJECT:	Penobscot River Dewatering	MIX No.
PROJECT No.:	SH0661	0661-005
MIXING DATE:	26-Dec-17	MIXED BY: <u> JDM </u>

UNTREATED MATERIAL TYPE	FFBU-VN-Composite	
WEIGHT OF UNTREATED MATERIAL	1,400 g	
REAGENT TYPE AND LOT NUMBER	ADDITION RATE	WEIGHT
Type I Portland Cement	20.00 %	280.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
Water Addition	0 %	0.0 g

OBSERVATIONS / NOTES

Moisture Content @ 24, 48, 72 Hours & 7 Days
 Paint Filter @ 24, 48, 72 Hours & 7 Days
 Bulk Specific Gravity @ 24, 48, 72 Hours & 7 Days
 pH @ 24, 48, 72 Hours & 7 Days
 Volumetric Expansion @ 72 Hours

VOLUMETRIC EXPANSION		72 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.6957
VOLUMETRIC EXPANSION (%):	11.31	
VOLUMETRIC EXPANSION		72 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.6782
VOLUMETRIC EXPANSION (%):	10.16	

MIX DEVELOPMENT DATA SHEET

PROJECT: Penobscot River Dewatering MIX No. 0661-006
 PROJECT No.: SH0661
 MIXING DATE: 26-Dec-17 MIXED BY: JDM

UNTREATED MATERIAL TYPE	FFBU-VN-Composite	
WEIGHT OF UNTREATED MATERIAL	1,400 g	
REAGENT TYPE AND LOT NUMBER	ADDITION RATE	WEIGHT
LKD	4.00 %	56.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
Water Addition	0 %	0.0 g

OBSERVATIONS / NOTES
 Moisture Content @ 24, 48, 72 Hours & 7 Days
 Paint Filter @ 24, 48, 72 Hours & 7 Days
 Bulk Specific Gravity @ 24, 48, 72 Hours & 7 Days
 pH @ 24, 48, 72 Hours & 7 Days
 Volumetric Expansion @ 72 Hours

VOLUMETRIC EXPANSION		72 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.6071
VOLUMETRIC EXPANSION (%):	5.50	

MIX DEVELOPMENT DATA SHEET

PROJECT: Penobscot River Dewatering MIX No. 0661-007
 PROJECT No.: SH0661
 MIXING DATE: 26-Dec-17 MIXED BY: JDM

UNTREATED MATERIAL TYPE	FFBU-VN-Composite	
WEIGHT OF UNTREATED MATERIAL	1,400 g	
REAGENT TYPE AND LOT NUMBER	ADDITION RATE	WEIGHT
LKD	8.00 %	112.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
Water Addition	0 %	0.0 g
OBSERVATIONS / NOTES Moisture Content @ 24, 48, 72 Hours & 7 Days Paint Filter @ 24, 48, 72 Hours & 7 Days Bulk Specific Gravity @ 24, 48, 72 Hours & 7 Days pH @ 24, 48, 72 Hours & 7 Days Volumetric Expansion @ 72 Hours		
VOLUMETRIC EXPANSION		72 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.6376
VOLUMETRIC EXPANSION (%):	7.50	

MIX DEVELOPMENT DATA SHEET

PROJECT: Penobscot River Dewatering MIX No. 0661-008
 PROJECT No.: SH0661
 MIXING DATE: 26-Dec-17 MIXED BY: JDM

UNTREATED MATERIAL TYPE	FFBU-VN-Composite	
WEIGHT OF UNTREATED MATERIAL	1,400 g	
REAGENT TYPE AND LOT NUMBER	ADDITION RATE	WEIGHT
LKD	12.00 %	168.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
Water Addition	0 %	0.0 g
OBSERVATIONS / NOTES Moisture Content @ 24, 48, 72 Hours & 7 Days Paint Filter @ 24, 48, 72 Hours & 7 Days Bulk Specific Gravity @ 24, 48, 72 Hours & 7 Days pH @ 24, 48, 72 Hours & 7 Days Volumetric Expansion @ 72 Hours		
VOLUMETRIC EXPANSION		72 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.6448
VOLUMETRIC EXPANSION (%):	7.97	

MIX DEVELOPMENT DATA SHEET

PROJECT: Penobscot River Dewatering MIX No. 0661-009
 PROJECT No.: SH0661
 MIXING DATE: 26-Dec-17 MIXED BY: JDM

UNTREATED MATERIAL TYPE	FFBU-VN-Composite	
WEIGHT OF UNTREATED MATERIAL	1,400 g	
REAGENT TYPE AND LOT NUMBER	ADDITION RATE	WEIGHT
LKD	16.00 %	224.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
Water Addition	0 %	0.0 g
OBSERVATIONS / NOTES Moisture Content @ 24, 48, 72 Hours & 7 Days Paint Filter @ 24, 48, 72 Hours & 7 Days Bulk Specific Gravity @ 24, 48, 72 Hours & 7 Days pH @ 24, 48, 72 Hours & 7 Days Volumetric Expansion @ 72 Hours		
VOLUMETRIC EXPANSION		72 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.67
VOLUMETRIC EXPANSION (%):	9.62	

MIX DEVELOPMENT DATA SHEET

PROJECT: Penobscot River Dewatering MIX No. 0661-010
 PROJECT No.: SH0661
 MIXING DATE: 26-Dec-17 MIXED BY: JDM

UNTREATED MATERIAL TYPE	FFBU-VN-Composite	
WEIGHT OF UNTREATED MATERIAL	1,400 g	
REAGENT TYPE AND LOT NUMBER	ADDITION RATE	WEIGHT
LKD	20.00 %	280.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
	%	0.0 g
Water Addition	0 %	0.0 g
OBSERVATIONS / NOTES Moisture Content @ 24, 48, 72 Hours & 7 Days Paint Filter @ 24, 48, 72 Hours & 7 Days Bulk Specific Gravity @ 24, 48, 72 Hours & 7 Days pH @ 24, 48, 72 Hours & 7 Days Volumetric Expansion @ 72 Hours		
VOLUMETRIC EXPANSION		72 Hours
INITIAL HEIGHT (in):	1.5234	FINAL HEIGHT (in):
		1.7243
VOLUMETRIC EXPANSION (%):	13.19	

Appendix J:
Solidification Evaluations Physical
Properties Testing Data Sheets

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-001 (24-Hour)
TESTING DATE: 12/27/17
TESTED BY: JDM
TRACKING CODE: B828_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0291 g	1.0326 g	0.9977 g
3. WT WET SOIL + TARE	19.2152 g	16.9955 g	20.0288 g
4. WT DRY SOIL + TARE	8.0650 g	7.1549 g	8.1495 g
5. WT WATER, W _w	11.1502 g	9.8406 g	11.8793 g
6. WT DRY SOIL, W _s	7.0359 g	6.1223 g	7.1518 g
7. ASTM MOISTURE CONTENT	158.48 %	160.73 %	166.10 %
8. PERCENT SOLIDS	38.69 %	38.35 %	37.58 %
9. AVERAGE ASTM MOISTURE CONTENT	161.77 %		
10. AVERAGE PERCENT SOLIDS	38.21 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-001 (24-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B828_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.47 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/27/2017
TESTED BY: JDM/CKB
TRACKING CODE: B828

KEMRON SAMPLE No.	MATERIAL pH
1 0661-001 (24-Hour) (A)	12.02
2 0661-001 (24-Hour) (B)	12.16
3 0661-001 (24-Hour) (C)	12.14
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.11

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0611-001 (24-Hour)
TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B828_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.12 g
3. WT OF MOLD + SOIL	284.37 g
4. WT OF WET SOIL, W	266.25 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	80.7 pcf
9. BULK SPECIFIC GRAVITY	1.29

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-001 (48-Hour)
TESTING DATE: 12/28/17
TESTED BY: JDM
TRACKING CODE: B838_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0393 g	1.0638 g	1.0081 g
3. WT WET SOIL + TARE	23.2001 g	22.2811 g	20.2442 g
4. WT DRY SOIL + TARE	9.6769 g	9.3130 g	8.4962 g
5. WT WATER, W _w	13.5232 g	12.9681 g	11.7480 g
6. WT DRY SOIL, W _s	8.6376 g	8.2492 g	7.4881 g
7. ASTM MOISTURE CONTENT	156.56 %	157.20 %	156.89 %
8. PERCENT SOLIDS	38.98 %	38.88 %	38.93 %
9. AVERAGE ASTM MOISTURE CONTENT	156.89 %		
10. AVERAGE PERCENT SOLIDS	38.93 %		

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/28/2017
TESTED BY: JDM/CKB
TRACKING CODE: B838_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-001 48-Hour) (A)	12.12
2 0661-001 (48-Hour) (B)	12.18
3 0661-001 (48-Hour) (C)	12.12
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.14

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-001 (48-Hour)
TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B838_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.12 g
3. WT OF MOLD + SOIL	281.97 g
4. WT OF WET SOIL, W	263.85 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	80.0 pcf
9. BULK SPECIFIC GRAVITY	1.28

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-001 (72-Hour)
TESTING DATE: 12/29/17
TESTED BY: JDM
TRACKING CODE: B848_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0358 g	1.0410 g	1.0320 g
3. WT WET SOIL + TARE	22.1968 g	17.4563 g	21.7862 g
4. WT DRY SOIL + TARE	9.4111 g	7.4931 g	9.1679 g
5. WT WATER, W _w	12.7857 g	9.9632 g	12.6183 g
6. WT DRY SOIL, W _s	8.3753 g	6.4521 g	8.1359 g
7. ASTM MOISTURE CONTENT	152.66 %	154.42 %	155.09 %
8. PERCENT SOLIDS	39.58 %	39.31 %	39.20 %
9. AVERAGE ASTM MOISTURE CONTENT	154.06 %		
10. AVERAGE PERCENT SOLIDS	39.36 %		

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/29/2017
TESTED BY: JDM/CKB
TRACKING CODE: B848_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-001 (72-Hour) (A)	12.22
2 0661-001 (72-Hour) (B)	12.28
3 0661-001 (72-Hour) (C)	12.32
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.27

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-001 (72-Hour)
TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B848_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.12 g
3. WT OF MOLD + SOIL	281.03 g
4. WT OF WET SOIL, W	262.91 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	79.7 pcf
9. BULK SPECIFIC GRAVITY	1.28

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-001 (7-Day)
TESTING DATE: 01/02/18
TESTED BY: JDM/LJ
TRACKING CODE: B858_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0668 g	1.0274 g	1.0393 g
3. WT WET SOIL + TARE	20.3538 g	17.0598 g	21.7618 g
4. WT DRY SOIL + TARE	8.6384 g	7.2933 g	9.1226 g
5. WT WATER, W _w	11.7154 g	9.7665 g	12.6392 g
6. WT DRY SOIL, W _s	7.5716 g	6.2659 g	8.0833 g
7. ASTM MOISTURE CONTENT	154.73 %	155.87 %	156.36 %
8. PERCENT SOLIDS	39.26 %	39.08 %	39.01 %
9. AVERAGE ASTM MOISTURE CONTENT	155.65 %		
10. AVERAGE PERCENT SOLIDS	39.12 %		

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 1/2/2018
TESTED BY: JDM/LJ
TRACKING CODE: B858_pH

KEMRON SAMPLE No.		MATERIAL pH
1	0661-001 (7-Day) (A)	12.51
2	0661-001 (7-Day) (B)	12.50
3	0661-001 (7-Day) (C)	12.52
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
AVERAGE:		12.51

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-001 (7-Day)
TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B858_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.12 g
3. WT OF MOLD + SOIL	282.36 g
4. WT OF WET SOIL, W	264.24 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	80.1 pcf
9. BULK SPECIFIC GRAVITY	1.28

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-002 (24-Hour)
TESTING DATE: 12/27/17
TESTED BY: JDM
TRACKING CODE: B829_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0335 g	1.0693 g	1.0540 g
3. WT WET SOIL + TARE	23.4327 g	17.9948 g	23.1792 g
4. WT DRY SOIL + TARE	10.4282 g	8.1700 g	10.3783 g
5. WT WATER, W _w	13.0045 g	9.8248 g	12.8009 g
6. WT DRY SOIL, W _s	9.3947 g	7.1007 g	9.3243 g
7. ASTM MOISTURE CONTENT	138.42 %	138.36 %	137.29 %
8. PERCENT SOLIDS	41.94 %	41.95 %	42.14 %
9. AVERAGE ASTM MOISTURE CONTENT	138.02 %		
10. AVERAGE PERCENT SOLIDS	42.01 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-002 (24-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B829_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.42 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/27/2017
TESTED BY: JDM/CKB
TRACKING CODE: B829

KEMRON SAMPLE No.	MATERIAL pH
1 0661-002 (24-Hour) (A)	12.41
2 0661-002 (24-Hour) (B)	12.33
3 0661-002 (24-Hour) (C)	12.35
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.36

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0611-002 (24-Hour)
TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B829_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.15 g
3. WT OF MOLD + SOIL	288.03 g
4. WT OF WET SOIL, W	269.88 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	81.8 pcf
9. BULK SPECIFIC GRAVITY	1.31

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-002 (48-Hour)
TESTING DATE: 12/28/17
TESTED BY: JDM
TRACKING CODE: B839_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0517 g	1.0502 g	1.0330 g
3. WT WET SOIL + TARE	25.4417 g	21.7954 g	21.4269 g
4. WT DRY SOIL + TARE	11.2283 g	9.6416 g	9.5728 g
5. WT WATER, W _w	14.2134 g	12.1538 g	11.8541 g
6. WT DRY SOIL, W _s	10.1766 g	8.5914 g	8.5398 g
7. ASTM MOISTURE CONTENT	139.67 %	141.46 %	138.81 %
8. PERCENT SOLIDS	41.72 %	41.41 %	41.87 %
9. AVERAGE ASTM MOISTURE CONTENT	139.98 %		
10. AVERAGE PERCENT SOLIDS	41.67 %		

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/28/2017
TESTED BY: JDM/CKB
TRACKING CODE: B839_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-002 48-Hour) (A)	12.44
2 0661-002 (48-Hour) (B)	12.43
3 0661-002 (48-Hour) (C)	12.39
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.42

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-002 (48-Hour)
TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B839_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.17 g
3. WT OF MOLD + SOIL	287.88 g
4. WT OF WET SOIL, W	269.71 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	81.8 pcf
9. BULK SPECIFIC GRAVITY	1.31

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-002 (72-Hour)
TESTING DATE: 12/29/17
TESTED BY: JDM
TRACKING CODE: B849_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0348 g	0.9962 g	1.0242 g
3. WT WET SOIL + TARE	18.0805 g	23.6654 g	20.3562 g
4. WT DRY SOIL + TARE	7.9475 g	10.1298 g	8.9648 g
5. WT WATER, W _w	10.1330 g	13.5356 g	11.3914 g
6. WT DRY SOIL, W _s	6.9127 g	9.1336 g	7.9406 g
7. ASTM MOISTURE CONTENT	146.59 %	148.20 %	143.46 %
8. PERCENT SOLIDS	40.55 %	40.29 %	41.07 %
9. AVERAGE ASTM MOISTURE CONTENT	146.08 %		
10. AVERAGE PERCENT SOLIDS	40.64 %		

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/29/2017
TESTED BY: JDM/CKB
TRACKING CODE: B849_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-002 (72-Hour) (A)	12.54
2 0661-002 (72-Hour) (B)	12.60
3 0661-002 (72-Hour) (C)	12.56
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.57

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-002 (72-Hour)
TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B849_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.13 g
3. WT OF MOLD + SOIL	286.76 g
4. WT OF WET SOIL, W	268.63 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	81.4 pcf
9. BULK SPECIFIC GRAVITY	1.31

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-002 (7-Day)
TESTING DATE: 01/02/18
TESTED BY: JDM/LJ
TRACKING CODE: B859_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0334 g	1.0377 g	1.0850 g
3. WT WET SOIL + TARE	23.7398 g	21.9698 g	17.2788 g
4. WT DRY SOIL + TARE	10.6930 g	9.9297 g	8.0444 g
5. WT WATER, W _w	13.0468 g	12.0401 g	9.2344 g
6. WT DRY SOIL, W _s	9.6596 g	8.8920 g	6.9594 g
7. ASTM MOISTURE CONTENT	135.07 %	135.40 %	132.69 %
8. PERCENT SOLIDS	42.54 %	42.48 %	42.98 %
9. AVERAGE ASTM MOISTURE CONTENT	134.39 %		
10. AVERAGE PERCENT SOLIDS	42.67 %		

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 1/2/2018
TESTED BY: JDM/LJ
TRACKING CODE: B859_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-002 (7-Day) (A)	12.95
2 0661-002 (7-Day) (B)	12.89
3 0661-002 (7-Day) (C)	12.94
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.93

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-002 (7-Day)
TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B859_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.13 g
3. WT OF MOLD + SOIL	288.37 g
4. WT OF WET SOIL, W	270.24 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	81.9 pcf
9. BULK SPECIFIC GRAVITY	1.31

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-003 (24-Hour)
TESTING DATE: 12/27/17
TESTED BY: JDM
TRACKING CODE: B830_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0704 g	1.0670 g	1.0835 g
3. WT WET SOIL + TARE	21.1904 g	21.7939 g	21.7649 g
4. WT DRY SOIL + TARE	9.8335 g	10.0970 g	10.1189 g
5. WT WATER, W _w	11.3569 g	11.6969 g	11.6460 g
6. WT DRY SOIL, W _s	8.7631 g	9.0300 g	9.0354 g
7. ASTM MOISTURE CONTENT	129.60 %	129.53 %	128.89 %
8. PERCENT SOLIDS	43.55 %	43.57 %	43.69 %
9. AVERAGE ASTM MOISTURE CONTENT	129.34 %		
10. AVERAGE PERCENT SOLIDS	43.60 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-003 (24-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B830_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	101.39 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/27/2017
TESTED BY: JDM/CKB
TRACKING CODE: B830

KEMRON SAMPLE No.	MATERIAL pH
1 0661-003 (24-Hour) (A)	12.39
2 0661-003 (24-Hour) (B)	12.42
3 0661-003 (24-Hour) (C)	12.40
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.40

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0611-003 (24-Hour)
TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B830_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.16 g
3. WT OF MOLD + SOIL	294.66 g
4. WT OF WET SOIL, W	276.50 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	83.8 pcf
9. BULK SPECIFIC GRAVITY	1.34

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-003 (48-Hour)
TESTING DATE: 12/28/17
TESTED BY: JDM
TRACKING CODE: B840_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0197 g	1.0150 g	1.0044 g
3. WT WET SOIL + TARE	27.3744 g	21.3668 g	24.4342 g
4. WT DRY SOIL + TARE	12.6051 g	10.0980 g	11.3566 g
5. WT WATER, W _w	14.7693 g	11.2688 g	13.0776 g
6. WT DRY SOIL, W _s	11.5854 g	9.0830 g	10.3522 g
7. ASTM MOISTURE CONTENT	127.48 %	124.06 %	126.33 %
8. PERCENT SOLIDS	43.96 %	44.63 %	44.18 %
9. AVERAGE ASTM MOISTURE CONTENT	125.96 %		
10. AVERAGE PERCENT SOLIDS	44.26 %		

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/28/2017
TESTED BY: JDM/CKB
TRACKING CODE: B840_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-003 48-Hour) (A)	12.47
2 0661-003 (48-Hour) (B)	12.44
3 0661-003 (48-Hour) (C)	12.43
4	
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10	
11	
12	
13	
14	
15	
AVERAGE:	12.45

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-003 (48-Hour)
TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B840_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.17 g
3. WT OF MOLD + SOIL	295.79 g
4. WT OF WET SOIL, W	277.62 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	84.2 pcf
9. BULK SPECIFIC GRAVITY	1.35

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-003 (72-Hour)
TESTING DATE: 12/29/17
TESTED BY: JDM
TRACKING CODE: B850_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0487 g	1.0872 g	1.0621 g
3. WT WET SOIL + TARE	20.0312 g	15.8094 g	21.6900 g
4. WT DRY SOIL + TARE	9.3633 g	7.5658 g	10.0889 g
5. WT WATER, W _w	10.6679 g	8.2436 g	11.6011 g
6. WT DRY SOIL, W _s	8.3146 g	6.4786 g	9.0268 g
7. ASTM MOISTURE CONTENT	128.30 %	127.24 %	128.52 %
8. PERCENT SOLIDS	43.80 %	44.01 %	43.76 %
9. AVERAGE ASTM MOISTURE CONTENT	128.02 %		
10. AVERAGE PERCENT SOLIDS	43.86 %		

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/29/2017
TESTED BY: JDM/CKB
TRACKING CODE: B850_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-003 (72-Hour) (A)	12.66
2 0661-003 (72-Hour) (B)	12.64
3 0661-003 (72-Hour) (C)	12.64
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12	
13	
14	
15	
AVERAGE:	12.65

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-003 (72-Hour)
TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B850_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.12 g
3. WT OF MOLD + SOIL	295.40 g
4. WT OF WET SOIL, W	277.28 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	84.1 pcf
9. BULK SPECIFIC GRAVITY	1.35

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-003 (7-Day)
TESTING DATE: 01/02/18
TESTED BY: JDM/LJ
TRACKING CODE: B860_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0691 g	1.0365 g	1.0389 g
3. WT WET SOIL + TARE	16.7053 g	20.9136 g	15.9361 g
4. WT DRY SOIL + TARE	8.0820 g	9.9660 g	7.7226 g
5. WT WATER, W _w	8.6233 g	10.9476 g	8.2135 g
6. WT DRY SOIL, W _s	7.0129 g	8.9295 g	6.6837 g
7. ASTM MOISTURE CONTENT	122.96 %	122.60 %	122.89 %
8. PERCENT SOLIDS	44.85 %	44.92 %	44.87 %
9. AVERAGE ASTM MOISTURE CONTENT	122.82 %		
10. AVERAGE PERCENT SOLIDS	44.88 %		

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 1/2/2018
TESTED BY: JDM/LJ
TRACKING CODE: B860_pH

KEMRON SAMPLE No.		MATERIAL pH
1	0661-003 (7-Day) (A)	12.96
2	0661-003 (7-Day) (B)	12.93
3	0661-003 (7-Day) (C)	12.98
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
AVERAGE:		12.96

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-003 (7-Day)
TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B860_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.13 g
3. WT OF MOLD + SOIL	294.10 g
4. WT OF WET SOIL, W	275.97 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	83.7 pcf
9. BULK SPECIFIC GRAVITY	1.34

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-004 (24-Hour)
TESTING DATE: 12/27/17
TESTED BY: JDM
TRACKING CODE: B831_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0639 g	1.0543 g	1.0800 g
3. WT WET SOIL + TARE	21.9371 g	21.7915 g	33.8012 g
4. WT DRY SOIL + TARE	10.6439 g	11.6107 g	16.2405 g
5. WT WATER, W _w	11.2932 g	10.1808 g	17.5607 g
6. WT DRY SOIL, W _s	9.5800 g	10.5564 g	15.1605 g
7. ASTM MOISTURE CONTENT	117.88 %	96.44 %	115.83 %
8. PERCENT SOLIDS	45.90 %	50.91 %	46.33 %
9. AVERAGE ASTM MOISTURE CONTENT	110.05 %		
10. AVERAGE PERCENT SOLIDS	47.71 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-004 (24-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B831_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	101.38 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/27/2017
TESTED BY: JDM/CKB
TRACKING CODE: B831

KEMRON SAMPLE No.	MATERIAL pH
1 0661-004 (24 Hour) (A)	12.52
2 0661-004 (24 Hour) (B)	12.46
3 0661-004 (24 Hour) (C)	12.40
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.46

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0611-004 (24-Hour)
TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B831_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.13 g
3. WT OF MOLD + SOIL	298.73 g
4. WT OF WET SOIL, W	280.60 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	85.1 pcf
9. BULK SPECIFIC GRAVITY	1.36

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-004 (48-Hour)
TESTING DATE: 12/28/17
TESTED BY: JDM
TRACKING CODE: B841_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0429 g	1.0577 g	1.0597 g
3. WT WET SOIL + TARE	21.7912 g	21.6333 g	22.6410 g
4. WT DRY SOIL + TARE	10.6956 g	10.7377 g	11.1175 g
5. WT WATER, W _w	11.0956 g	10.8956 g	11.5235 g
6. WT DRY SOIL, W _s	9.6527 g	9.6800 g	10.0578 g
7. ASTM MOISTURE CONTENT	114.95 %	112.56 %	114.57 %
8. PERCENT SOLIDS	46.52 %	47.05 %	46.60 %
9. AVERAGE ASTM MOISTURE CONTENT	114.03 %		
10. AVERAGE PERCENT SOLIDS	46.72 %		

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/28/2017
TESTED BY: JDM/CKB
TRACKING CODE: B841_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-004 48-Hour) (A)	12.60
2 0661-004 (48-Hour) (B)	12.57
3 0661-004 (48-Hour) (C)	12.54
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.57

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-004 (48-Hour)
TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B841_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.15 g
3. WT OF MOLD + SOIL	298.56 g
4. WT OF WET SOIL, W	280.41 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	85.0 pcf
9. BULK SPECIFIC GRAVITY	1.36

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-004 (72-Hour)
TESTING DATE: 12/29/17
TESTED BY: JDM
TRACKING CODE: B851_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0280 g	1.0383 g	1.0477 g
3. WT WET SOIL + TARE	16.9446 g	20.6200 g	20.6181 g
4. WT DRY SOIL + TARE	8.3963 g	10.1980 g	10.1412 g
5. WT WATER, W _w	8.5483 g	10.4220 g	10.4769 g
6. WT DRY SOIL, W _s	7.3683 g	9.1597 g	9.0935 g
7. ASTM MOISTURE CONTENT	116.01 %	113.78 %	115.21 %
8. PERCENT SOLIDS	46.29 %	46.78 %	46.47 %
9. AVERAGE ASTM MOISTURE CONTENT	115.00 %		
10. AVERAGE PERCENT SOLIDS	46.51 %		

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/29/2017
TESTED BY: JDM/CKB
TRACKING CODE: B851_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-004 (72-Hour) (A)	12.69
2 0661-004 (72-Hour) (B)	12.76
3 0661-004 (72-Hour) (C)	12.71
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.72

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-004 (72-Hour)
TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B851_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.15 g
3. WT OF MOLD + SOIL	298.24 g
4. WT OF WET SOIL, W	280.09 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	84.9 pcf
9. BULK SPECIFIC GRAVITY	1.36

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-004 (7-Day)
TESTING DATE: 01/02/18
TESTED BY: JDM/LJ
TRACKING CODE: B861_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0978 g	1.0305 g	1.0381 g
3. WT WET SOIL + TARE	14.9879 g	13.2256 g	16.4248 g
4. WT DRY SOIL + TARE	7.5350 g	6.7612 g	8.3120 g
5. WT WATER, W _w	7.4529 g	6.4644 g	8.1128 g
6. WT DRY SOIL, W _s	6.4372 g	5.7307 g	7.2739 g
7. ASTM MOISTURE CONTENT	115.78 %	112.80 %	111.53 %
8. PERCENT SOLIDS	46.34 %	46.99 %	47.27 %
9. AVERAGE ASTM MOISTURE CONTENT	113.37 %		
10. AVERAGE PERCENT SOLIDS	46.87 %		

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 1/2/2018
TESTED BY: JDM/LJ
TRACKING CODE: B861_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-004 (7-Day) (A)	13.03
2 0661-004 (7-Day) (B)	13.00
3 0661-004 (7-Day) (C)	13.01
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	13.01

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-004 (7-Day)
TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B861_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.15 g
3. WT OF MOLD + SOIL	298.77 g
4. WT OF WET SOIL, W	280.62 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	85.1 pcf
9. BULK SPECIFIC GRAVITY	1.36

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-005 (24-Hour)
TESTING DATE: 12/27/17
TESTED BY: JDM
TRACKING CODE: B832_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0166 g	1.0205 g	1.0215 g
3. WT WET SOIL + TARE	21.4294 g	19.7958 g	24.9405 g
4. WT DRY SOIL + TARE	10.8257 g	10.3991 g	12.5353 g
5. WT WATER, W _w	10.6037 g	9.3967 g	12.4052 g
6. WT DRY SOIL, W _s	9.8091 g	9.3786 g	11.5138 g
7. ASTM MOISTURE CONTENT	108.10 %	100.19 %	107.74 %
8. PERCENT SOLIDS	48.05 %	49.95 %	48.14 %
9. AVERAGE ASTM MOISTURE CONTENT	105.35 %		
10. AVERAGE PERCENT SOLIDS	48.71 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-005 (24-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B832_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.95 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/27/2017
TESTED BY: JDM/CKB
TRACKING CODE: B832

KEMRON SAMPLE No.	MATERIAL pH
1 0661-005 (24 Hour) (A)	12.45
2 0661-005 (24 Hour) (B)	12.40
3 0661-005 (24 Hour) (C)	12.36
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.40

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0611-005 (24-Hour)
TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B832_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.12 g
3. WT OF MOLD + SOIL	306.61 g
4. WT OF WET SOIL, W	288.49 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	87.5 pcf
9. BULK SPECIFIC GRAVITY	1.40

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-005 (48-Hour)
TESTING DATE: 12/28/17
TESTED BY: JDM
TRACKING CODE: B842_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0489 g	1.0367 g	1.0317 g
3. WT WET SOIL + TARE	16.8205 g	18.4939 g	17.0678 g
4. WT DRY SOIL + TARE	8.8468 g	9.6403 g	8.9095 g
5. WT WATER, W _w	7.9737 g	8.8536 g	8.1583 g
6. WT DRY SOIL, W _s	7.7979 g	8.6036 g	7.8778 g
7. ASTM MOISTURE CONTENT	102.25 %	102.91 %	103.56 %
8. PERCENT SOLIDS	49.44 %	49.28 %	49.13 %
9. AVERAGE ASTM MOISTURE CONTENT	102.91 %		
10. AVERAGE PERCENT SOLIDS	49.28 %		

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/28/2017
TESTED BY: JDM/CKB
TRACKING CODE: B842_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-005 (48-Hour) (A)	12.51
2 0661-005 (48-Hour) (B)	12.57
3 0661-005 (48-Hour) (C)	12.52
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.53

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-005 (48-Hour)
TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B842_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.12 g
3. WT OF MOLD + SOIL	304.30 g
4. WT OF WET SOIL, W	286.18 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	86.8 pcf
9. BULK SPECIFIC GRAVITY	1.39

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-005 (72-Hour)
TESTING DATE: 12/29/17
TESTED BY: JDM
TRACKING CODE: B852_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.1059 g	1.0111 g	1.0436 g
3. WT WET SOIL + TARE	15.6021 g	14.0659 g	17.7209 g
4. WT DRY SOIL + TARE	8.3330 g	7.4601 g	9.2953 g
5. WT WATER, W _w	7.2691 g	6.6058 g	8.4256 g
6. WT DRY SOIL, W _s	7.2271 g	6.4490 g	8.2517 g
7. ASTM MOISTURE CONTENT	100.58 %	102.43 %	102.11 %
8. PERCENT SOLIDS	49.86 %	49.40 %	49.48 %
9. AVERAGE ASTM MOISTURE CONTENT	101.71 %		
10. AVERAGE PERCENT SOLIDS	49.58 %		

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/29/2017
TESTED BY: JDM/CKB
TRACKING CODE: B852_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-005 (72-Hour) (A)	12.69
2 0661-005 (72-Hour) (B)	12.72
3 0661-005 (72-Hour) (C)	12.70
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.70

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-005 (72-Hour)
TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B852_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.16 g
3. WT OF MOLD + SOIL	305.46 g
4. WT OF WET SOIL, W	287.30 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	87.1 pcf
9. BULK SPECIFIC GRAVITY	1.40

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-005 (7-Day)
TESTING DATE: 01/02/18
TESTED BY: JDM/LJ
TRACKING CODE: B862_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0170 g	1.0292 g	1.0133 g
3. WT WET SOIL + TARE	16.4367 g	14.3768 g	13.4794 g
4. WT DRY SOIL + TARE	8.7022 g	7.7614 g	7.2101 g
5. WT WATER, W _w	7.7345 g	6.6154 g	6.2693 g
6. WT DRY SOIL, W _s	7.6852 g	6.7322 g	6.1968 g
7. ASTM MOISTURE CONTENT	100.64 %	98.27 %	101.17 %
8. PERCENT SOLIDS	49.84 %	50.44 %	49.71 %
9. AVERAGE ASTM MOISTURE CONTENT	100.03 %		
10. AVERAGE PERCENT SOLIDS	50.00 %		

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 1/2/2018
TESTED BY: JDM/LJ
TRACKING CODE: B862_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-005 (7-Day) (A)	13.03
2 0661-005 (7-Day) (B)	13.03
3 0661-005 (7-Day) (C)	13.06
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	13.04

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-005 (7-Day)
TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B862_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.11 g
3. WT OF MOLD + SOIL	305.47 g
4. WT OF WET SOIL, W	287.36 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	87.1 pcf
9. BULK SPECIFIC GRAVITY	1.40

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-006 (24-Hour)
TESTING DATE: 12/27/17
TESTED BY: JDM
TRACKING CODE: B833_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0158 g	1.0365 g	1.0339 g
3. WT WET SOIL + TARE	30.6873 g	26.5609 g	27.8907 g
4. WT DRY SOIL + TARE	12.7413 g	11.1723 g	11.6879 g
5. WT WATER, W _w	17.9460 g	15.3886 g	16.2028 g
6. WT DRY SOIL, W _s	11.7255 g	10.1358 g	10.6540 g
7. ASTM MOISTURE CONTENT	153.05 %	151.82 %	152.08 %
8. PERCENT SOLIDS	39.52 %	39.71 %	39.67 %
9. AVERAGE ASTM MOISTURE CONTENT	152.32 %		
10. AVERAGE PERCENT SOLIDS	39.63 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-006 (24-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B833_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	101.50 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.28 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/27/2017
TESTED BY: JDM/CKB
TRACKING CODE: B833

KEMRON SAMPLE No.	MATERIAL pH
1 0661-006 (24 Hour) (A)	12.35
2 0661-006 (24 Hour) (B)	12.31
3 0661-006 (24 Hour) (C)	12.29
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.32

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0611-006 (24-Hour)
TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B833_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.15 g
3. WT OF MOLD + SOIL	275.96 g
4. WT OF WET SOIL, W	257.81 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	78.2 pcf
9. BULK SPECIFIC GRAVITY	1.25

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-006 (48-Hour)
TESTING DATE: 12/28/17
TESTED BY: JDM
TRACKING CODE: B843_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0269 g	1.0405 g	1.0720 g
3. WT WET SOIL + TARE	20.6363 g	21.1587 g	24.4696 g
4. WT DRY SOIL + TARE	8.8025 g	8.9922 g	10.2828 g
5. WT WATER, W _w	11.8338 g	12.1665 g	14.1868 g
6. WT DRY SOIL, W _s	7.7756 g	7.9517 g	9.2108 g
7. ASTM MOISTURE CONTENT	152.19 %	153.01 %	154.02 %
8. PERCENT SOLIDS	39.65 %	39.52 %	39.37 %
9. AVERAGE ASTM MOISTURE CONTENT	153.07 %		
10. AVERAGE PERCENT SOLIDS	39.51 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-006 (48-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B843_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	103.21 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.62 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/28/2017
TESTED BY: JDM/CKB
TRACKING CODE: B843_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-006 (48-Hour) (A)	12.38
2 0661-006 (48-Hour) (B)	12.41
3 0661-006 (48-Hour) (C)	12.35
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.38

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-006 (48-Hour)
TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B843_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.14 g
3. WT OF MOLD + SOIL	273.26 g
4. WT OF WET SOIL, W	255.12 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	77.3 pcf
9. BULK SPECIFIC GRAVITY	1.24

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-006 (72-Hour)
TESTING DATE: 12/29/17
TESTED BY: JDM
TRACKING CODE: B853_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0491 g	1.0607 g	1.0214 g
3. WT WET SOIL + TARE	23.7093 g	18.1267 g	26.7368 g
4. WT DRY SOIL + TARE	9.9886 g	7.7878 g	11.0873 g
5. WT WATER, W _w	13.7207 g	10.3389 g	15.6495 g
6. WT DRY SOIL, W _s	8.9395 g	6.7271 g	10.0659 g
7. ASTM MOISTURE CONTENT	153.48 %	153.69 %	155.47 %
8. PERCENT SOLIDS	39.45 %	39.42 %	39.14 %
9. AVERAGE ASTM MOISTURE CONTENT	154.21 %		
10. AVERAGE PERCENT SOLIDS	39.34 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-006 (72-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B853_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.22 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.11 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/29/2017
TESTED BY: JDM/CKB
TRACKING CODE: B853_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-006 (72-Hour) (A)	12.52
2 0661-006 (72-Hour) (B)	12.51
3 0661-006 (72-Hour) (C)	12.49
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.51

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-006 (72-Hour)
TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B853_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.13 g
3. WT OF MOLD + SOIL	278.64 g
4. WT OF WET SOIL, W	260.51 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	79.0 pcf
9. BULK SPECIFIC GRAVITY	1.27

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-006 (7-Day)
TESTING DATE: 01/02/18
TESTED BY: JDM/LJ
TRACKING CODE: B863_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9993 g	0.9630 g	1.0264 g
3. WT WET SOIL + TARE	19.1257 g	19.4455 g	24.0727 g
4. WT DRY SOIL + TARE	8.2164 g	8.3099 g	10.1718 g
5. WT WATER, W _w	10.9093 g	11.1356 g	13.9009 g
6. WT DRY SOIL, W _s	7.2171 g	7.3469 g	9.1454 g
7. ASTM MOISTURE CONTENT	151.16 %	151.57 %	152.00 %
8. PERCENT SOLIDS	39.82 %	39.75 %	39.68 %
9. AVERAGE ASTM MOISTURE CONTENT	151.58 %		
10. AVERAGE PERCENT SOLIDS	39.75 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-006 (7-Day)
TESTING METHOD: EPA 9095

TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B863_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	102.88 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.19 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 1/2/2018
TESTED BY: JDM/LJ
TRACKING CODE: B863_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-006 (7-Day) (A)	12.70
2 0661-006 (7-Day) (B)	12.74
3 0661-006 (7-Day) (C)	12.73
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.72

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-006 (7-Day)
TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B863_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.14 g
3. WT OF MOLD + SOIL	278.31 g
4. WT OF WET SOIL, W	260.17 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	78.9 pcf
9. BULK SPECIFIC GRAVITY	1.26

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-007 (24-Hour)
TESTING DATE: 12/27/17
TESTED BY: JDM
TRACKING CODE: B834_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0746 g	1.0580 g	1.0353 g
3. WT WET SOIL + TARE	28.6822 g	20.7916 g	25.3877 g
4. WT DRY SOIL + TARE	12.5074 g	9.3108 g	11.2497 g
5. WT WATER, W _w	16.1748 g	11.4808 g	14.1380 g
6. WT DRY SOIL, W _s	11.4328 g	8.2528 g	10.2144 g
7. ASTM MOISTURE CONTENT	141.48 %	139.11 %	138.41 %
8. PERCENT SOLIDS	41.41 %	41.82 %	41.94 %
9. AVERAGE ASTM MOISTURE CONTENT	139.67 %		
10. AVERAGE PERCENT SOLIDS	41.73 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-007 (24-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B834_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.03 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.28 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/27/2017
TESTED BY: JDM/CKB
TRACKING CODE: B834

KEMRON SAMPLE No.	MATERIAL pH
1 0661-007 (24 Hour) (A)	12.46
2 0661-007 (24 Hour) (B)	12.46
3 0661-007 (24 Hour) (C)	12.49
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.47

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0611-007 (24-Hour)
TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B834_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.17 g
3. WT OF MOLD + SOIL	283.12 g
4. WT OF WET SOIL, W	264.95 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	80.3 pcf
9. BULK SPECIFIC GRAVITY	1.29

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-007 (48-Hour)
TESTING DATE: 12/28/17
TESTED BY: JDM
TRACKING CODE: B844_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0340 g	1.0821 g	1.0734 g
3. WT WET SOIL + TARE	23.4651 g	21.8560 g	24.1445 g
4. WT DRY SOIL + TARE	10.4836 g	9.8696 g	10.7088 g
5. WT WATER, W _w	12.9815 g	11.9864 g	13.4357 g
6. WT DRY SOIL, W _s	9.4496 g	8.7875 g	9.6354 g
7. ASTM MOISTURE CONTENT	137.38 %	136.40 %	139.44 %
8. PERCENT SOLIDS	42.13 %	42.30 %	41.76 %
9. AVERAGE ASTM MOISTURE CONTENT	137.74 %		
10. AVERAGE PERCENT SOLIDS	42.06 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-007 (48-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B844_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	101.16 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.53 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/28/2017
TESTED BY: JDM/CKB
TRACKING CODE: B844_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-007 (48-Hour) (A)	12.50
2 0661-007 (48-Hour) (B)	12.48
3 0661-007 (48-Hour) (C)	12.49
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.49

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-007 (48-Hour)
TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B844_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.13 g
3. WT OF MOLD + SOIL	281.21 g
4. WT OF WET SOIL, W	263.08 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	79.8 pcf
9. BULK SPECIFIC GRAVITY	1.28

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-007 (72-Hour)
TESTING DATE: 12/29/17
TESTED BY: JDM
TRACKING CODE: B854_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0478 g	1.0247 g	1.0600 g
3. WT WET SOIL + TARE	21.7737 g	20.4556 g	23.8324 g
4. WT DRY SOIL + TARE	9.6628 g	9.1618 g	10.5406 g
5. WT WATER, W _w	12.1109 g	11.2938 g	13.2918 g
6. WT DRY SOIL, W _s	8.6150 g	8.1371 g	9.4806 g
7. ASTM MOISTURE CONTENT	140.58 %	138.79 %	140.20 %
8. PERCENT SOLIDS	41.57 %	41.88 %	41.63 %
9. AVERAGE ASTM MOISTURE CONTENT	139.86 %		
10. AVERAGE PERCENT SOLIDS	41.69 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-007 (72-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B854_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	105.56 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.42 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/29/2017
TESTED BY: JDM/CKB
TRACKING CODE: B854_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-007 (72-Hour) (A)	12.63
2 0661-007 (72-Hour) (B)	12.66
3 0661-007 (72-Hour) (C)	12.67
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.65

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-007 (72-Hour)
TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B854_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.14 g
3. WT OF MOLD + SOIL	283.18 g
4. WT OF WET SOIL, W	265.04 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	80.3 pcf
9. BULK SPECIFIC GRAVITY	1.29

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-007 (7-Day)
TESTING DATE: 01/02/18
TESTED BY: JDM/LJ
TRACKING CODE: B864_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0323 g	1.0285 g	1.0748 g
3. WT WET SOIL + TARE	23.0110 g	24.0386 g	22.8786 g
4. WT DRY SOIL + TARE	11.0018 g	10.9811 g	10.4578 g
5. WT WATER, W _w	12.0092 g	13.0575 g	12.4208 g
6. WT DRY SOIL, W _s	9.9695 g	9.9526 g	9.3830 g
7. ASTM MOISTURE CONTENT	120.46 %	131.20 %	132.38 %
8. PERCENT SOLIDS	45.36 %	43.25 %	43.03 %
9. AVERAGE ASTM MOISTURE CONTENT	128.01 %		
10. AVERAGE PERCENT SOLIDS	43.88 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-007 (7-Day)
TESTING METHOD: EPA 9095

TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B864_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	103.24 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.05 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 1/2/2018
TESTED BY: JDM/LJ
TRACKING CODE: B864_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-007 (7-Day) (A)	12.89
2 0661-007 (7-Day) (B)	12.87
3 0661-007 (7-Day) (C)	12.91
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.89

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-007 (7-Day)
TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B864_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.12 g
3. WT OF MOLD + SOIL	281.99 g
4. WT OF WET SOIL, W	263.87 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	80.0 pcf
9. BULK SPECIFIC GRAVITY	1.28

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-008 (24-Hour)
TESTING DATE: 12/27/17
TESTED BY: JDM
TRACKING CODE: B835_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9931 g	1.0642 g	1.0628 g
3. WT WET SOIL + TARE	24.5549 g	24.0917 g	22.3095 g
4. WT DRY SOIL + TARE	11.5017 g	11.3526 g	10.5013 g
5. WT WATER, W _w	13.0532 g	12.7391 g	11.8082 g
6. WT DRY SOIL, W _s	10.5086 g	10.2884 g	9.4385 g
7. ASTM MOISTURE CONTENT	124.21 %	123.82 %	125.11 %
8. PERCENT SOLIDS	44.60 %	44.68 %	44.42 %
9. AVERAGE ASTM MOISTURE CONTENT	124.38 %		
10. AVERAGE PERCENT SOLIDS	44.57 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-008 (24-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B835_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.09 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.16 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/27/2017
TESTED BY: JDM/CKB
TRACKING CODE: B835

KEMRON SAMPLE No.	MATERIAL pH
1 0661-008 (24 Hour) (A)	12.43
2 0661-008 (24 Hour) (B)	12.43
3 0661-008 (24 Hour) (C)	12.42
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.43

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0611-008 (24-Hour)
TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B835_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.15 g
3. WT OF MOLD + SOIL	288.17 g
4. WT OF WET SOIL, W	270.02 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	81.9 pcf
9. BULK SPECIFIC GRAVITY	1.31

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-008 (48-Hour)
TESTING DATE: 12/28/17
TESTED BY: JDM
TRACKING CODE: B845_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0477 g	1.0068 g	1.0631 g
3. WT WET SOIL + TARE	21.5901 g	21.4254 g	23.4913 g
4. WT DRY SOIL + TARE	10.1112 g	10.0770 g	10.9815 g
5. WT WATER, W _w	11.4789 g	11.3484 g	12.5098 g
6. WT DRY SOIL, W _s	9.0635 g	9.0702 g	9.9184 g
7. ASTM MOISTURE CONTENT	126.65 %	125.12 %	126.13 %
8. PERCENT SOLIDS	44.12 %	44.42 %	44.22 %
9. AVERAGE ASTM MOISTURE CONTENT	125.96 %		
10. AVERAGE PERCENT SOLIDS	44.26 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-008 (48-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B845_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	101.01 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.43 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/28/2017
TESTED BY: JDM/CKB
TRACKING CODE: B845_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-008 (48-Hour) (A)	12.52
2 0661-008 (48-Hour) (B)	12.52
3 0661-008 (48-Hour) (C)	12.50
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.51

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-008 (48-Hour)
TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B845_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.12 g
3. WT OF MOLD + SOIL	287.51 g
4. WT OF WET SOIL, W	269.39 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	81.7 pcf
9. BULK SPECIFIC GRAVITY	1.31

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-008 (72-Hour)
TESTING DATE: 12/29/17
TESTED BY: JDM
TRACKING CODE: B855_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0779 g	1.0367 g	1.0528 g
3. WT WET SOIL + TARE	25.7273 g	21.3127 g	22.0571 g
4. WT DRY SOIL + TARE	12.0699 g	10.1026 g	10.4219 g
5. WT WATER, W _w	13.6574 g	11.2101 g	11.6352 g
6. WT DRY SOIL, W _s	10.9920 g	9.0659 g	9.3691 g
7. ASTM MOISTURE CONTENT	124.25 %	123.65 %	124.19 %
8. PERCENT SOLIDS	44.59 %	44.71 %	44.61 %
9. AVERAGE ASTM MOISTURE CONTENT	124.03 %		
10. AVERAGE PERCENT SOLIDS	44.64 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-008 (72-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B855_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	103.69 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.08 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/29/2017
TESTED BY: JDM/CKB
TRACKING CODE: B855_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-008 (72-Hour) (A)	12.61
2 0661-008 (72-Hour) (B)	12.63
3 0661-008 (72-Hour) (C)	12.63
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.62

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-008 (72-Hour)
TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B855_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.13 g
3. WT OF MOLD + SOIL	287.08 g
4. WT OF WET SOIL, W	268.95 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	81.5 pcf
9. BULK SPECIFIC GRAVITY	1.31

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-008 (7-Day)
TESTING DATE: 01/02/18
TESTED BY: JDM/LJ
TRACKING CODE: B865_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0897 g	1.0615 g	1.0832 g
3. WT WET SOIL + TARE	23.9801 g	22.2378 g	22.0746 g
4. WT DRY SOIL + TARE	11.3390 g	10.4784 g	10.4700 g
5. WT WATER, W _w	12.6411 g	11.7594 g	11.6046 g
6. WT DRY SOIL, W _s	10.2493 g	9.4169 g	9.3868 g
7. ASTM MOISTURE CONTENT	123.34 %	124.88 %	123.63 %
8. PERCENT SOLIDS	44.78 %	44.47 %	44.72 %
9. AVERAGE ASTM MOISTURE CONTENT	123.95 %		
10. AVERAGE PERCENT SOLIDS	44.65 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-008 (7-Day)
TESTING METHOD: EPA 9095

TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B865_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	103.67 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.18 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 1/2/2018
TESTED BY: JDM/LJ
TRACKING CODE: B865_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-008 (7-Day) (A)	12.91
2 0661-008 (7-Day) (B)	12.93
3 0661-008 (7-Day) (C)	12.90
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.91

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-008 (7-Day)
TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B865_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.16 g
3. WT OF MOLD + SOIL	288.16 g
4. WT OF WET SOIL, W	270.00 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	81.9 pcf
9. BULK SPECIFIC GRAVITY	1.31

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-009 (24-Hour)
TESTING DATE: 12/27/17
TESTED BY: JDM
TRACKING CODE: B836_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0416 g	1.0538 g	1.0265 g
3. WT WET SOIL + TARE	26.6205 g	25.5477 g	25.2664 g
4. WT DRY SOIL + TARE	13.0116 g	12.4542 g	12.3595 g
5. WT WATER, W _w	13.6089 g	13.0935 g	12.9069 g
6. WT DRY SOIL, W _s	11.9700 g	11.4004 g	11.3330 g
7. ASTM MOISTURE CONTENT	113.69 %	114.85 %	113.89 %
8. PERCENT SOLIDS	46.80 %	46.54 %	46.75 %
9. AVERAGE ASTM MOISTURE CONTENT	114.14 %		
10. AVERAGE PERCENT SOLIDS	46.70 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-009 (24-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B836_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	105.20 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.12 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/27/2017
TESTED BY: JDM/CKB
TRACKING CODE: B836

KEMRON SAMPLE No.	MATERIAL pH
1 0661-009 (24 Hour) (A)	12.48
2 0661-009 (24 Hour) (B)	12.49
3 0661-009 (24 Hour) (C)	12.45
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.47

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0611-009 (24-Hour)
TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B836_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.16 g
3. WT OF MOLD + SOIL	294.77 g
4. WT OF WET SOIL, W	276.61 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	83.9 pcf
9. BULK SPECIFIC GRAVITY	1.34

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-009 (48-Hour)
TESTING DATE: 12/28/17
TESTED BY: JDM
TRACKING CODE: B846_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0478 g	1.0717 g	1.0724 g
3. WT WET SOIL + TARE	29.2065 g	22.2634 g	27.5616 g
4. WT DRY SOIL + TARE	14.2269 g	11.0157 g	13.4393 g
5. WT WATER, W _w	14.9796 g	11.2477 g	14.1223 g
6. WT DRY SOIL, W _s	13.1791 g	9.9440 g	12.3669 g
7. ASTM MOISTURE CONTENT	113.66 %	113.11 %	114.19 %
8. PERCENT SOLIDS	46.80 %	46.92 %	46.69 %
9. AVERAGE ASTM MOISTURE CONTENT	113.66 %		
10. AVERAGE PERCENT SOLIDS	46.80 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-009 (48-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B846_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	104.02 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.29 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/28/2017
TESTED BY: JDM/CKB
TRACKING CODE: B846_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-009 (48-Hour) (A)	12.52
2 0661-009 (48-Hour) (B)	12.49
3 0661-009 (48-Hour) (C)	12.53
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.51

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-009 (48-Hour)
TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B846_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.13 g
3. WT OF MOLD + SOIL	294.14 g
4. WT OF WET SOIL, W	276.01 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	83.7 pcf
9. BULK SPECIFIC GRAVITY	1.34

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-009 (72-Hour)
TESTING DATE: 12/29/17
TESTED BY: JDM
TRACKING CODE: B856_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0310 g		1.0612 g
3. WT WET SOIL + TARE	20.1195 g		23.6875 g
4. WT DRY SOIL + TARE	9.9636 g		11.6139 g
5. WT WATER, W _w	10.1559 g		12.0736 g
6. WT DRY SOIL, W _s	8.9326 g		10.5527 g
7. ASTM MOISTURE CONTENT	113.69 %		114.41 %
8. PERCENT SOLIDS	46.80 %		46.64 %
9. AVERAGE ASTM MOISTURE CONTENT	114.05 %		
10. AVERAGE PERCENT SOLIDS	46.72 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-009 (72-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B856_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	102.84 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.10 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/29/2017
TESTED BY: JDM/CKB
TRACKING CODE: B856_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-009 (72-Hour) (A)	12.54
2 0661-009 (72-Hour) (B)	12.57
3 0661-009 (72-Hour) (C)	12.53
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.55

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-009 (72-Hour)
TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B856_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.12 g
3. WT OF MOLD + SOIL	296.41 g
4. WT OF WET SOIL, W	278.29 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	84.4 pcf
9. BULK SPECIFIC GRAVITY	1.35

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-009 (7-Day)
TESTING DATE: 01/02/18
TESTED BY: JDM/LJ
TRACKING CODE: B866_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	0.9797 g	0.9747 g	0.9806 g
3. WT WET SOIL + TARE	23.2827 g	24.1872 g	24.3624 g
4. WT DRY SOIL + TARE	11.5317 g	12.1375 g	12.0893 g
5. WT WATER, W _w	11.7510 g	12.0497 g	12.2731 g
6. WT DRY SOIL, W _s	10.5520 g	11.1628 g	11.1087 g
7. ASTM MOISTURE CONTENT	111.36 %	107.95 %	110.48 %
8. PERCENT SOLIDS	47.31 %	48.09 %	47.51 %
9. AVERAGE ASTM MOISTURE CONTENT	109.93 %		
10. AVERAGE PERCENT SOLIDS	47.64 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-009 (7-Day)
TESTING METHOD: EPA 9095

TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B866_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	101.32 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.08 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 1/2/2018
TESTED BY: JDM/LJ
TRACKING CODE: B866_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-009 (7-Day) (A)	13.03
2 0661-009 (7-Day) (B)	13.01
3 0661-009 (7-Day) (C)	13.05
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	13.03

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-009 (7-Day)
TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B866_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.16 g
3. WT OF MOLD + SOIL	294.47 g
4. WT OF WET SOIL, W	276.31 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	83.8 pcf
9. BULK SPECIFIC GRAVITY	1.34

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-010 (24-Hour)
TESTING DATE: 12/27/17
TESTED BY: JDM
TRACKING CODE: B837_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0011 g	1.0480 g	1.0258 g
3. WT WET SOIL + TARE	25.9571 g	22.0249 g	23.2179 g
4. WT DRY SOIL + TARE	13.1772 g	11.2625 g	11.8607 g
5. WT WATER, W _w	12.7799 g	10.7624 g	11.3572 g
6. WT DRY SOIL, W _s	12.1761 g	10.2145 g	10.8349 g
7. ASTM MOISTURE CONTENT	104.96 %	105.36 %	104.82 %
8. PERCENT SOLIDS	48.79 %	48.69 %	48.82 %
9. AVERAGE ASTM MOISTURE CONTENT	105.05 %		
10. AVERAGE PERCENT SOLIDS	48.77 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-010 (24-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B837_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	106.97 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.05 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045
DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/27/2017
TESTED BY: JDM/CKB
TRACKING CODE: B837

KEMRON SAMPLE No.	MATERIAL pH
1 0661-010 (24 Hour) (A)	12.47
2 0661-010 (24 Hour) (B)	12.49
3 0661-010 (24 Hour) (C)	12.53
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.50

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0611-010 (24-Hour)
TESTING DATE: 12/27/2017
TESTED BY: JDM
TRACKING CODE: B837_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.12 g
3. WT OF MOLD + SOIL	299.40 g
4. WT OF WET SOIL, W	281.28 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	85.3 pcf
9. BULK SPECIFIC GRAVITY	1.37

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-010 (48-Hour)
TESTING DATE: 12/28/17
TESTED BY: JDM
TRACKING CODE: B847_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0474 g	1.0516 g	1.0675 g
3. WT WET SOIL + TARE	19.8787 g	16.8181 g	27.8176 g
4. WT DRY SOIL + TARE	10.2113 g	8.7027 g	14.0145 g
5. WT WATER, W _w	9.6674 g	8.1154 g	13.8031 g
6. WT DRY SOIL, W _s	9.1639 g	7.6511 g	12.9470 g
7. ASTM MOISTURE CONTENT	105.49 %	106.07 %	106.61 %
8. PERCENT SOLIDS	48.66 %	48.53 %	48.40 %
9. AVERAGE ASTM MOISTURE CONTENT	106.06 %		
10. AVERAGE PERCENT SOLIDS	48.53 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-010 (48-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B847_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	101.77 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.04 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/28/2017
TESTED BY: JDM/CKB
TRACKING CODE: B847_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-010 (48-Hour) (A)	12.55
2 0661-010 (48-Hour) (B)	12.53
3 0661-010 (48-Hour) (C)	12.55
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.54

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-010 (48-Hour)
TESTING DATE: 12/28/2017
TESTED BY: JDM
TRACKING CODE: B847_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.14 g
3. WT OF MOLD + SOIL	300.31 g
4. WT OF WET SOIL, W	282.17 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	85.5 pcf
9. BULK SPECIFIC GRAVITY	1.37

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-010 (72-Hour)
TESTING DATE: 12/29/17
TESTED BY: JDM
TRACKING CODE: B857_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0950 g	1.0433 g	1.0414 g
3. WT WET SOIL + TARE	22.9297 g	22.0022 g	24.3477 g
4. WT DRY SOIL + TARE	11.5329 g	11.1647 g	12.8785 g
5. WT WATER, W _w	11.3968 g	10.8375 g	11.4692 g
6. WT DRY SOIL, W _s	10.4379 g	10.1214 g	11.8371 g
7. ASTM MOISTURE CONTENT	109.19 %	107.08 %	96.89 %
8. PERCENT SOLIDS	47.80 %	48.29 %	50.79 %
9. AVERAGE ASTM MOISTURE CONTENT	104.38 %		
10. AVERAGE PERCENT SOLIDS	48.96 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-010 (72-Hour)
TESTING METHOD: EPA 9095

TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B857_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	100.42 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.07 g
RESULTS (PASS / FAIL) *	Fail

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 12/29/2017
TESTED BY: JDM/CKB
TRACKING CODE: B857_pH

KEMRON SAMPLE No.	MATERIAL pH
1 0661-010 (72-Hour) (A)	12.65
2 0661-010 (72-Hour) (B)	12.67
3 0661-010 (72-Hour) (C)	12.67
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
AVERAGE:	12.66

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-010 (72-Hour)
TESTING DATE: 12/29/2017
TESTED BY: JDM
TRACKING CODE: B857_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.15 g
3. WT OF MOLD + SOIL	303.54 g
4. WT OF WET SOIL, W	285.39 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	86.5 pcf
9. BULK SPECIFIC GRAVITY	1.39

MOISTURE CONTENT DETERMINATION

REPORT FORM
ASTM D 2216

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-010 (7-Day)
TESTING DATE: 01/02/18
TESTED BY: JDM/LJ
TRACKING CODE: B867_MC

MOISTURE CONTENT (Dry & Wet Basis)			
1. MOISTURE TIN NO.	A	B	C
2. WT MOISTURE TIN (tare weight)	1.0416 g	1.0398 g	1.0176 g
3. WT WET SOIL + TARE	23.1819 g	24.2497 g	21.3278 g
4. WT DRY SOIL + TARE	11.9882 g	12.4426 g	10.9849 g
5. WT WATER, W _w	11.1937 g	11.8071 g	10.3429 g
6. WT DRY SOIL, W _s	10.9466 g	11.4028 g	9.9673 g
7. ASTM MOISTURE CONTENT	102.26 %	103.55 %	103.77 %
8. PERCENT SOLIDS	49.44 %	49.13 %	49.08 %
9. AVERAGE ASTM MOISTURE CONTENT	103.19 %		
10. AVERAGE PERCENT SOLIDS	49.22 %		

PAINT FILTER TEST

SUMMARY OF RESULTS

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-010 (7-Day)
TESTING METHOD: EPA 9095

TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B867_PaintFilter

TESTING PARAMETER AND RESULTS	
QUANTITY OF MATERIAL	103.41 g
LENGTH OF TEST	5.0 min.
QUANTITY OF LIQUID	0.00 g
RESULTS (PASS / FAIL) *	Pass

* In accordance with EPA Method 9095, if any liquid from the test material collects after 5 minutes of testing, the material is deemed to contain free liquids, and therefore has failed the paint filter test.

MATERIAL pH

EPA METHOD 9045 DATA SHEET

PROJECT: Penobscot River Dewatering Study
PROJECT No.: SH0661
TESTING DATE: 1/2/2018
TESTED BY: JDM/LJ
TRACKING CODE: B867_pH

KEMRON SAMPLE No.		MATERIAL pH
1	0661-010 (7-Day) (A)	13.03
2	0661-010 (7-Day) (B)	13.07
3	0661-010 (7-Day) (C)	13.06
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
AVERAGE:		13.05

UNIT WEIGHT DETERMINATION

DATA SHEET
ASTM D7263

PROJECT: Penobscot River Dewatering
PROJECT No.: SH0661
SAMPLE No.: 0661-010 (7-Day)
TESTING DATE: 1/2/2018
TESTED BY: JDM
TRACKING CODE: B867_UW

UNIT WEIGHT (DENSITY)	
1. SAMPLE NO.	
2. WT OF MOLD (tare weight)	18.16 g
3. WT OF MOLD + SOIL	300.91 g
4. WT OF WET SOIL, W	282.75 g
5. DIAMETER OF SPECIMEN, D	2.00 in
6. HEIGHT OF SPECIMEN, H	4.00 in
7. VOLUME OF SPECIMEN	12.57 in ³
8. BULK UNIT WEIGHT	85.7 pcf
9. BULK SPECIFIC GRAVITY	1.37

APPENDIX C-2
Analytical Results For Samples Sent to Kemron

**APPENDIX C-2
 ANALYTICAL RESULTS FOR SAMPLES SENT TO KEMRON
 Penobscot River Phase III Engineering Study
 Penobscot River Estuary, Maine**

Sample Identification	Sample Date	Methyl Mercury (ng/L)		Total Mercury (ng/g)		Percent Solids (percent by weight)	
		Result	Qual	Result	Qual	Result	Qual
DEW-SED-01	10/12/2017			663		36.7	J
DEW-WAT-01	10/12/2017	0.05	U				
DEW-WAT-02-BPT	11/15/2017	0.307					
DEW-WAT-03-BPT	11/15/2017	0.092					
DEW-WAT-04-BPT	11/16/2017	0.797					
DEW-WAT-03-BPS	11/15/2017	0.091					
DEW-WAT-04-BPS	11/16/2017	0.791					
DEW-WAT-02-BSPT	11/16/2017	0.283					
DEW-WAT-03-BSPT	11/15/2017	0.102					
DEW-WAT-04-BSPT	11/16/2017	0.62					
DEW-WAT-03-RHD	11/15/2017	0.286					
DEW-WAT-04-RHD	11/16/2017	0.092					
DEW-WAT-05-BPSGDT	11/9/2017	0.126					
DEW-WAT-05-BPSRDT	11/9/2017	0.113					
DEW-WAT-05-RHDGDT	11/9/2017	0.083					
DEW-WAT-05-RHDRDT	11/9/2017	0.05	U				
DEW-WAT-06	11/29/2017	1.02					

Notes:

BPS = Bulk Pre-Screening
 BPT = Bulk Polymer Treatment
 BSPT = Bulk Screening Polymer Treatment
 RHD = Raw Hydraulic Dredge
 GDT = GeoTube Dewatering Test
 RDT = Rapid Dewatering Test
 Aqueous samples were analyzed for methyl mercury in error rather than total mercury.

APPENDIX D

Cohesive Sediment Erosion Field Study: Penobscot River, Maine

Data Report

Coastal and Hydraulics Laboratory



**US Army Corps
of Engineers®**
Engineer Research and
Development Center

Cohesive Sediment Erosion Field Study: Penobscot River, Maine

David Perkey, Joe Gailani, and Thomas Kirklin

December 2017

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1 Introduction

Many contaminants in aquatic systems (including PCBs, DDT, and heavy metals) are associated with fine-grained sediments (clays and silts). The contaminants adhere to cohesive sediment particles and are transported through waterways with these particles. Therefore, contaminants are incorporated into the sediment bed when silt and clay particles deposit. Benthic organisms process fine sediment particles and associated contaminants are ingested. The contaminants can then be transferred to other species in the food chain. Industrial discharge into U.S. waterways prior to regulation in the 1970s has left legacy contaminated sediment deposits in many waterways. Some of these deposits have been buried by ongoing sediment transport and sedimentation processes. Therefore, high contaminant concentration sediment deposits often occur below the present sediment bed surface layer and are in some cases effectively disconnected from the food chain. Rare events, including high river discharge and tropical storm surge can remove the surface sediments and re-expose or even resuspend the presently buried contaminated deposits. Remediation options for contaminated sediments must address the potential for presently buried deposits to be re-exposed and effect the food chain. Potential for re-exposure of these deposits must address not only event-related erosion potential of the surface layer, but also erosion potential for sub-surface layers which include higher contaminant concentrations. These sub-surface layers are generally higher density than the surface sediments and therefore more resistant to erosion. Sedflume (McNeil et al, 1996) is used to evaluate critical shear stress for initiation of erosion and erosion rate as a function of applied shear stress for multiple layers in a sediment bed. This report describes Sedflume erosion experiments performed on sediment cores extracted from the Penobscot River in Maine.

Study Site

The main stem of the Penobscot River (Figure 1-1) is formed by the convergence of the West Branch and East Branch. The main stem is 264 miles long and empties into the Atlantic Ocean at Penobscot Bay. The Penobscot River basin is 8,588 square miles. The study area is a reach of the Main Stem from Winterport south to Verona Island (Figure 1-1), just north of Penobscot Bay. The study area is tidally influenced. This river reach includes legacy contaminated sediments from industrial discharges. A Sedflume sediment bed erosion study was performed in this study area to evaluate potential for surface and buried sediments to resuspend during storm and high river discharge events.

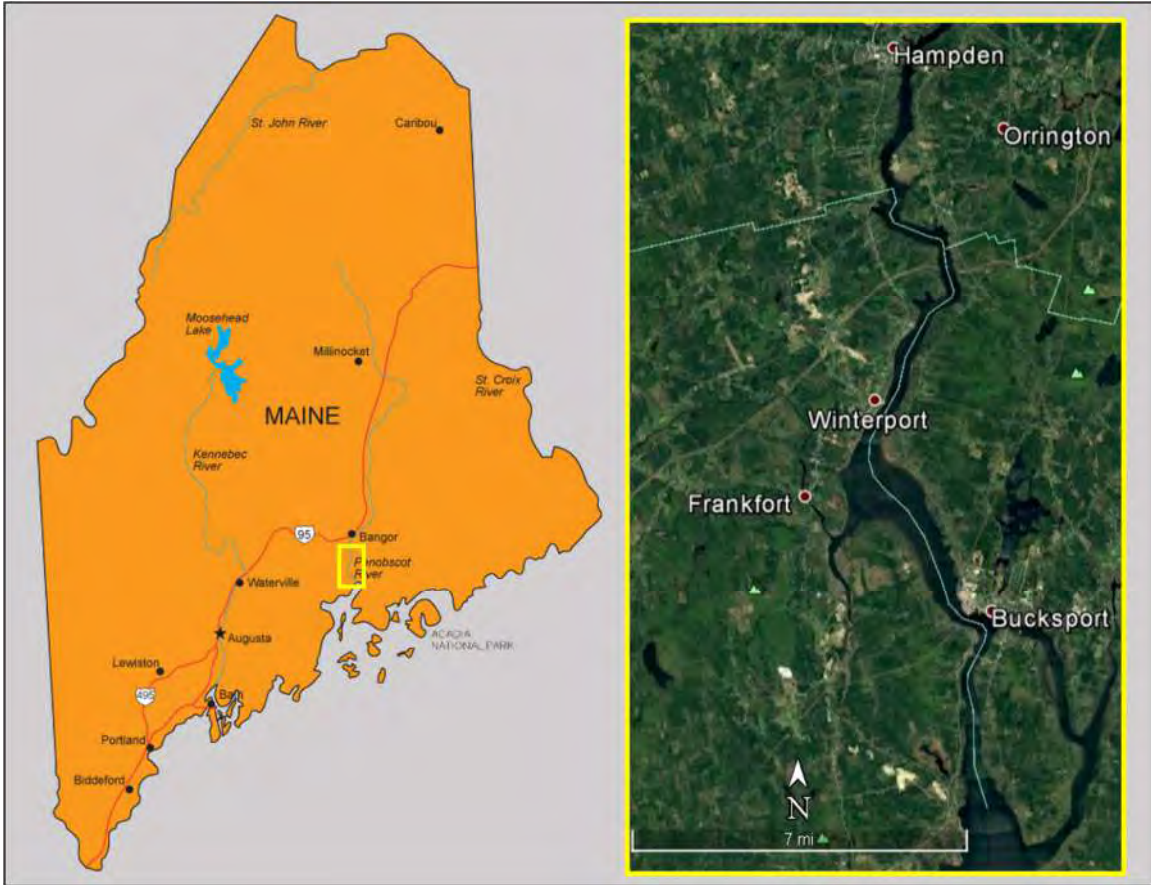


Figure 1-1. Penobscot River Study Site

Cohesive Sediment Transport Processes

The sediments of interest within the Penobscot River are classified as cohesive sediment. Non-cohesive sediment (sand and gravel) erosion can be generally estimated as a function of grain size distribution and mineral density. Cohesive sediment transport processes are dominated by other factors. Cohesive sediments are generally a mixture of sand, silt, and clay sized particles.

Erosion

A general definition for cohesive sediment is sediment for which the erosion rate cannot be estimated by standard sand transport methods. In these cases, cohesive forces are equivalent to or are greater than the gravitational forces that dominate sand transport. Cohesive sediment erosion characteristics are highly dependent upon factors such as particle size distribution, particle coatings, fine sediment mineralogy, organic content, bulk density, gas content, pore-water chemistry, and biological activity. Erosion rate and critical shear stress for erosion can vary significantly with small changes in only one of these inter-dependent parameters. It has been well

demonstrated that critical stress and erosion rates for cohesive sediment can vary over several orders of magnitude for sediments with only slightly differing properties. Therefore, the influence of cohesion on sediment processes is significant. Qualitatively, it is understood which properties most significantly influence erosion. However, there are no quantitative methods available to determine erosion rate from cohesive sediment properties. Therefore, due to the sensitivity and wide range of influencing parameters, erosion characteristics of cohesive sediments are determined by site-specific analysis of erosion with erosion flumes.

Several flumes are available to parameterize site-specific cohesive sediment erosion algorithms. Most of these devices operate over a range of low shear stress (<2 Pa) and are consequently capable of measuring surface sediment erosion. Sedflume is an erosion device with capability to impose bed stresses in the range of 0.1 to 12 Pa and measures erosion rates from sediment cores taken from the field (for in-situ or stratified bed conditions) or prepared in the laboratory (for assessing disturbed sediments such as dredged material). Sedflume is designed to quantify erosion rates for surface and sub-surface sediments. These measurements permit description of the vertical variation of erosion rate within the bed. It should be noted that even if sediments are well mixed, cohesive sediment bed erosion will change with depth due to the influence of consolidation (bed density) on erosion rate. Erosion rate can vary by several orders of magnitude between surficial sediments and sediment buried less than 30 cm below the surface. Sedflume was selected to quantify erosion rate and erosion rate variation with depth (density) for this study.

Study Objectives

The U.S. Army Corps of Engineers (USACE) has a Testing Services Agreement (TSA # [34-13-463VXZ009](#)) with [Amec Foster Wheeler](#) to provide technical expertise regarding characterization of cohesive sediment erosion parameters in the Penobscot River. [Amec Foster Wheeler](#) has requested USACE to provide cohesive sediment erosion testing along a reach of the Penobscot River from Bangor, ME to the head of Penobscot Bay. This report describes field experiments conducted to define cohesive sediment erosion processes in the river and analysis of these data to parameterize cohesive sediment transport for use in a numerical sediment transport model. Chapter 2 provides a description of the field experiments, data collection methods, and analysis methods. Chapter 3 provides results and discussion of the analyzed data. Chapter 4 provides a summary and conclusion of the study.

2 Methods

This chapter describes the field experiments, sampling and experimental methods, and data analysis methods used in determining cohesive sediment erosion in the Penobscot River, Maine. Background and technical information about the experimental devices is presented first, followed

by a description of how these devices were deployed during field experiments to meet the study objectives.

Sedflume

Sedflume is a field- or laboratory-deployable flume for quantifying cohesive sediment erosion. The USACE-developed Sedflume is a derivative of the flume developed by researchers at the University of California at Santa Barbara (McNeil et al. 1996). The flume includes an 80-cm-long inlet section (Figure 2-1) with cross-sectional area of 2×10 cm for uniform, fully developed, smooth-turbulent flow. The inlet section is followed by a test section with a 10-cm diameter open bottom. Coring tubes and flume test section, inlet section, and exit sections are constructed of clear polycarbonate materials to permit observation of sediment-water interactions during the course of erosion experiments. The flume includes a port over the test section to provide access to the core surface for physical sampling. The flume accepts sediment cores up to 80-cm in length.

Erosion Experiments

Prior to the erosion experiment, descriptions of the core are recorded, including length, condition of the core surface, biological activity, and any visual evidence of layering. Cores are inserted into the testing section of Sedflume and a screw jack is used to advance the plunger such that the core surface becomes flush with the bottom wall of the flume. Flow is directed over the sample by diverting flow from a 5.5-hp trash-pump, through a 5-cm inner diameter stiff hose, into the flume. The flow through the flume produces shear stress on the surface of the core. (Numerical, experimental, and analytical analyses have been performed to relate flowrate to bottom shear stress.) Erosion of the surface sediment is initiated as the shear stress is increased beyond the critical stress for erosion, τ_c . As sediment was eroded from the core surface, the operator advanced the screw jack to maintain the sediment surface flush with the bottom wall of the erosion flume. Figure 2-1 includes a photograph of the flume, a close-up photograph of the test section, and a table of flow rate/shear stress relationships.

Erosion velocity was determined from the displacement of the core surface over the elapsed time of the experiment. Generally, erosion experiments were performed by repeating a sequence of increasing shear stresses. Approximately 1-5 mm of sediment was eroded at each erosion experiment at a specified shear stress, and thus the duration of each test was dependent on the rate

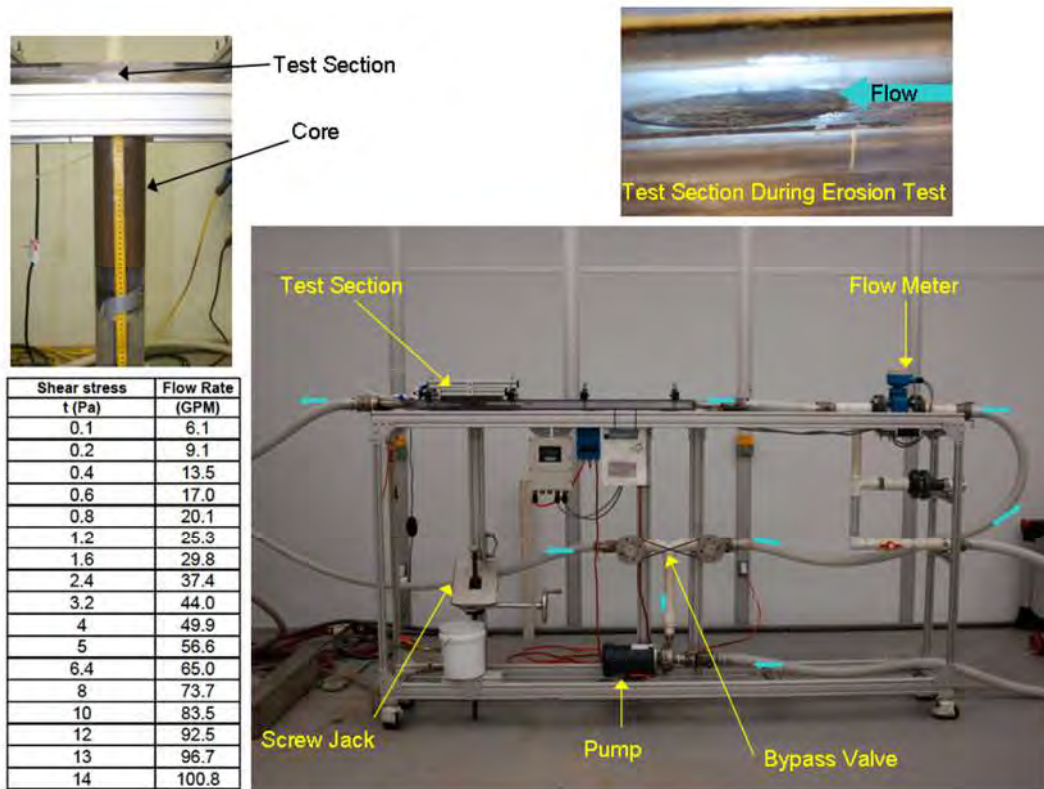


Figure 2-1. Sedflume erosion flume (lower right). Core inserted into test section (upper left). Core surface flush with bottom of flow channel (upper right). Table of shear stress associated with channel flow rates (lower left).

of erosion. Generally, these erosion tests were between 30 and 600 seconds in duration. A diagram depicting this erosion test process along with an example erosion sequence is shown in figure 2-2.

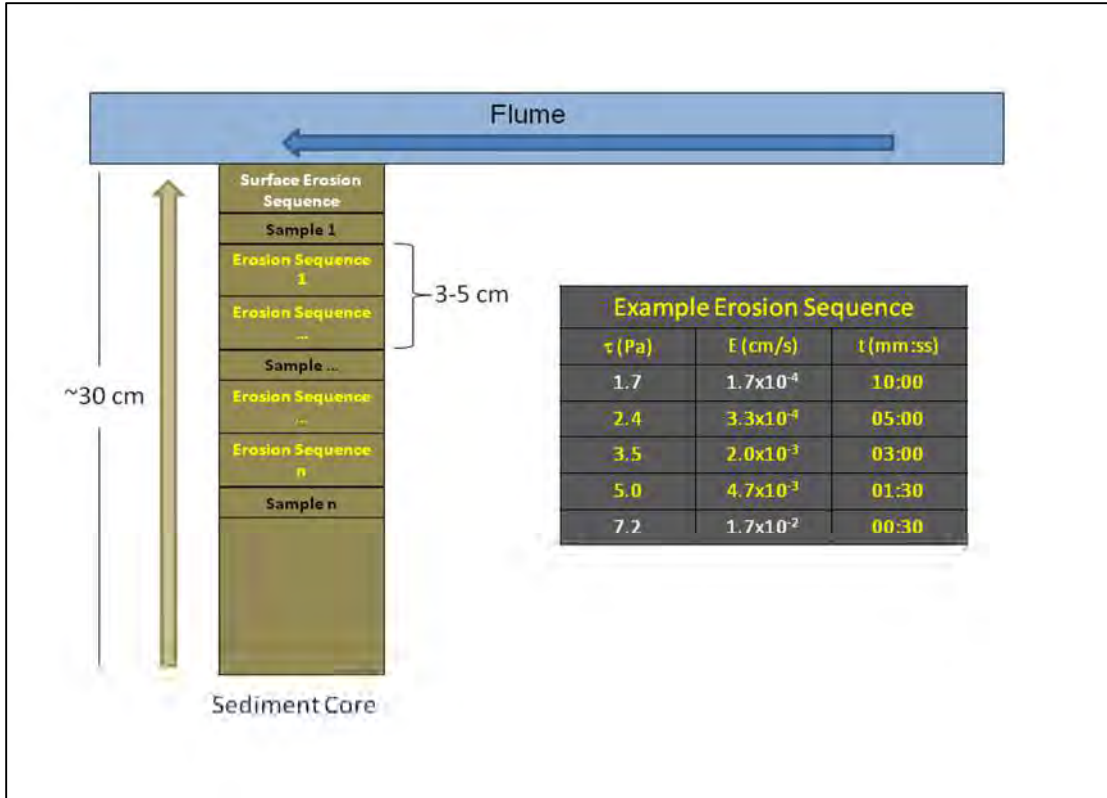


Figure 2-2. Diagram of sediment core erosion process. The brown arrow indicates direction of motion of the sediment into the flume as the screw jack is advanced. The blue arrow indicates flow direction of water. Operational shear stress limits (shown in white lettering) set the bounds and determine the spacing of shear stress intervals for the erosion sequence. An example erosion sequence is provided in the table to the right of the sediment core. Similar erosion sequences are repeated multiple times throughout the core with physical samples being collected every 3-5 cm.

Sediment Bulk Properties

Physical samples for bulk sediment property measurements were taken at approximately 3-5 cm intervals during erosion experiments, generally at the end of a shear stress cycle. Physical samples were collected by draining the flume channel, opening the port over the test section, and extracting a sample from the sediment bed. These samples were then measured for bulk density and grain-size distribution. These properties strongly influence erosion; therefore, documenting any variation with depth is important in interpreting the erosion data.

Bulk Density Measurements. Bulk sediment density of physical samples is determined by a wet-dry weight analysis. Physical samples are extracted from the saturated core surface and placed in a pre-weighed aluminum tray. Sample weight is recorded immediately after collection and again after a minimum of 12 hours in a 50° C (122° F) drying oven. Wet weight of the sample was calculated by subtracting tare weight from the weight of the sample. The dry weight of the sample was calculated as the tare weight subtracted from the weight after drying. The water content w is then given

$$w = \left(\frac{m_w - m_d}{m_d} \right) \quad (1)$$

where m_w and m_d are the wet and dry weights, respectively. A volume of saturated sediment, V , consists of both solid particles and water and can be written as

$$V = V_s + V_w \quad (2)$$

where V_s is the volume of solid particles and V_w is the volume of water. If the sediment particles and water have density ρ_s and ρ_w , respectively, the water content of the sediment can be written as

$$w = \frac{\rho_w V_w}{\rho_s V_s} \quad (3)$$

A mass balance of the volume of sediment gives

$$\rho V = \rho_s V_s + \rho_w V_w \quad (4)$$

where ρ is the bulk density of the sediment sample.

(1)-(4) are used to derive an explicit expression for the bulk density of the sediment sample, ρ , as a function of the water content, w , and the densities of the sediment particles and water. This equation is

$$\rho = \rho_s + \frac{w \rho_s (\rho_w - \rho_s)}{\rho_w + w \rho_s} \quad (5)$$

For the purpose of these calculations, $\rho_s = 2.65 \text{ g}\cdot\text{cm}^{-3}$ and ρ_w is calculated for measured pore water at room temperature.

Particle-Size Distribution. Samples collected during erosion experiments were transported to the Sediment Transport Processes Lab at the Engineer Research and Development Center (ERDC) for grain size analysis. A Malvern Mastersizer 2000 laser particle-sizer was used to measure the particle-size distributions in sub-samples collected from the cores. The Malvern measures particle size over the range 0.02 to 2000 μm . Sediments were homogenized, sub-sampled (1-2 g), and deflocculated overnight in a solution of sodium metaphosphate (40 g/L). To remove large organic debris, samples were passed through a #18 mesh (1000 μm) sieve into the instrument's reservoir and sonicated for 60 seconds prior to analysis. The sample was then pumped and recirculated through the optical module. The optical module includes a spatial filter assembly containing a laser diode and laser beam collimator. The diffraction detector assembly contains a custom photodetector array that is used for the measurement of light scattering by the suspended particles. The distribution of grain sizes and median grain sizes is derived from this light scattering measurement. Organic material was not oxidized or combusted prior to grain size analysis.

Erosion Analysis

The goal of erosion data analysis is to determine appropriate parameterization of erosion processes so that they may be incorporated into numerical modeling studies. Erosion data are evaluated for consistency in shear stress-erosion response with depth. Data that exhibit similar shear-erosion responses are grouped together, with additional consideration given to the physical sample data and notes recorded during the testing. Log-linear regressions of erosion rate to applied shear stress are performed to determine coefficients for one or more common cohesive sediment erosion expressions. In the case of this study, the data were fit to the so-called Sedflume

erosion expression, $E=A\tau^N$ where E is erosion rate in cm/s, τ is the applied shear stress in Pa, and A and N are parameters determined from the log-linear regression to the data. Critical shear stress, τ_c , is determined from the regression parameters such that τ_c is the shear stress that corresponds to an erosion rate, E_c of 10^{-4} cm/s (or 3.6 mm/hr). Alternate critical shear stress values can be determined from the fit parameters to determine a minimum erosion rate considered to be relevant to the subject situation. The expression for critical stress is $\tau_c=(E_c/A)^{1/N}$, where E_c is the critical erosion rate. Caution should be exercised in determining alternate critical shear stresses such that the alternate critical stress, E_c , is not smaller than a factor of 10 less than the minimum erosion rate in the dataset.

Field Experiments

Field experiments were conducted 19 September through 26 September 2015. The field efforts included core collection and cohesive sediment erosion experiments.

Core Collection

From September 19-20 2017, fifteen 10-cm diameter cores were collected from thirteen out of 15 sampling locations (Figures 2-3 through 2-5) in the Penobscot River for the purpose of erosion experiments. Due to limited access to multiple sampling areas during low tide, coring activities could not be completed within one working day. As a result of limited recovery of sediment in initial cores taken at sites VE-MU3-SF1 and OR-MU3-SF1, replicate cores were collected at these sites to confirm depth of refusal. The longer of replicate cores was then selected for erosion analysis. Additionally, due to limited sediment recovery at initial coordinates provided, sampling locations for BU-MU1-SF-1 and FF-MU7-SF-1 were adjusted to locations that allowed for successful core recovery. Coordinates for these new positions were logged with the vessel's GPS system. Hard bottom conditions did not allow for core recovery at sites VE-MU4-SF-2 or VW-MU7-SF1. Table 1 provides core logging information for each of the cores collected.



Figure 2-3. Map of coring locations up river of Winterport. Yellow dots indicate push cores, green dots indicate gravity cores, and red squares indicate unsuccessful core locations.

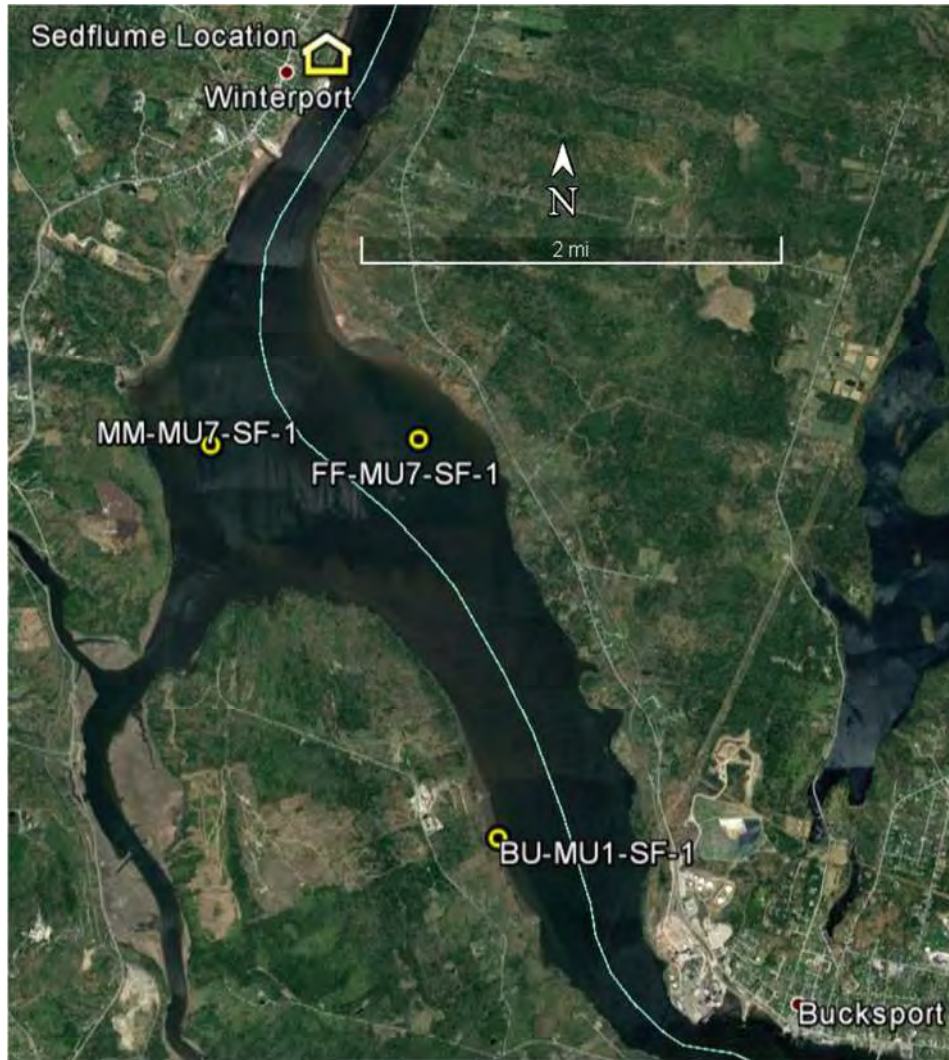


Figure 2-4. Map of coring locations between Winterport and Bucksport. Yellow dots indicate push cores, green dots indicate gravity cores, and red squares indicate unsuccessful core locations.



Figure 2-5. Map of coring locations in the area of Verona Island. Yellow dots indicate push cores, green dots indicate gravity cores, and red squares indicate unsuccessful core locations.

Core ID	Latitude (° North)	Longitude (° West)	Collection Date	Core Type	Core Length (cm)
BU-MU1-SF-1	44.58520	68.82439	9/19/2017	Push	20-21
FF-MU7-SF-1	44.61263	68.83206	9/19/2017	Push	15-17
MM-MU6-SF-1	44.60189	68.85212	9/19/2017	Push	14-15
ON-MU13-SF-1	44.71021	68.83957	9/20/2017	Gravity	37-38
ON-MU2-SF-1	44.70980	68.83852	9/20/2017	Push	17-20
ON-MU2-SF-2	44.70218	68.83255	9/20/2017	Push	19-20
OR-MU1-SF-1	44.54336	68.75172	9/19/2017	Push	22-24
OR-MU3-SF-1A	44.54298	68.75038	9/19/2017	Push	11-12
OR-MU3-SF-1B	44.54298	68.75038	9/19/2017	Push	19-20
VE-MU3-SF-1A	44.50483	68.77168	9/19/2017	Push	9-10
VE-MU3-SF-1B	44.50483	68.77168	9/19/2017	Push	10-11
VE-MU4-SF-1	44.50396	68.77077	9/19/2017	N/A	-
VE-MU4-SF-2	44.50133	68.77996	9/19/2017	Gravity	45-46
VN-MU3-SF-1	44.53522	68.76295	9/19/2017	Push	21-24
VN-MU4-SF-1	44.54896	68.76834	9/19/2017	Push	17-19
VW-MU14-SF-1	44.52221	68.79652	9/19/2017	Push	23-25
VW-MU7-SF1	44.52309	68.79537	9/19/2017	N/A	-

Cores from the Penobscot River were collected via a push corer or gravity corer. The ERDC push corer was utilized in water depths ≤ 4.5 m (15 ft) and is composed of a polycarbonate core barrel, a 10-cm PVC sleeve, a 5-cm PVC check valve, and aluminum push poles (Figure 2-6A). The push corer is lowered by hand to the bottom and vertically driven into the bed by the operator pressing downward on the attached push pole. Care is taken to keep the push pole and core in a vertical orientation during the coring process. The check valve serves to create a seal above the core to prevent the captured sediment core from slipping out of the core tube. Once the core is retrieved to the vessel, a plunger with bentonite paste (for sealing and lubrication) is inserted into the bottom of the core and each end of the core is sealed with end caps (Figures 2-6C and D).

The ERDC gravity corer (Figure 2-6B) is constructed of steel and weighs approximately 32 kg (70 lbs). The gravity corer consists of a core barrel, check valve, fins, and cable harness. The gravity corer is lowered to the bottom and penetrates the bed by its own weight and momentum. As with the push core system, the check valve serves to create a seal above the core to prevent the captured sediment core from slipping out of the core tube. Once the core is retrieved a plunger is inserted and each end of the core is sealed with end caps as described with the push cores.

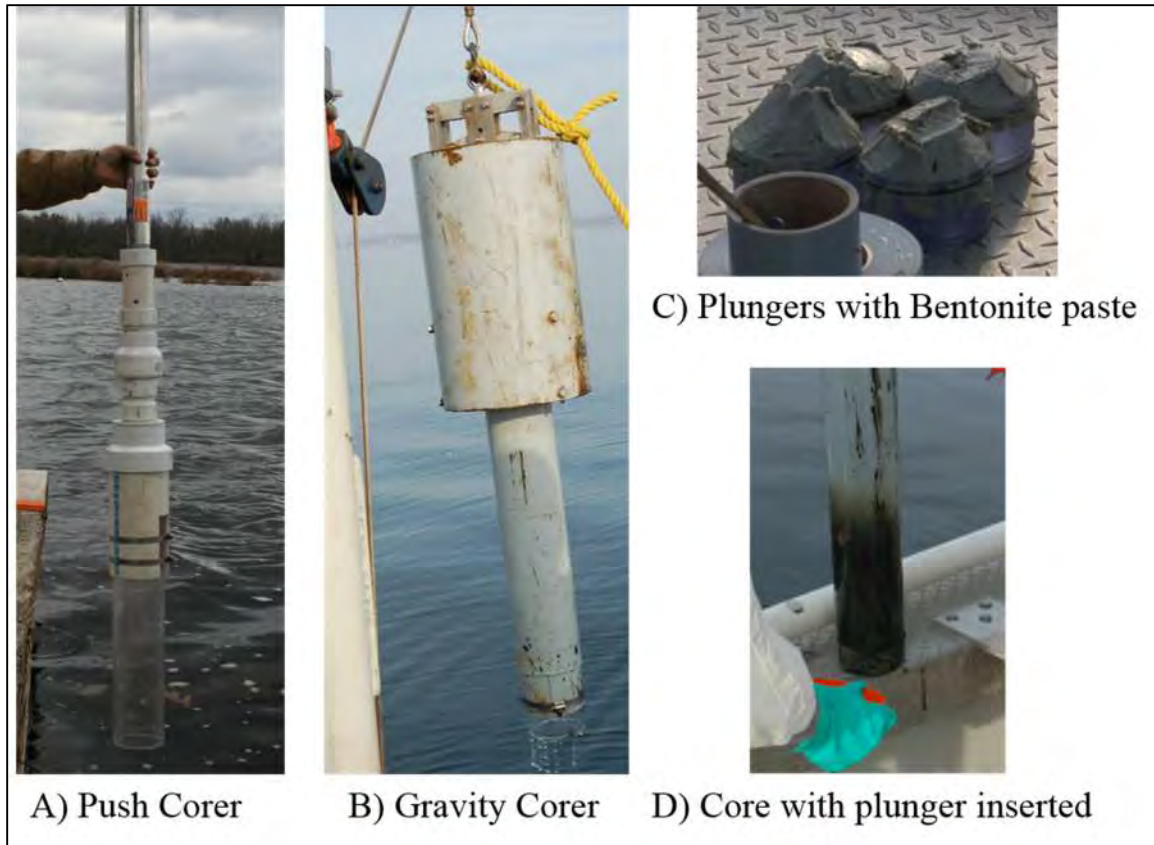


Figure 2-6. Coring Systems

Erosion Experiments

Cores collected were transported by vessel to the ERDC-CHL mobile sediment laboratory, which was staged at the Winterport Marina (Figures 2-3 and 2-4). Erosion experiments were conducted from September 21, 2017 through September 26, 2017, in the field laboratory following the Sedflume methods presented earlier in this report. During the time of erosion experiments, sediment cores were stored in a shaded barrel, filled with site water.

In accordance with the signed testing service agreement, only 12 of the 15 collected cores were tested with the Sedflume. As previously stated Cores OR-MU3-SF-1A and VE-MU3-SF-1A were not tested because longer, replicate cores at these sites were selected for erosion testing. Additionally, Amec Foster Wheeler staff determined that core ON-MU2-SF-2 was not to be tested. The sediment from these three cores were transferred into 1-gallon buckets and turned over to Amec Foster Wheeler. Daily water levels at Winterport Marina ranged tidally by approximately 3-4 meters. At periods of low tide and high flow velocity in the river, reduced water clarity limited the operational schedule of sedflume. Due to these schedule restrictions, erosion experiments were not conducted over the entire length of the cores, but were instead limited to the upper 15 cm.

3 Results and Discussion

Cohesive sediment transport process data collected during the field study were analyzed to determine parameterizations for cohesive sediment erosion. The results of the data analysis and parameterization are presented in the following sections. This chapter will describe general observations and interesting contrasts in the data. The reader will be referred to technical appendices for full presentation of the analyzed dataset.

Cohesive Sediment Erosion

Analysis of cohesive sediment erosion data obtained from undisturbed field cores is inherently complex. Cohesive sediment erosion is sensitive to slight changes in bed density, deposit mineralogy, gas content, organic content, biological activity and a host of other factors. In many cases, these factors change significantly at relatively small vertical scales (such as depositional bed sequences). Consequently, measured cohesive sediment erosion rates from field cores are notoriously noisy. To counter the large variance in measured erosion rates, field erosion experiments are conducted in a manner to produce a large sample from which to derive statistically representative fits to various numerical erosion algorithms. To ensure high quality in the data analysis, data and associated experimental notes are evaluated to identify outliers in the dataset. Outliers are rejected based on comparisons between adjacent data points and experimental log notes.

The results of erosion testing are presented for each core along with the results for analysis of physical samples collected. The results presented below are organized by sampling location to facilitate the comparison of results at those sampling locations. The erosion parameters for all cores are summarized at the end of this Results section. Core descriptions including photographs, visual descriptions, and results of grain size distribution analysis are provided in Appendix A.

Location ON-MU2-SF1

The erosion trends versus depth for core ON-MU2-SF1 are presented in Figure 3-1 while erosion data versus shear stress are shown in Figure 3-2. Visible observations of worm tubes and bioturbation were noted in this core down to a depth of 8-10 cm. The upper 1 cm of the core, or “surface layer” was found to be more highly erodible than immediate underlying sediment with a $\tau_c=0.43$ Pa. Sediments from 1-6 cm showed consistent erosion behavior with a $\tau_c=0.75$ Pa. This consistency aligns well with the observed region of bioturbation in the core. Below a depth of 6 cm, erosion behavior was observed to alter and bed failure became more common. Only 3 data points from depths just over 10 cm were able to be utilized to characterize sediments below the bioturbation zone. The trend line of these sediments showed a $\tau_c=0.21$ Pa. The results of physical samples collected from the core are presented in Table 3-1 and show that material below 10 cm

was sand dominated, and thus a change in sediment type may explain the erosion behavior below the zone of bioturbation in this core.

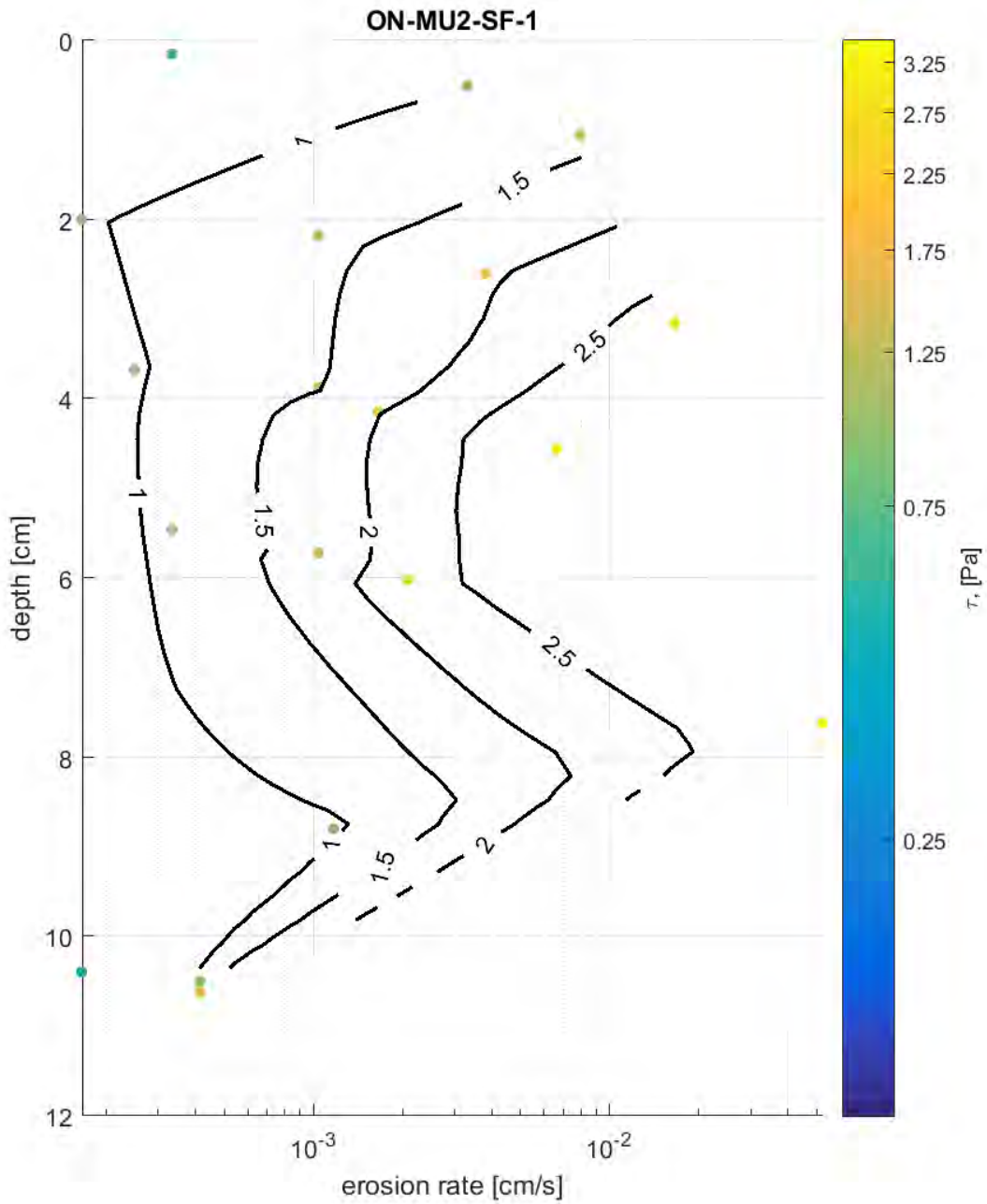


Figure 3-1: Erosion rate versus depth for core ON-MU2-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

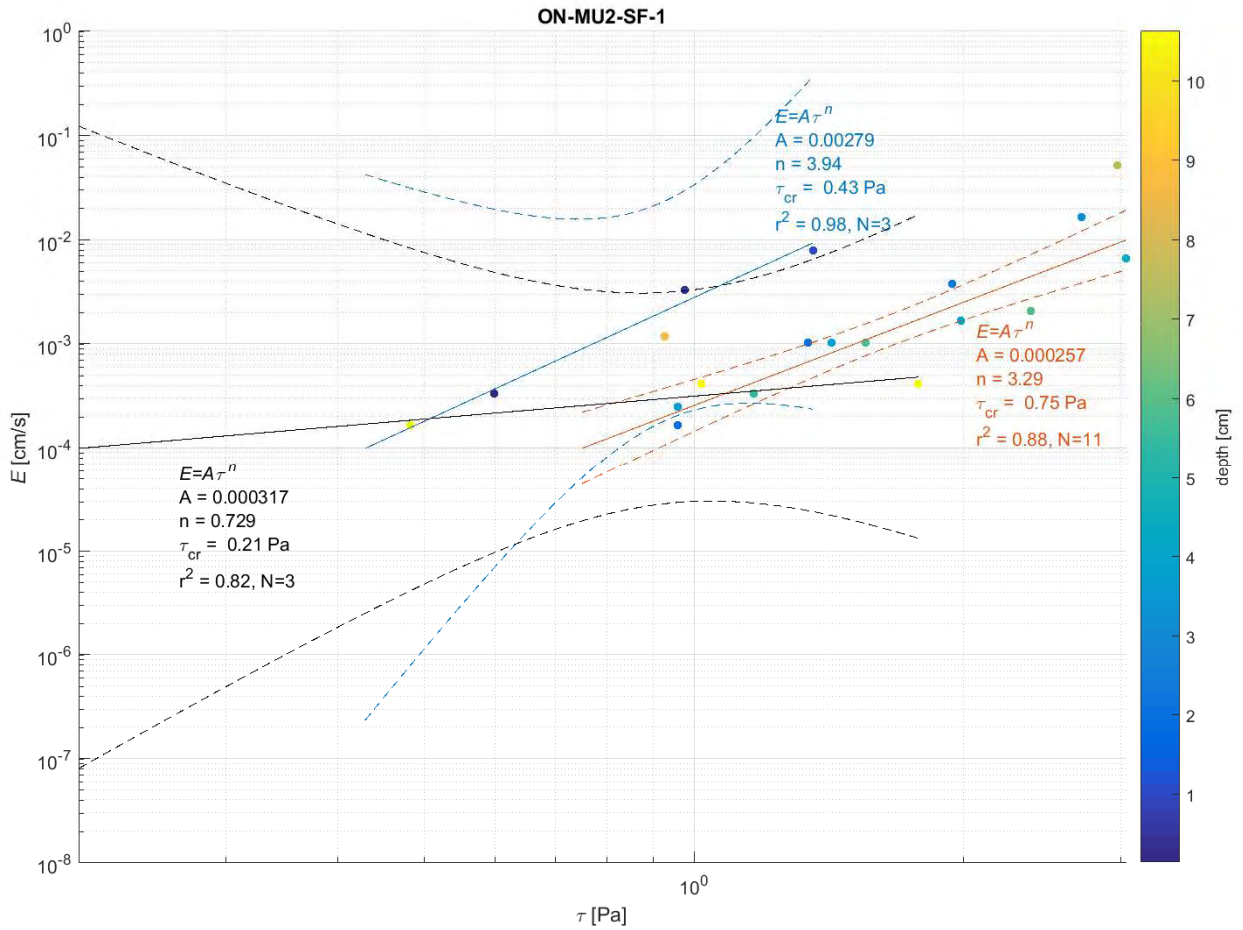


Figure 3-2: Erosion rate versus shear stress for core ON-MU2-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the three layers evident in the data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay
1	1.50	1.16	8.8	39.3	176.5	38.0	59.6	2.3
2	5.00	1.18	8.4	43.4	207.6	41.8	55.4	2.9
3	11.25	1.19	10.5	70.1	413.0	55.9	41.8	2.3

Location ON-MU13-SF1

The erosion trends versus depth for core ON-MU13-SF1 are presented in Figure 3-3 while erosion data versus shear stress are shown in Figure 3-4. Visible observations of worm tubes and bioturbation were noted in this core down to a depth of 10 cm. Erosion rates tended to decrease with depth down core with the most erodible sediments being found in the “surface layer” from 0-1 cm of the core ($\tau_c = 0.16$ Pa). Sediments from 1.7-4.5 cm depth displayed uniform erosion behavior with a $\tau_c = 0.54$ Pa. While the erosion vs depth plot showed evidence that multiple thin layers may exist in the remainder of the core, erosion vs shear suggested that a fit grouping the remainder of the core together provided a strong fit that characterized these sediments well ($\tau_c = 0.93$ Pa). The results of physical samples collected from the core are presented in Table 3-2 and show near uniform sand, silt and clay composition down core. However, bulk density was observed to increase with depth and thus changes in erosion rate may be associated with packing density.

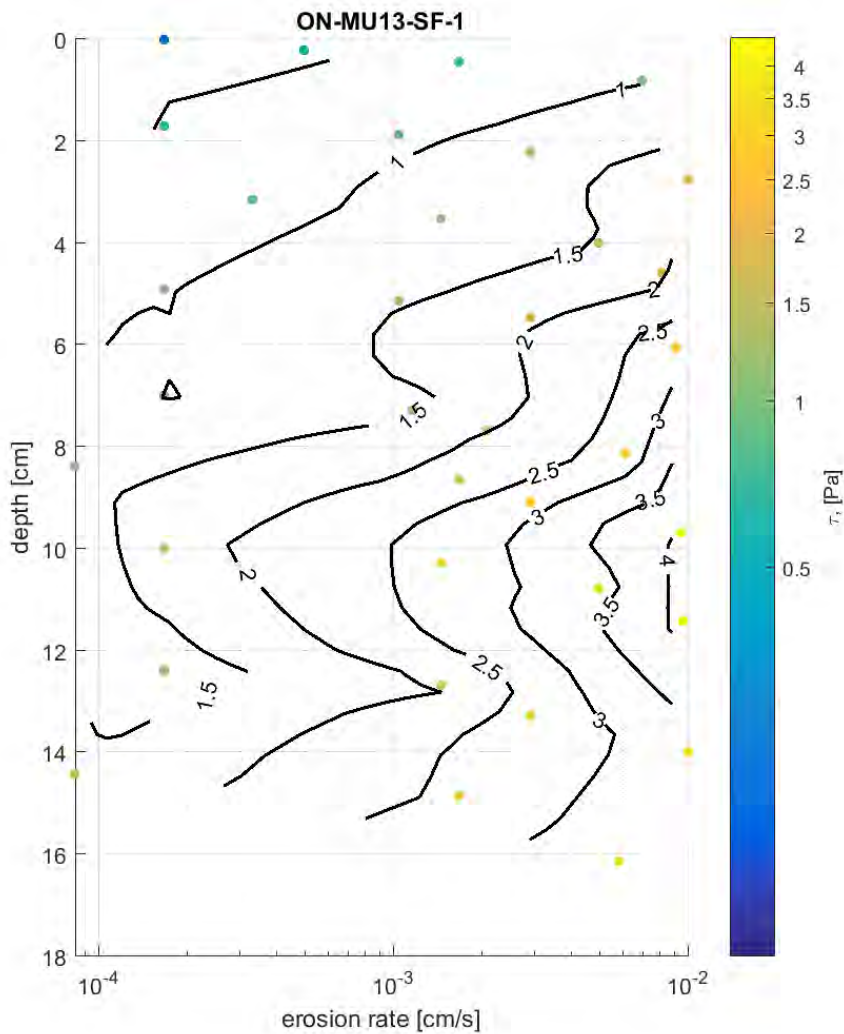


Figure 3-3: Erosion rate versus depth for core ON-MU13-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

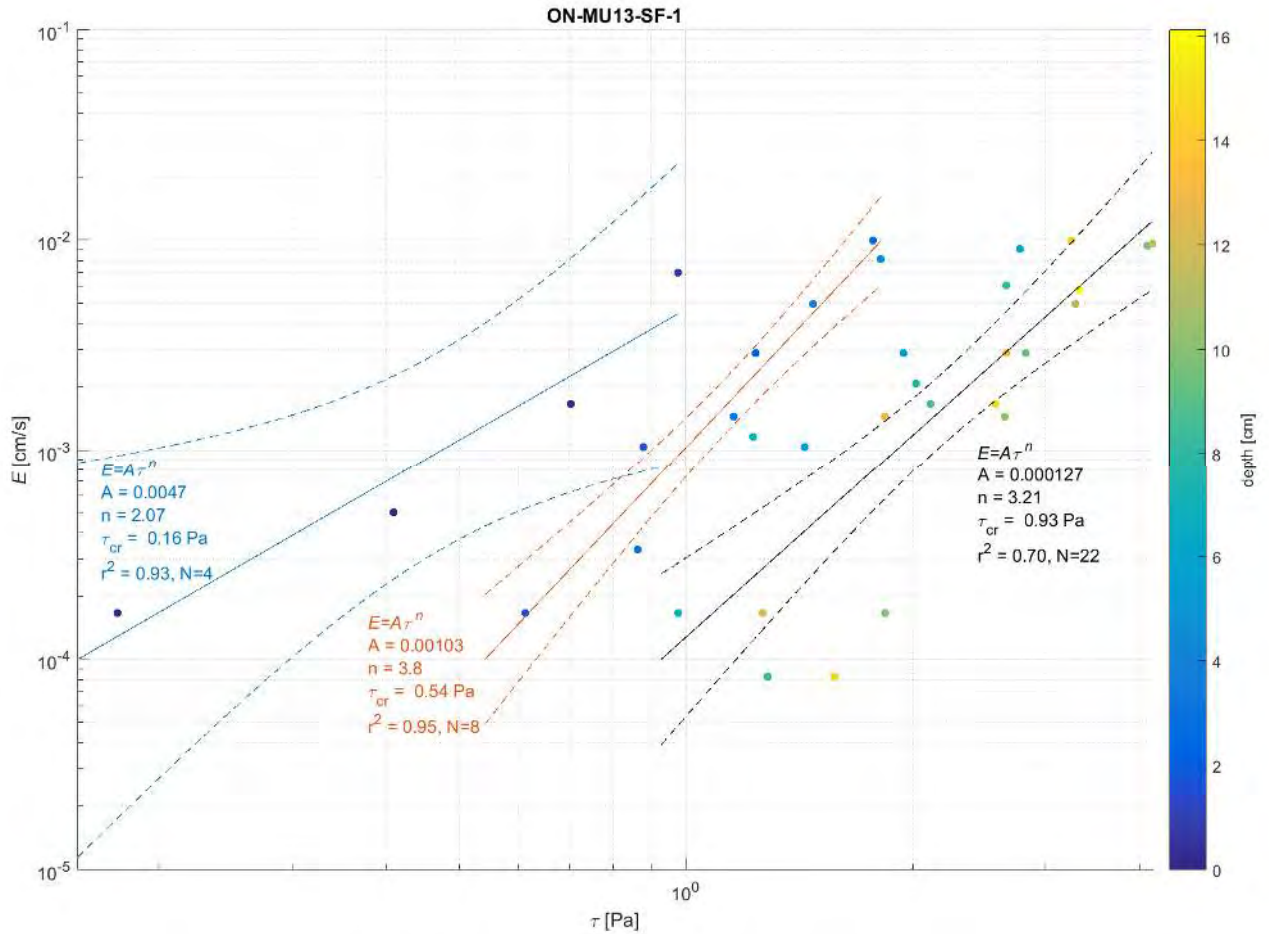


Figure 3-4: Erosion rate versus shear stress for core ON-MU13-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the three layers evident in the data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Table 3-2. Physical Sample Properties, Station ON-MU13-SF1									
Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay	
1	1.325	1.18	8.3	41.3	186.4	39.7	57.4	3.0	
2	6.625	1.19	8.2	42.2	195.9	40.8	56.2	3.0	
3	11.975	1.22	7.5	38.8	163.1	38.0	58.5	3.4	
4	16.725	1.25	7.7	37.8	151.1	36.2	60.5	3.3	

Location MM-MU6-SF1

The erosion trends versus depth for core MM-MU6-SF1 are presented in Figure 3-5 while erosion data versus shear stress are shown in Figure 3-6. Visible observations of worm tubes and bioturbation were noted in this core down to a depth of 2-3 cm. While Figure 3-5 showed some evidence of possible layering within the core, the erosion vs shear plot showed that one fit characterized the entire core adequately. This fit included the upper 1cm of the core. The results of physical samples collected from the core are presented in Table 3-3.

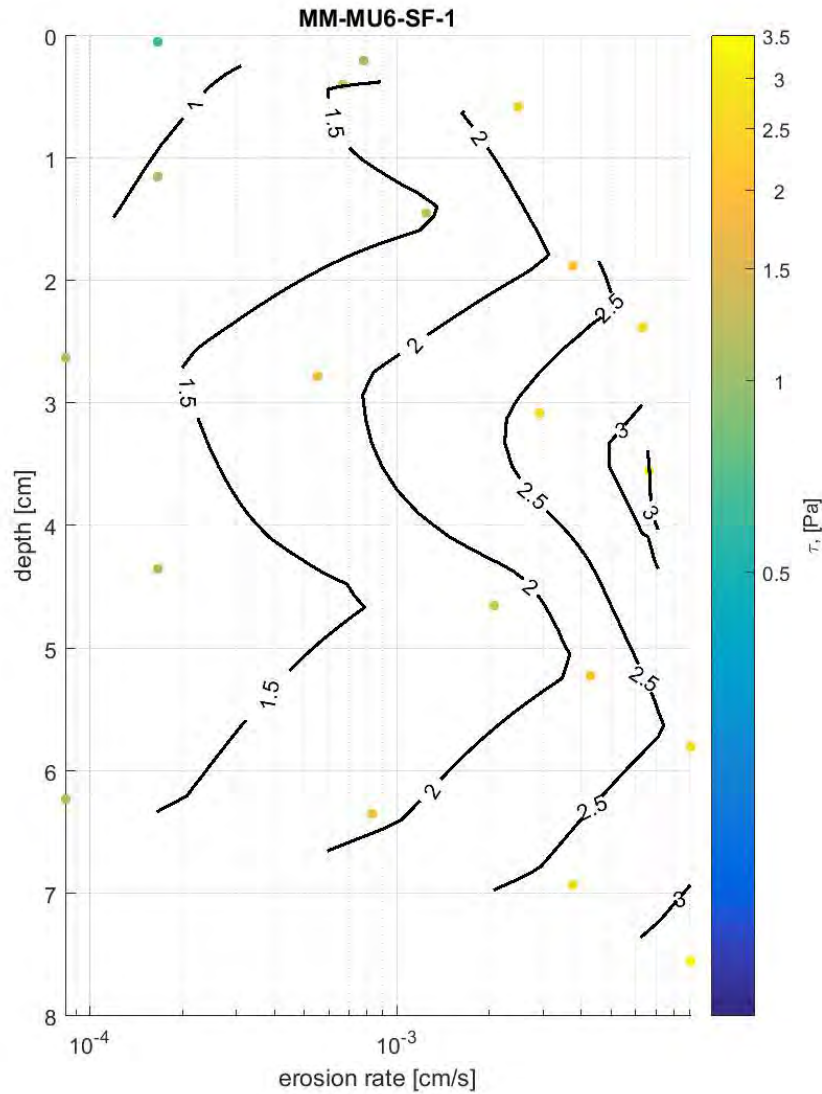


Figure 3-5: Erosion rate versus depth for core MM-MU6-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

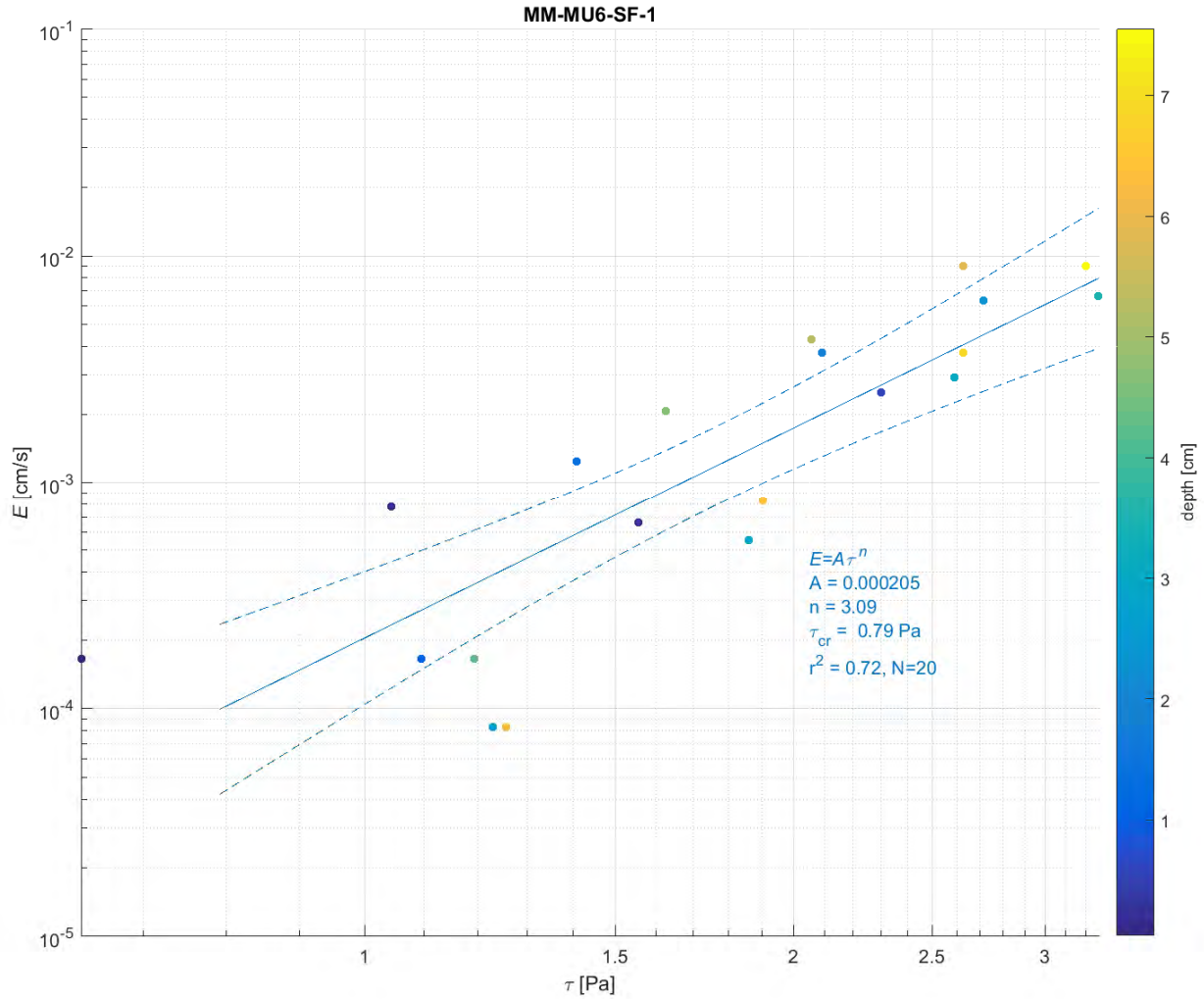


Figure 3-6: Erosion rate versus shear stress for core MM-MU6-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the erosion data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay
1	0.825	1.39	9.3	49.3	252.3	45.3	52.0	2.7
2	3.975	1.47	10.6	71.5	395.8	56.6	41.2	2.2

3	7.9	1.28	9.4	62.1	470.2	52.5	45.0	2.5
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Location FF-MU7-SF1

The erosion trends versus depth for core FF-MU7-SF1 are presented in Figure 3-7 while erosion data versus shear stress are shown in Figure 3-8. Visible observations of worm tubes and bioturbation were noted in this core down to a depth of 2-3 cm. This core was noted to have a sandy texture throughout, but erosion data showed distinct layering behavior. Similar to other cores, a “surface layer” was identified in the upper 1 cm of the core ($\tau_c = 0.3$ Pa). A second layer from 1.5-4 cm, which loosely correlated with the remainder of the bioturbated region of the core, showed consistent erosion behavior with a higher critical shear stress of 0.6 Pa. During erosion testing it was noted that sand content appeared to increase below 4 cm and significant scouring of the erosion surface was observed. Erosion data from below 4 cm therefore is reflective of a non-cohesive bed. The results of physical samples collected from the core are presented in Table 3-3 and showed sand content to increase with depth from 57% to 78%.

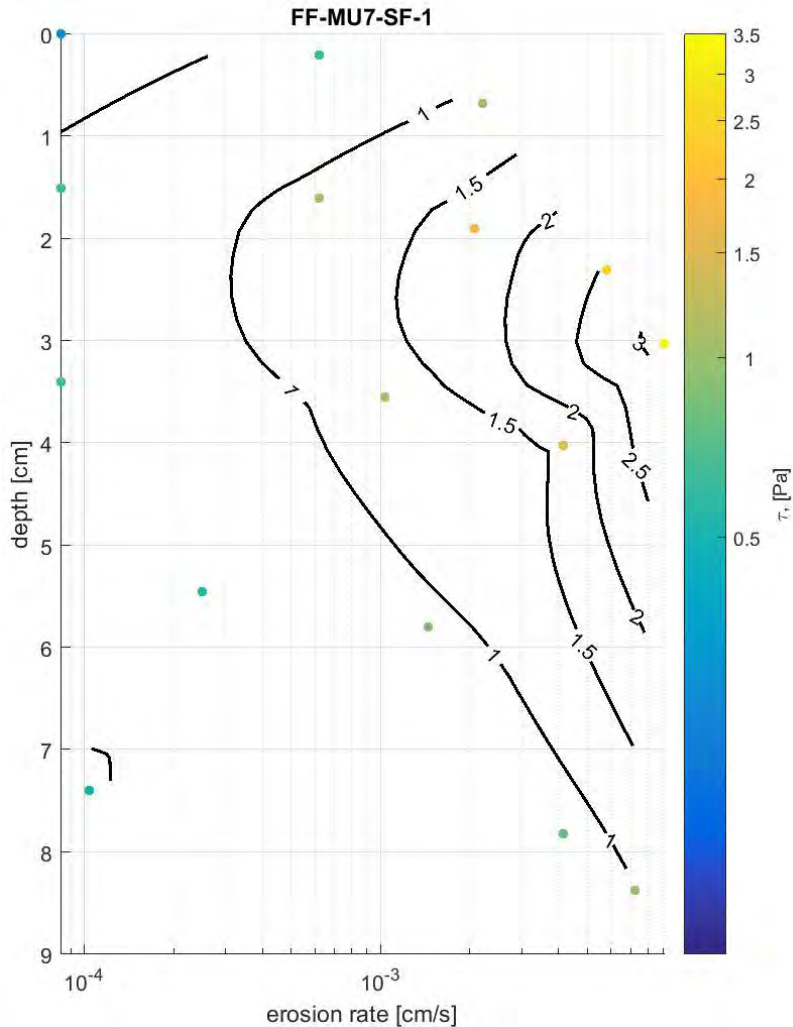


Figure 3-7: Erosion rate versus depth for core FF-MU7-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

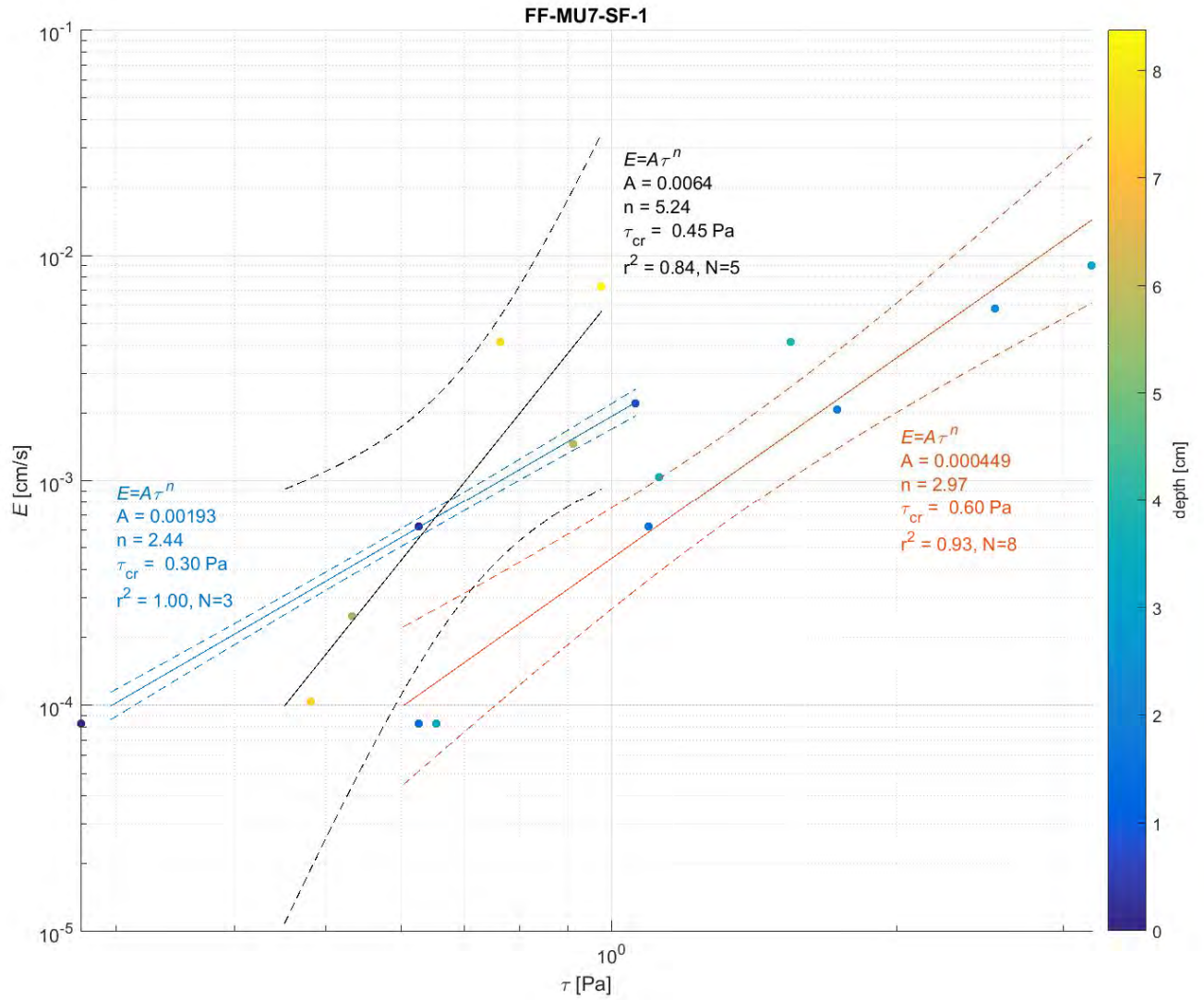


Figure 3-8: Erosion rate versus shear stress for core FF-MU7-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the three layers evident in the erosion data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay
1	1.15	1.42	9.7	76.0	437.1	57.3	40.2	2.5

2	4.7	1.54	13.6	107.1	420.3	65.0	33.4	1.6
3	8.8	1.83	20.5	271.5	740.1	78.0	21.0	1.0

Location BU-MU1-SF1

The erosion trends versus depth for core BU-MU1-SF1 are presented in Figure 3-9 while erosion data versus shear stress are shown in Figure 3-10. Visible observations of this core described a sandy texture with worm tubes and visible bioturbation down to a depth of 2 cm. Erosion vs depth data suggested the possible presence of several thin layers in the core, but erosion vs shear (Figure 3-10) fits indicated that a two layer model best described these sediments. A clear “surface layer” was not evident in this core. Instead, an upper layer down to a depth of 8.3 cm that was largely characterized by the mobilization of aggregates, was grouped and yielded a $\tau_c = 0.54$ Pa. Below this depth, erosion behavior was characterized by scouring and core surface failure. The fit to the data from this region of the core gave a $\tau_c = 1.21$ Pa. While a general decrease in erosion rate with depth was observed in these groupings, the results of physical samples collected from the core (Table 3-5) did not show a consistent increase in density or change in grain size that corresponded with this observed behavior.

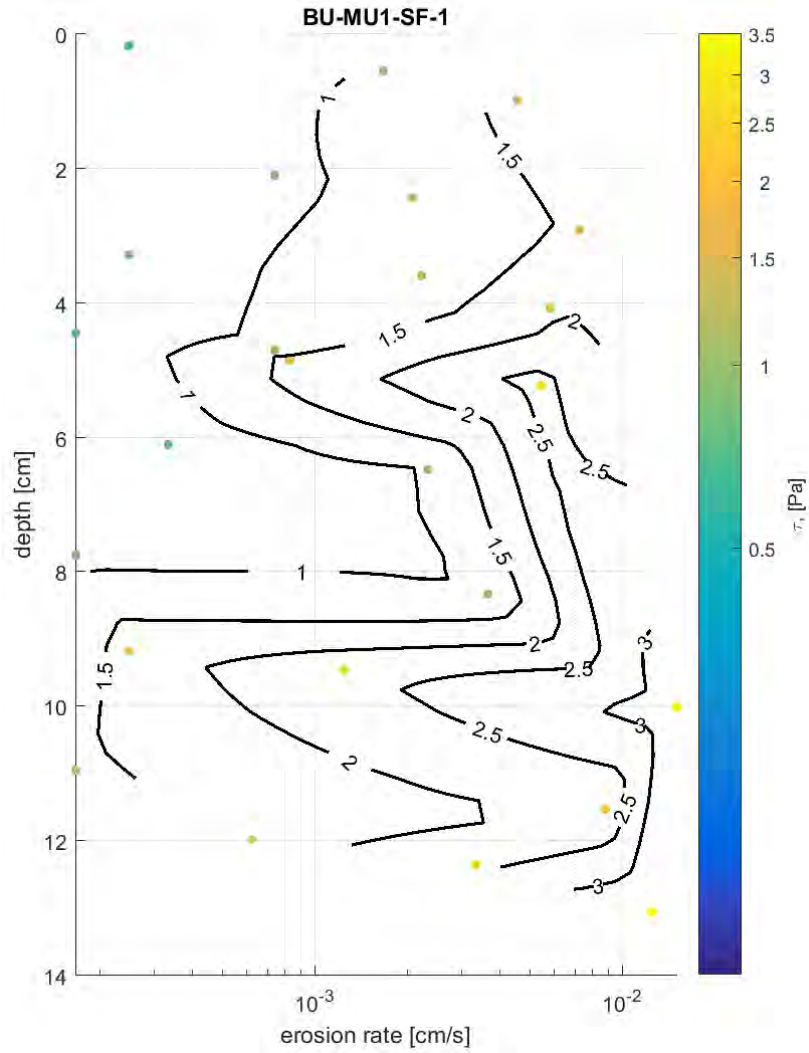


Figure 3-9: Erosion rate versus depth for core BB-MU1-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

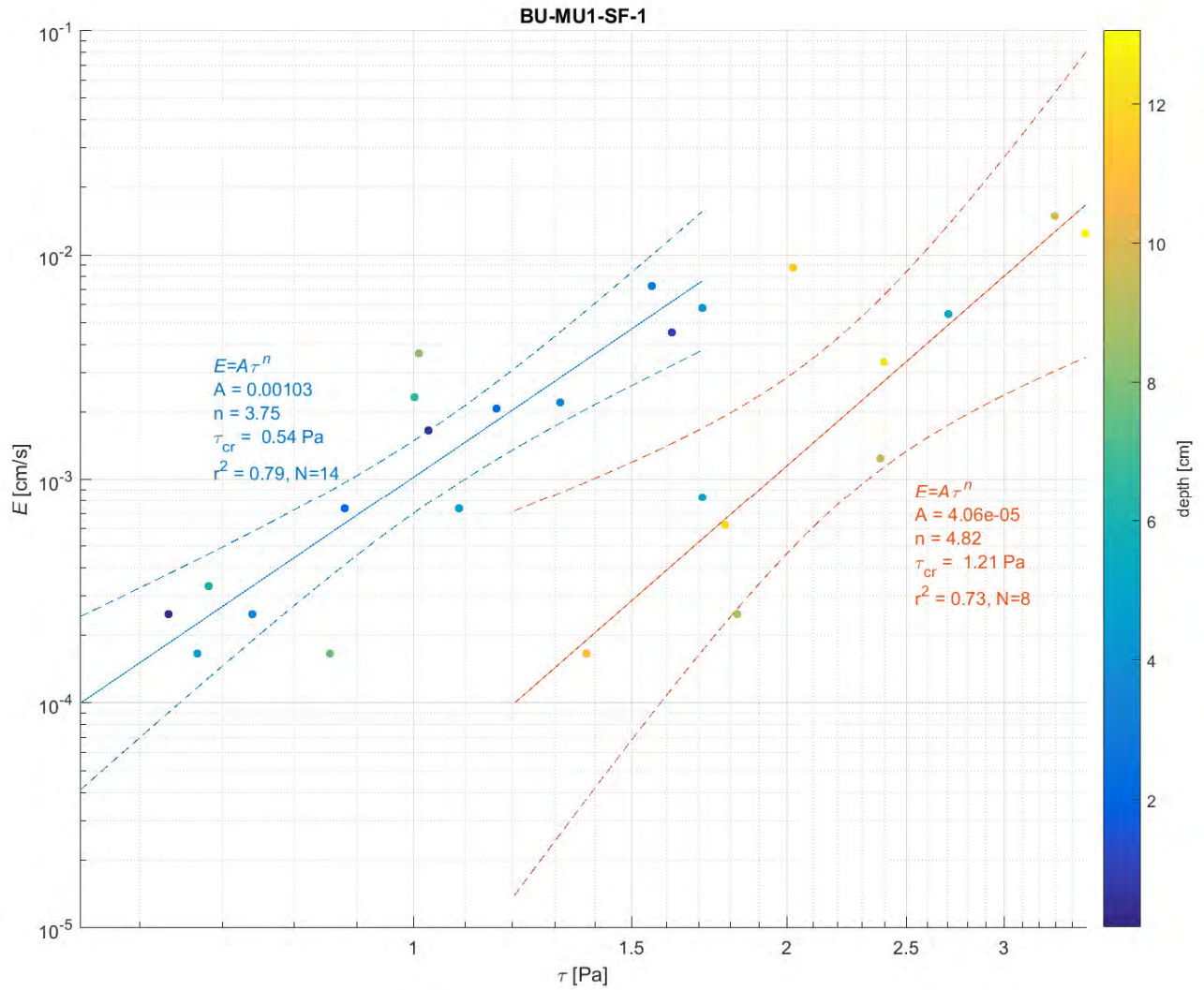


Figure 3-10: Erosion rate versus shear stress for core BB-MU1-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the two layers evident in the erosion data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay
1	1.4	1.51	15.6	83.3	285.6	66.8	31.8	1.4
2	5.6	1.40	11.6	68.1	300.0	57.4	40.6	2.0
3	10.55	1.51	12.9	65.9	338.0	56.8	41.4	1.8
4	13.45	1.56	12.5	73.9	300.8	60.2	38.0	1.8

Location OR-MU1-SF1

The erosion trends versus depth for core OR-MU1-SF1 are presented in Figure 3-11 while erosion data versus shear stress are shown in Figure 3-12. Visible observations of this core described a surface covered with wood chips and other organic debris along with worm tubes and visible bioturbation down to a depth of 8-10 cm. Evidence of layering can be seen in the erosion data (Figures 3-11 and 3-12). A “surface layer” from 0-1 cm was identified with a $\tau_c = 0.18$ Pa. A second layer was identified from 1-10 cm that corresponded with the remainder of the noted bioturbation zone. Below a depth of 10 cm, erosion rates of sediments were found to increase and τ_c shifted from 1.05 Pa to 0.78 Pa. The results of physical samples collected from the core (Table 3-6) did not show consistent changes in grain size or density below a depth of 10 cm. Despite this fact, the elevated erosion rates and tight fit of the data from this depth range (Figure 3-12), combined with the noted change in bioturbation activity at this depth warranted a third layer being described in this core.

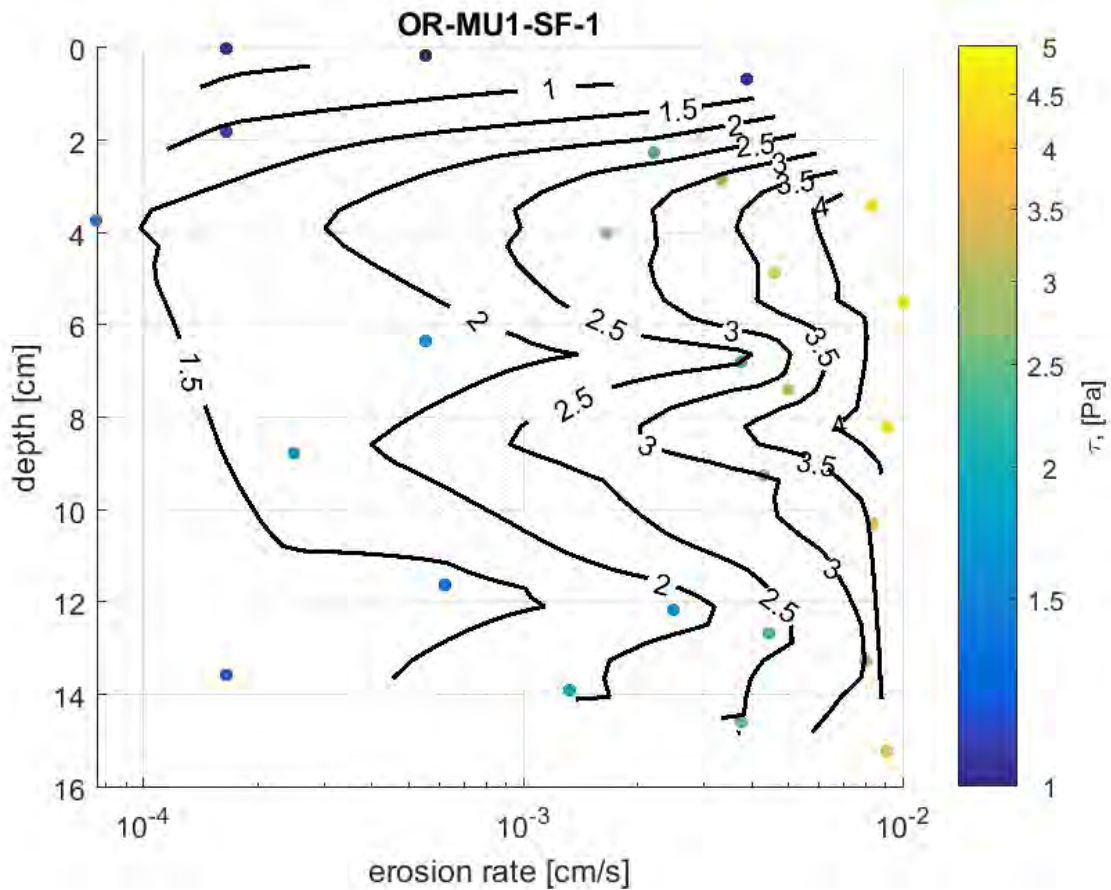


Figure 3-11: Erosion rate versus depth for core OR-MU1-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

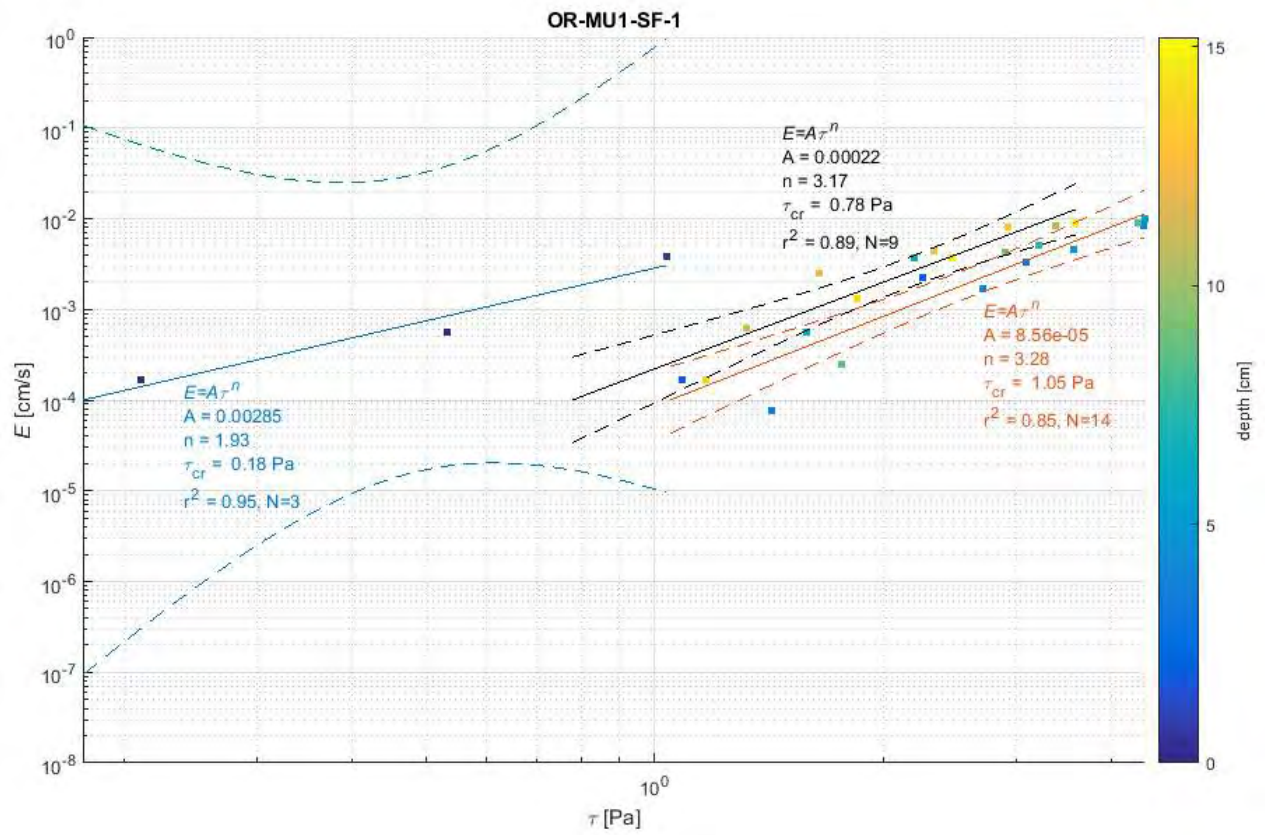


Figure 3-12: Erosion rate versus shear stress for core OR-MU1-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the three layers evident in the erosion data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay
1	1.3	1.18	6.7	39.8	231.1	40.9	55.2	3.9
2	6.0	1.38	7.9	46.5	250.2	43.6	53.0	3.3
3	10.85	1.43	7.3	41.3	229.4	40.2	56.4	3.4
4	15.7	1.35	8.3	47.2	267.1	44.3	52.8	2.9

Location OR-MU3-SF1B

The erosion trends versus depth for core OR-MU3-SF1B are presented in Figure 3-13 while erosion data versus shear stress are shown in Figure 3-14. No note of visible bioturbation was made for core OR-MU3-SF1B. Evidence of layering of the sediments in this core was clearly seen in the erosion vs depth plot (Figures 3-11). A “surface layer” from 0-1 cm was identified with a $\tau_c = 0.11$ Pa. While the erosion vs depth plot and the results from physical samples

collected in the core (Table 3-7) showed evidence that multiple layers might exist in the remainder of the core, attempts to characterize these layer individually resulted in overlapping fits. Instead, a grouping of the remainder of the cores erosion data provided a fit that characterized these sediments well ($\tau_c = 0.27$ Pa).

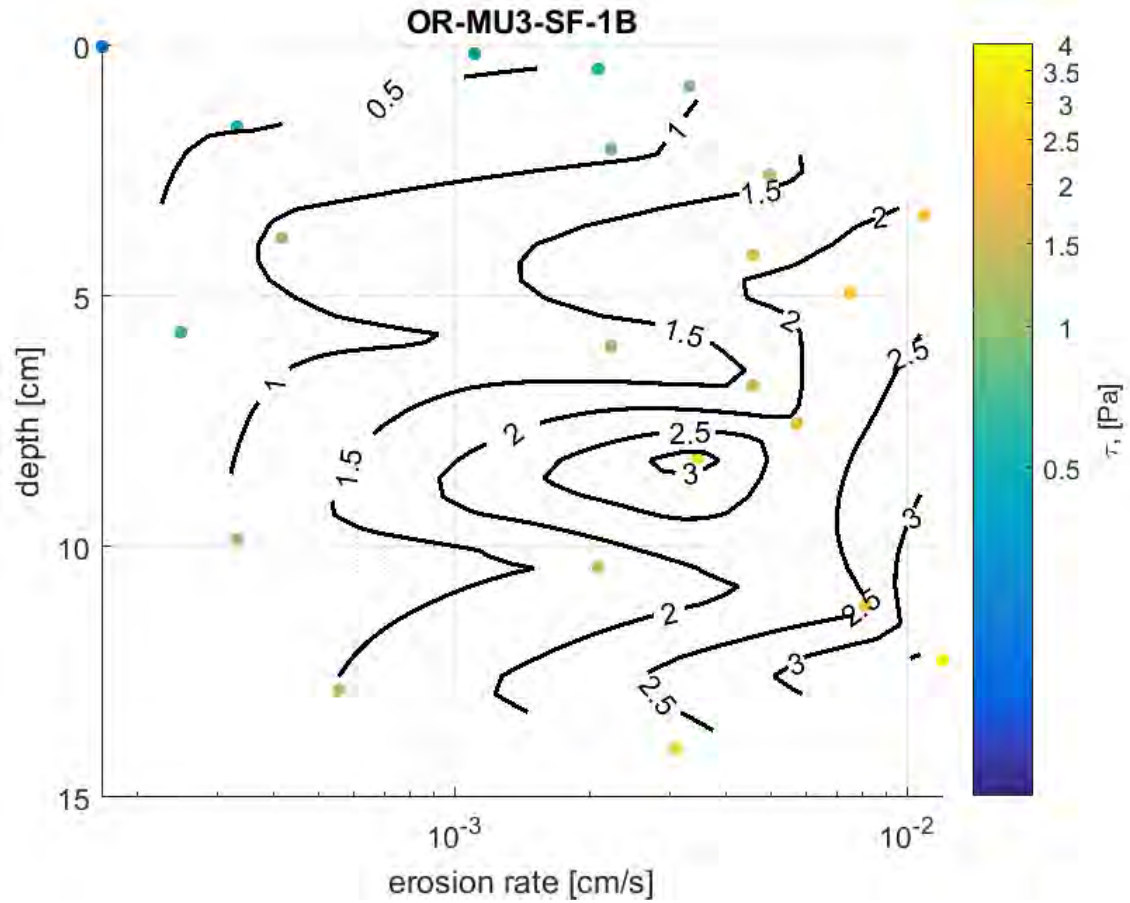


Figure 3-13: Erosion rate versus depth for core OR-MU3-SF-1B. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

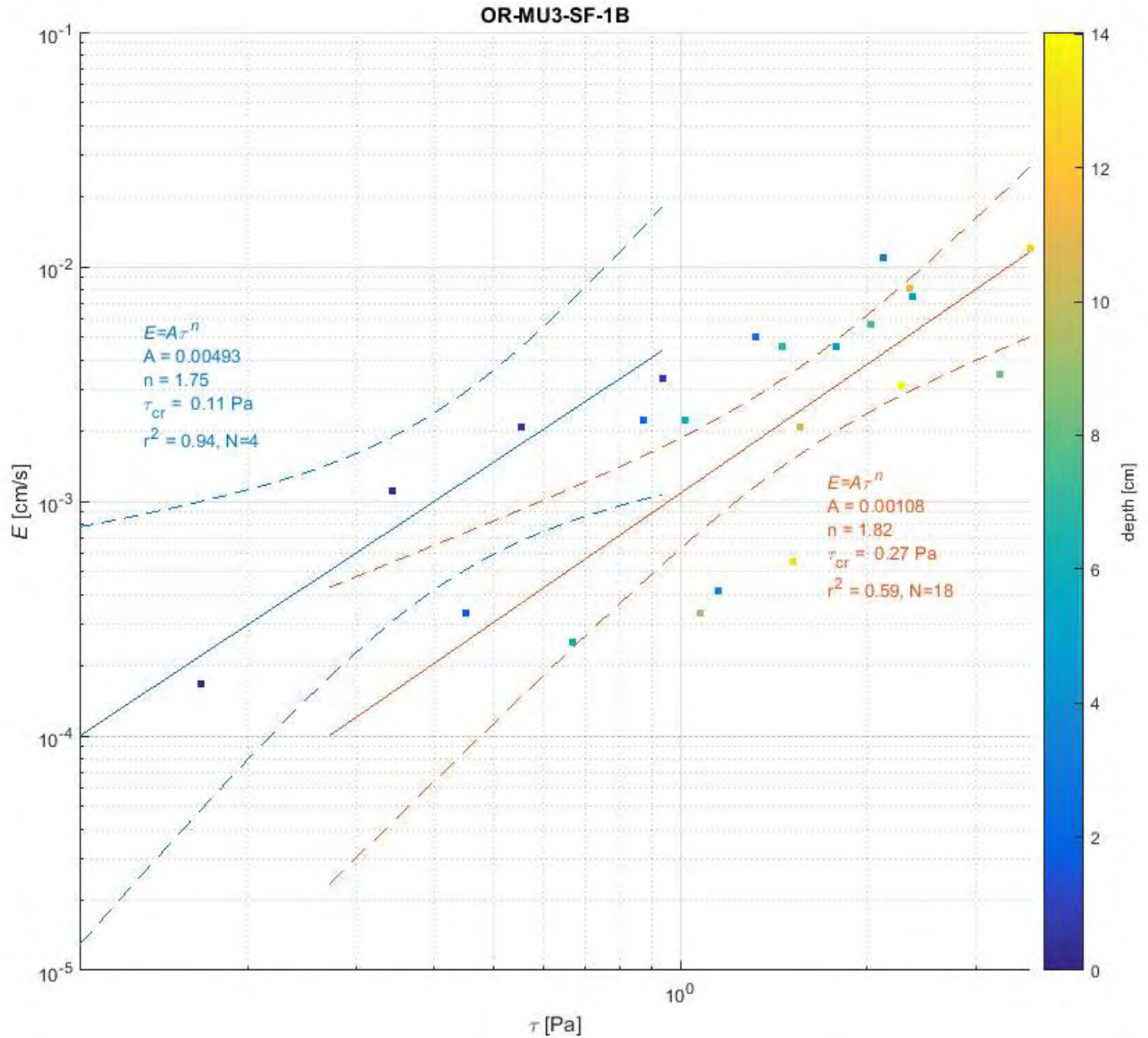


Figure 3-14: Erosion rate versus shear stress for core OR-MU3-SF-1B. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the two layers evident in the erosion data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay
1	1.15	1.36	7.7	48.2	208.8	45.5	51.4	3.0
2	5.4	1.30	9.7	59.4	355.7	51.5	46.1	2.3
3	9.05	1.28	8.2	49.7	199.5	45.8	51.4	2.8
4	14.625	1.40	9.6	71.8	438.0	56.6	40.8	2.5

Location VN-MU3-SF1

The erosion trends versus depth for core VN-MU3-SF1 are presented in Figure 3-15 while erosion data versus shear stress are shown in Figure 3-16. Visible observations of this core noted worm tubes and visible bioturbation down to a depth of 4-5 cm. Similar to other cores, erosion data and results of physical samples (Table 3-7) indicated layering within the core. Erosion rates tended to decrease with depth with the most erodible sediments being found in the “surface layer” from 0-1 cm of the core ($\tau_c = 0.20$ Pa). A second layer was identified from 1-6.5 cm that corresponded with an observed textural and erosion behavioral change that was noted during testing. This layer also loosely corresponds with the noted depth of observed bioturbation. The remainder of the core showed consistent erosion behavior and was grouped into a third layer with $\tau_c = 0.85$ Pa.

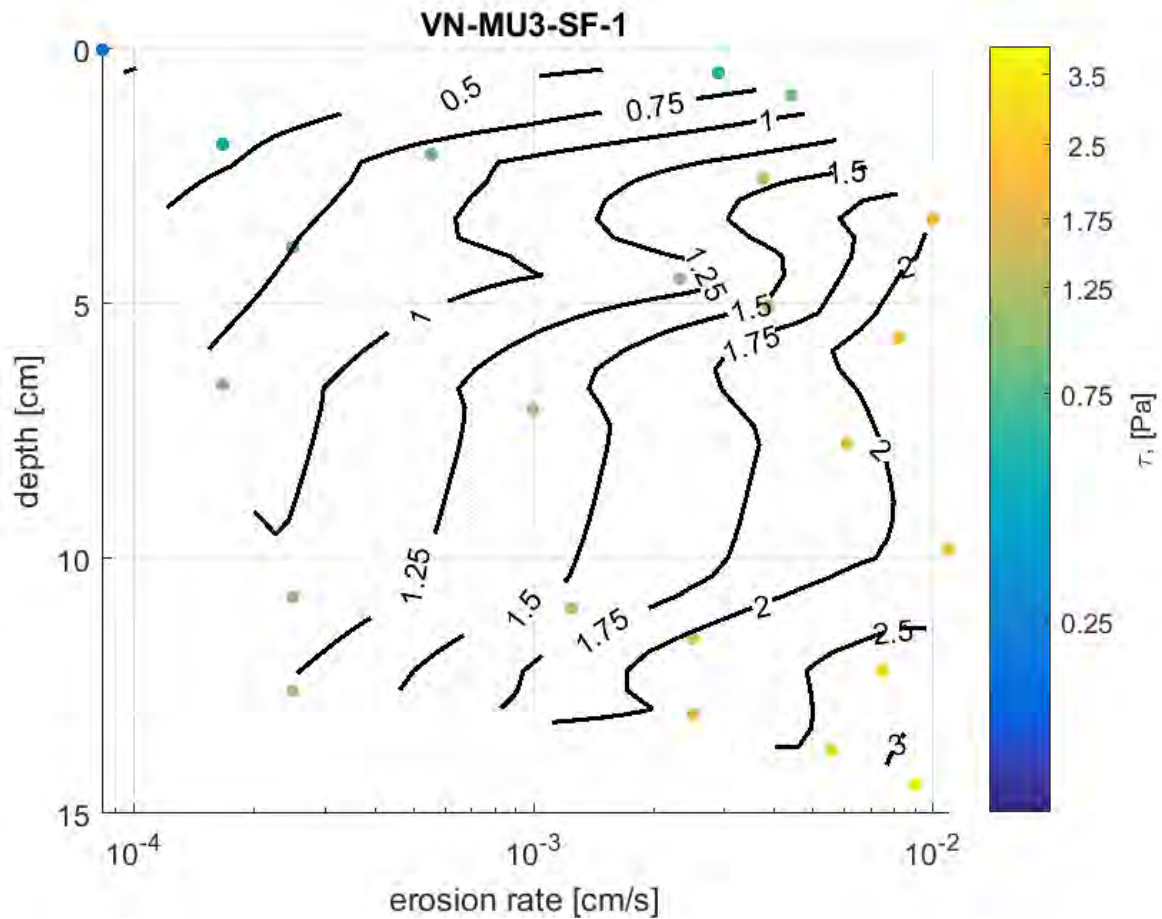


Figure 3-15: Erosion rate versus depth for core VN-MU3-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

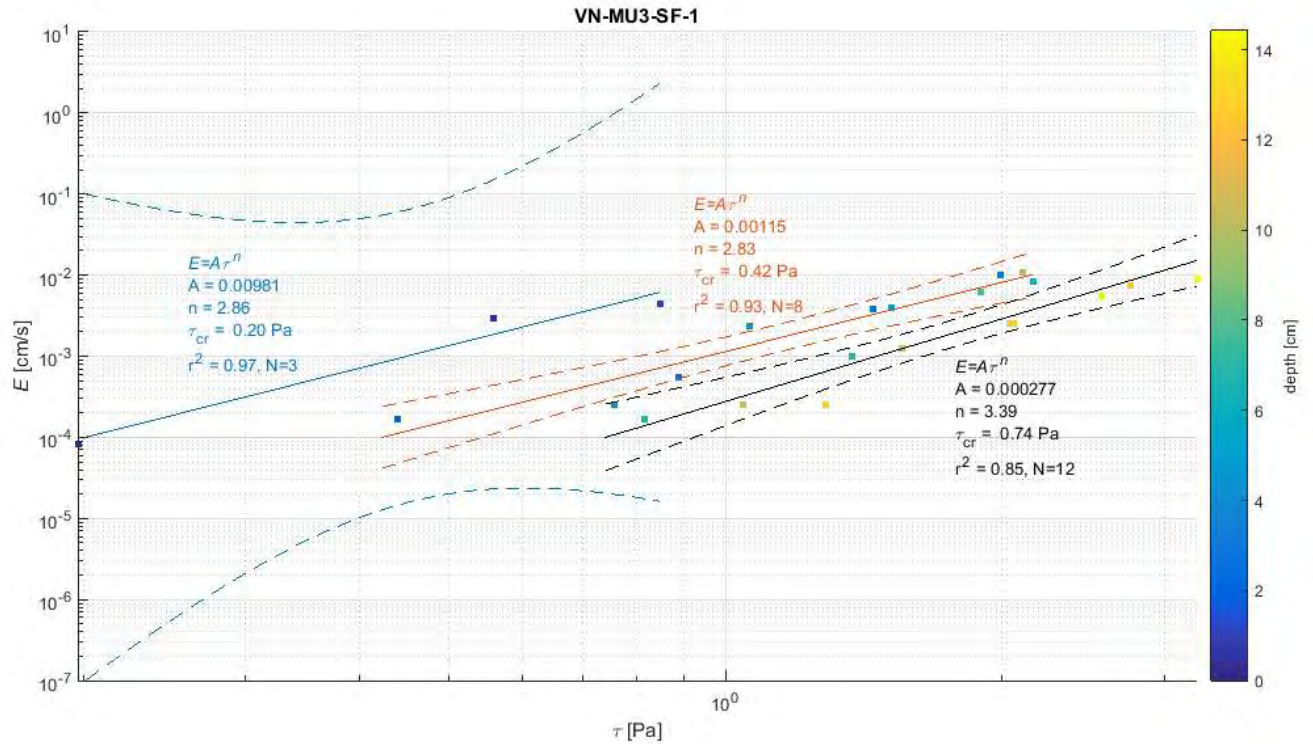


Figure 3-16: Erosion rate versus shear stress for core VN-MU3-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the three layers evident in the erosion data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay
1	1.40	1.28	8.7	51.6	285.9	47.0	50.2	2.7
2	6.175	1.24	8.7	58.9	400.0	51.2	46.0	2.8
3	10.30	1.29	7.6	40.9	190.9	39.7	57.0	3.3
4	14.925	1.37	7.9	46.1	264.0	43.7	53.2	3.2

Location VN-MU4-SF1

The erosion trends versus depth for core VN-MU4-SF1 are presented in Figure 3-17 while erosion data versus shear stress are shown in Figure 3-18. Visible observations of this core noted worm tubes and visible bioturbation down to a depth of 4-5 cm. Limited erosion data was obtained from the upper 1cm of the core due to a mounded, uneven surface covered with worm tubes. In trying to expose this surface to flows great enough to generate erosion, a surface failure occurred. Despite this, erosion data still indicated layering within the core. A layer was identified from 1.7-4.1 cm that corresponded with the noted depth of observed bioturbation and had a $\tau_c=0.20$ Pa. Sediments below this depth were found to be more erosion resistant and were grouped in a fit that yielded a $\tau_c=1.07$ Pa. The results of physical samples collected from the core

are presented in Table 3-9.

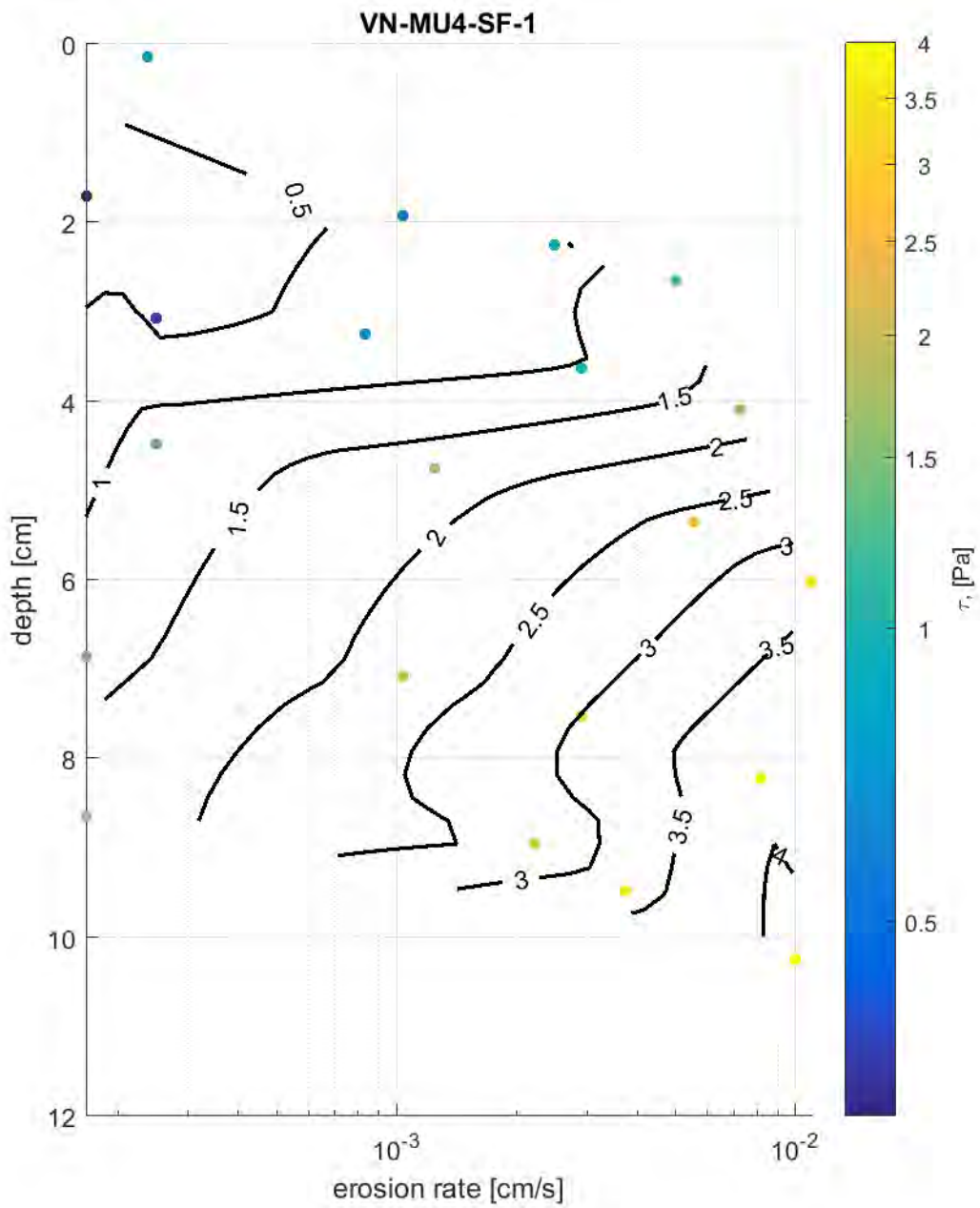


Figure 3-17: Erosion rate versus depth for core VN-MU4-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

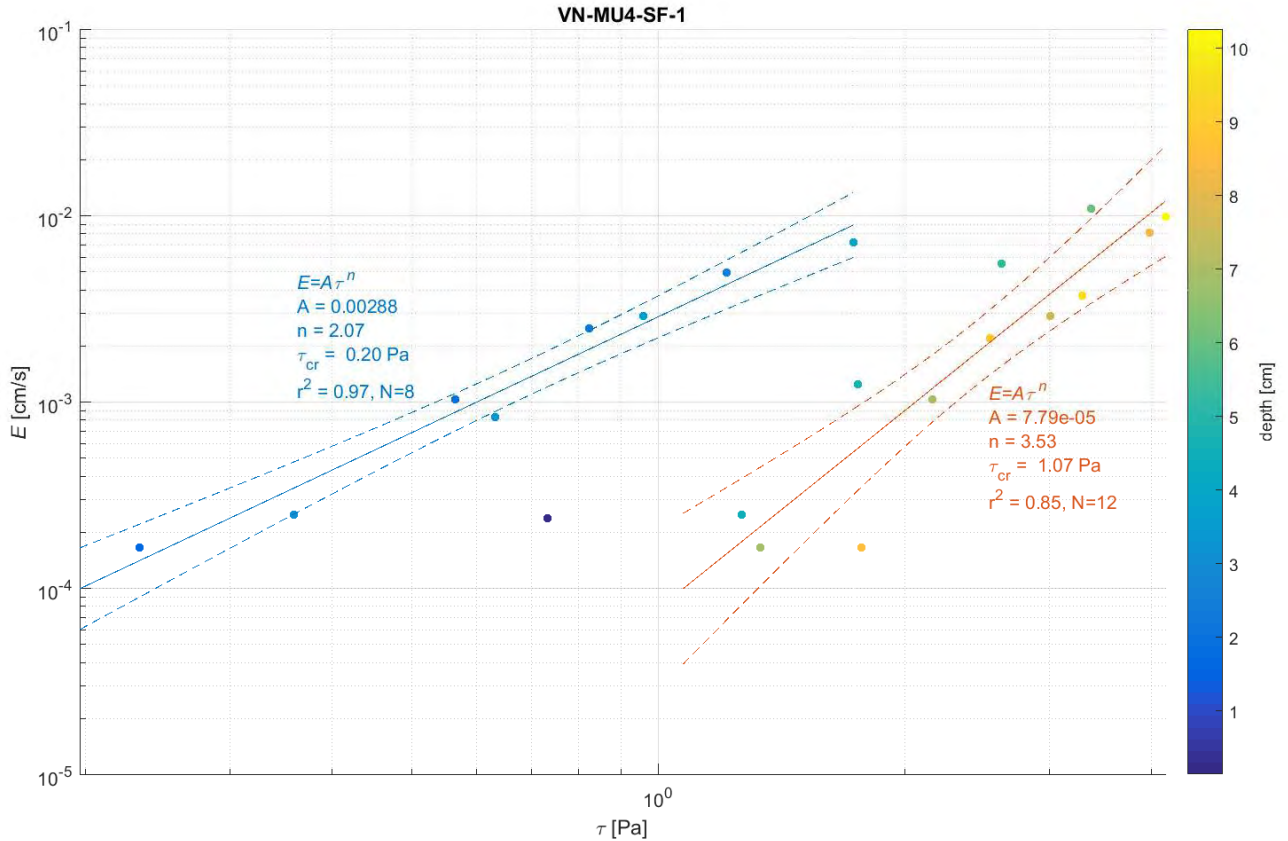


Figure 3-18: Erosion rate versus shear stress for core VN-MU4-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the two layers evident in the erosion data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay
1	1.15	1.29	8.5	48.6	246.0	45.2	52.0	2.8
2	6.50	1.42	8.4	47.7	218.2	44.3	52.8	2.9
3	10.65	1.45	8.5	51.2	233.2	46.9	50.2	2.9

Location VW-MU14-SF1

The erosion trends versus depth for core VW-MU14-SF1 are presented in Figure 3-19 while erosion data versus shear stress are shown in Figure 3-20. Visible observations of this core noted that the core surface was densely covered with worm tubes and other organic debris. Visible evidence of bioturbation was noted to be present in the core down to a depth of 8-9 cm. Erosion data indicated layering within the core and decreasing erosion rates with depth. A “surface layer” was not identified in this core, largely due to the fact that erosion notes described a sediment surface that was largely covered by worm tubes down to a depth of approximately 3-4 cm.

Instead, data showed a transition in erosion behavior that occurred at approximately 9 cm down core. This depth corresponded to the noted range of the bioturbation zone. Data from the upper 9 cm were grouped into one layer that showed a $\tau_c=0.26$ Pa. Sediments below this depth were found to be more erosion resistant and were grouped in a fit that yielded a $\tau_c=0.96$ Pa. The results of physical samples collected from the core are presented in Table 3-10.

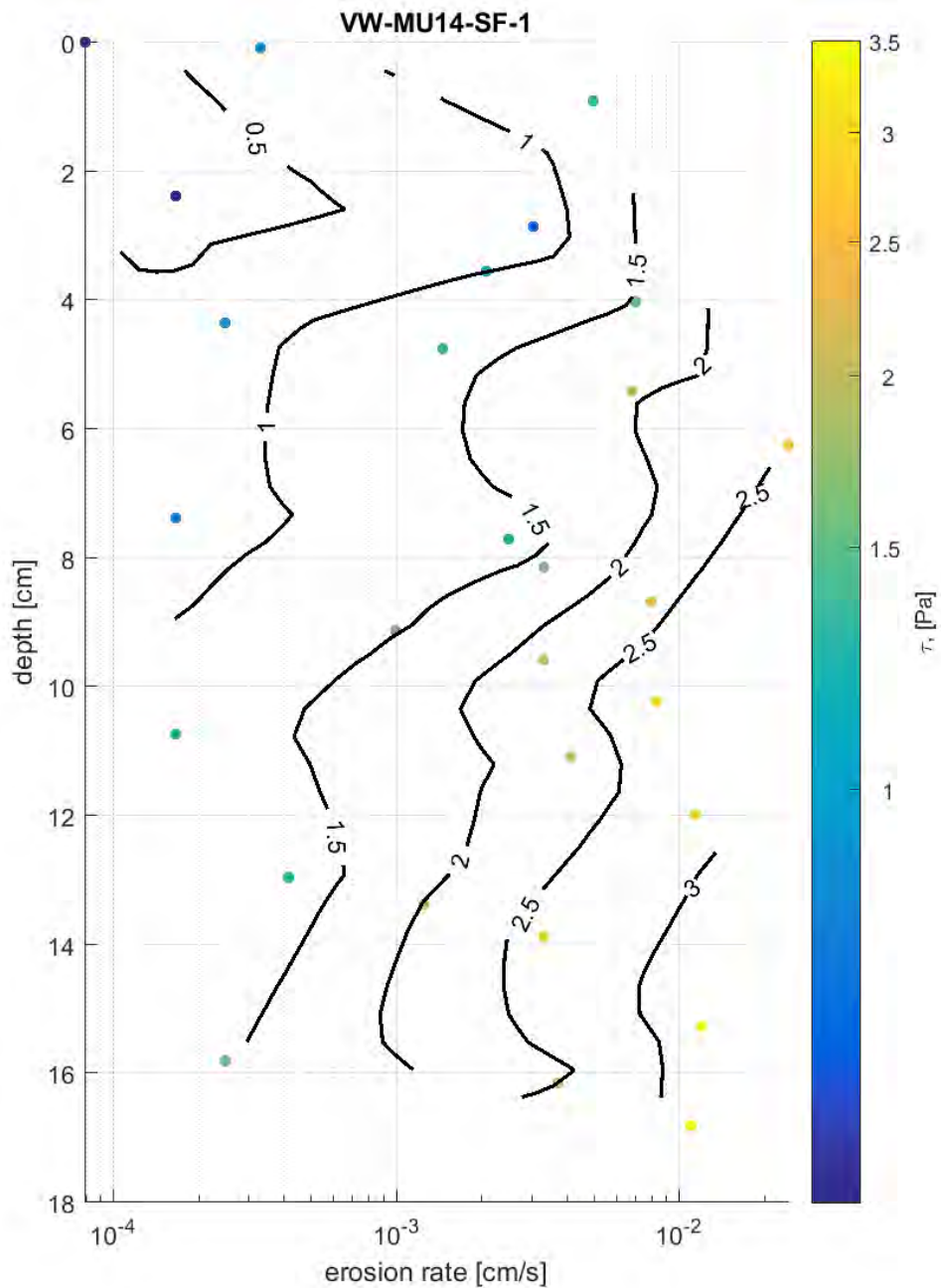


Figure 3-19: Erosion rate versus depth for core VW-MU14-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

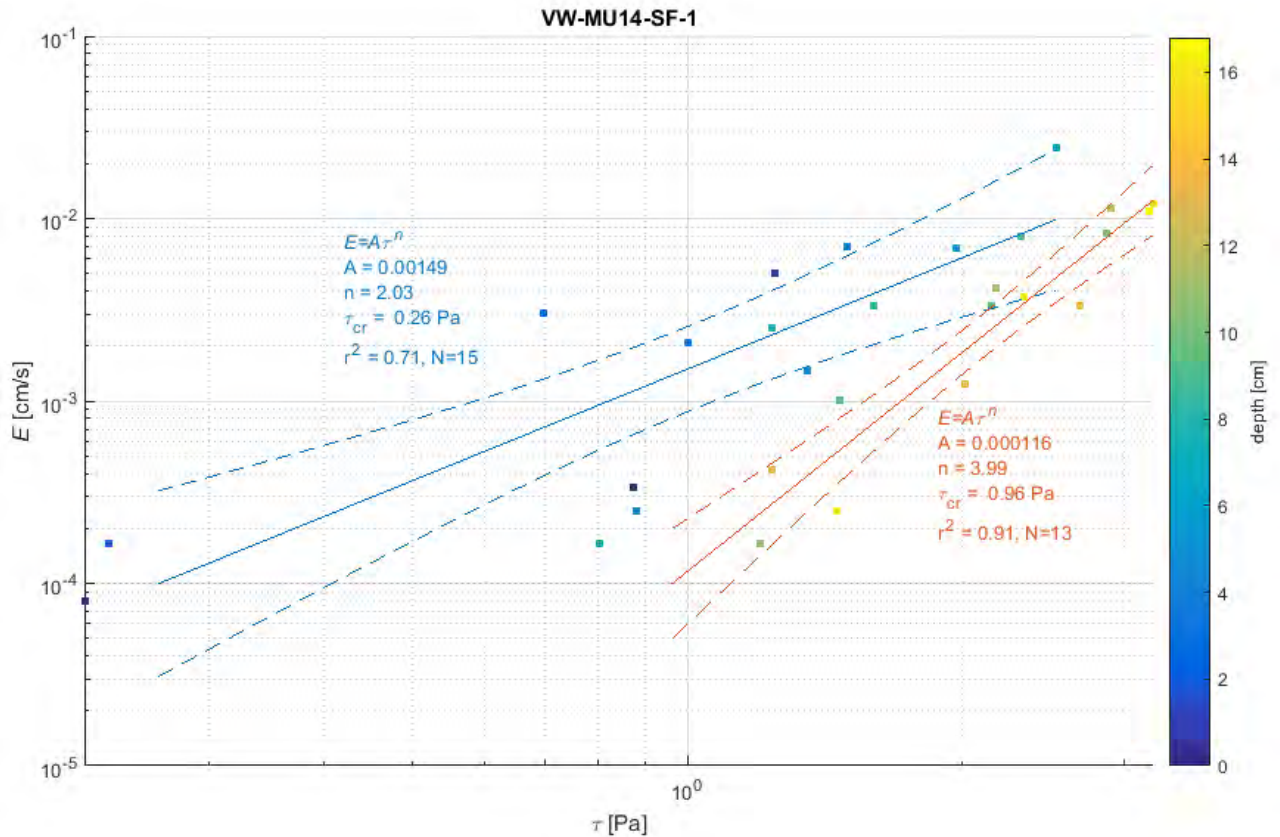


Figure 3-20: Erosion rate versus shear stress for core VW-MU14-SF-1. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the two layers evident in the erosion data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay
1	1.425	1.22	7.8	40.3	196.3	39.3	57.5	3.2
2	6.95	1.30	8.8	61.0	297.4	52.3	44.9	2.8
3	12.45	1.33	8.5	60.8	341.1	52.2	44.9	2.8
4	17.40	1.43	10.7	59.7	255.9	51.9	45.9	2.2

Location VE-MU3-SF1B

The erosion trends versus depth for core VE-MU3-SF1B are presented in Figure 3-21 while erosion data versus shear stress are shown in Figure 3-22. Visible observations of this core described a sandy texture with organic debris present on the surface. Unlike many of the other cores, no visible evidence of bioturbation was described. No “surface layer” from 0-1 cm was identified in the erosion data, but layering was still evident within the core. Erosional behavior of sediments from 0-4 cm was frequently described as sand particles winnowing around organic debris, larger pebbles, or clumps of more cohesive sediment. The grouping of data from this part

of the core produced a fit with a $\tau_c = 0.15$ Pa. Below this depth erosion behavior was more frequently characterized by the mobilization of aggregated sediment, though coarse sand and pebbles were still visible. This material was more resistant to erosion with a $\tau_c = 0.60$ Pa. The results of physical samples collected from the core (Table 3-11).

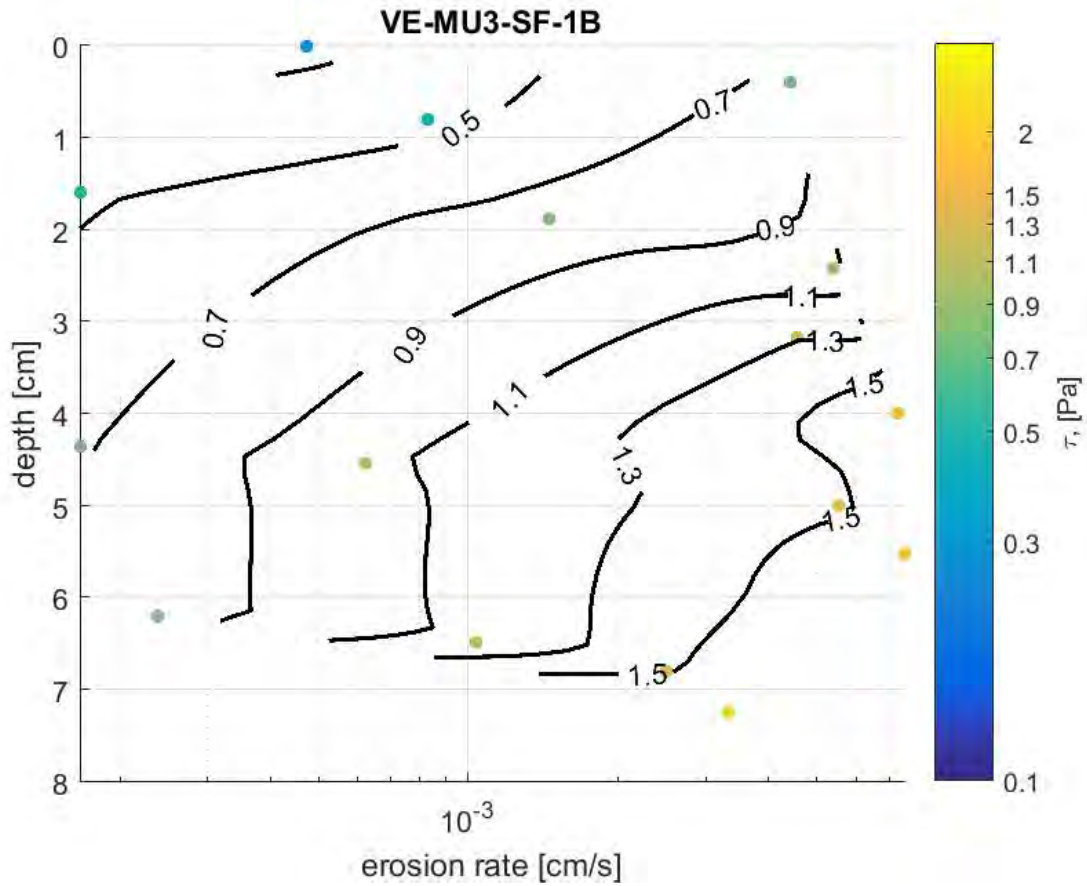


Figure 3-21: Erosion rate versus depth for core VE-MU3-SF-1B. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

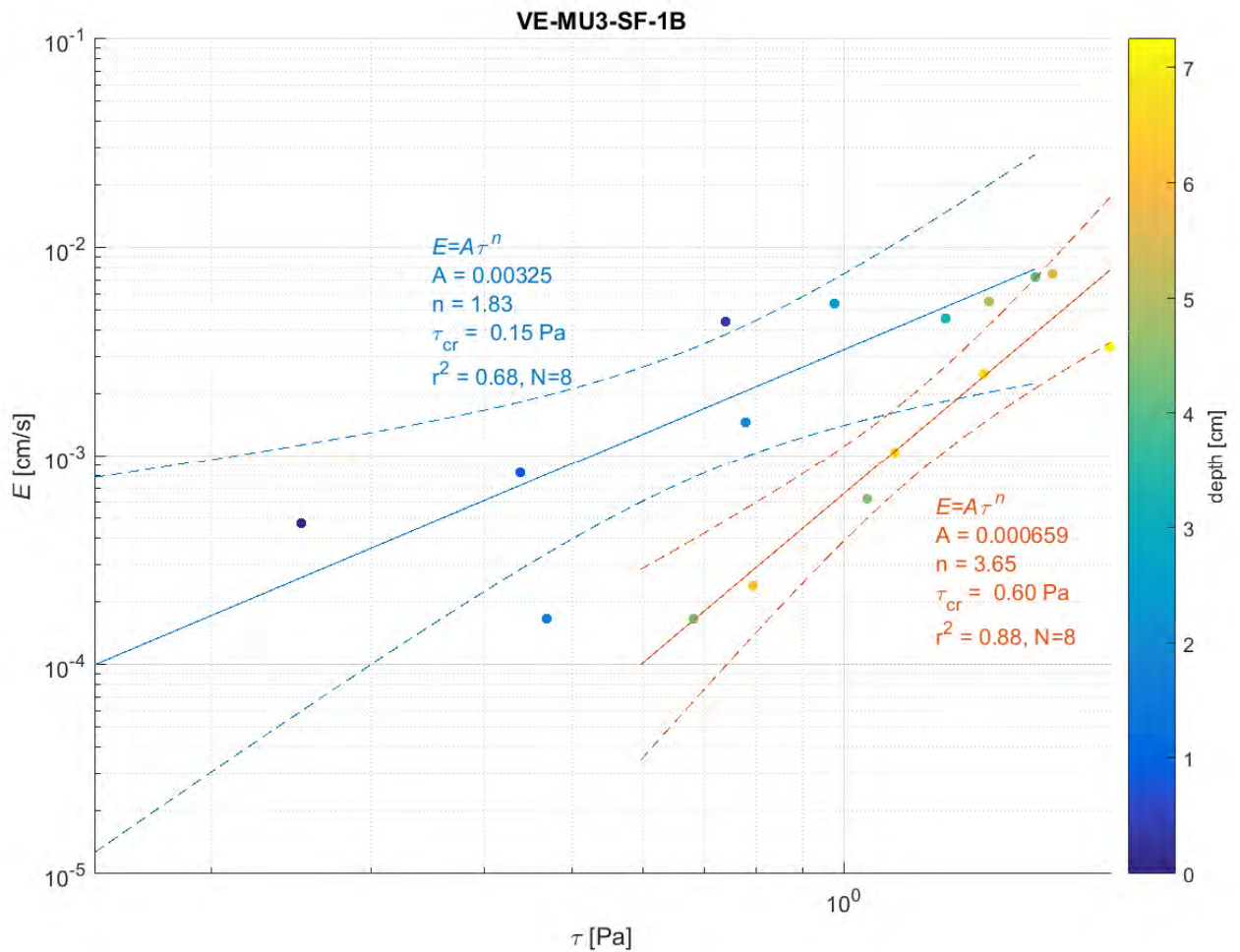


Figure 3-22: Erosion rate versus shear stress for core VE-MU3-SF-1B. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the two layers evident in the erosion data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay
1	1.15	1.32	12.0	93.8	486.0	62.4	35.8	1.9
2	5.85	1.60	14.4	177.1	673.1	73.1	25.2	1.7
3	7.55	1.58	8.5	104.2	465.6	63.2	33.6	3.2

Location VE-MU4-SF2

The erosion trends versus depth for core VE-MU4-SF2 are presented in Figure 3-23 while erosion data versus shear stress are shown in Figure 3-24. Visible observations of this core noted worm tubes and visible bioturbation down to a depth of 10 cm. Limited erosion data from the upper 1

cm of the core did not allow for characterization of a “surface layer”. Erosion data still indicated layering within the core with a decrease in erosion rate with depth, as seen in Figure 3-23. As frequently observed in other cores, erosion data indicated a change in behavior that corresponded with the observed bioturbation zone. A layer was identified from 1-10 cm that displayed consistent erosion behavior and had a $\tau_c=0.56$ Pa. Sediments below this depth were found to be more erosion resistant and were grouped in a fit that yielded a $\tau_c=1.10$ Pa. The results of physical samples collected from the core are presented in Table 3-12. These results show that while grain size did not significantly change down core, bulk density did increase with depth, and thus changes in erosion rate may be associated with packing density.

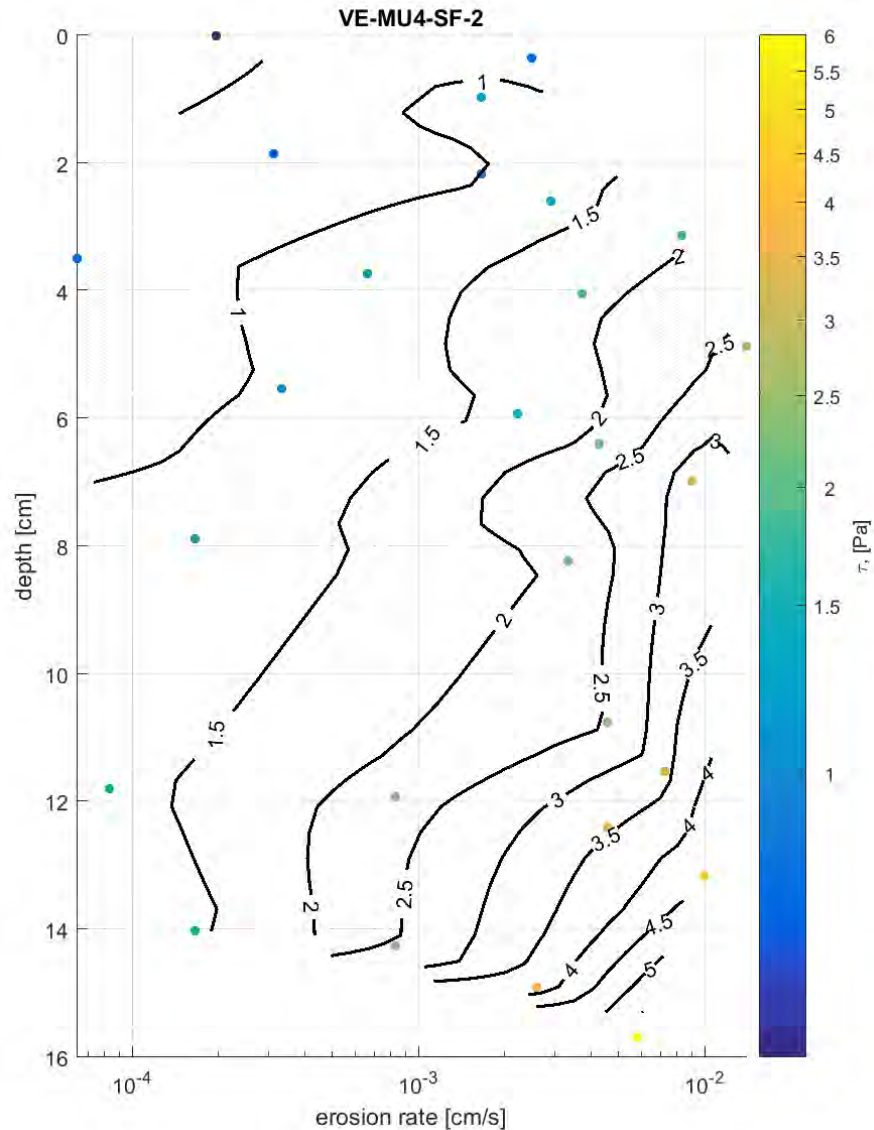


Figure 3-23: Erosion rate versus depth for core VE-MU4-SF-2. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the applied shear stress for each data point. Contours through the data indicate trends of erosion rate with depth for a given shear stress.

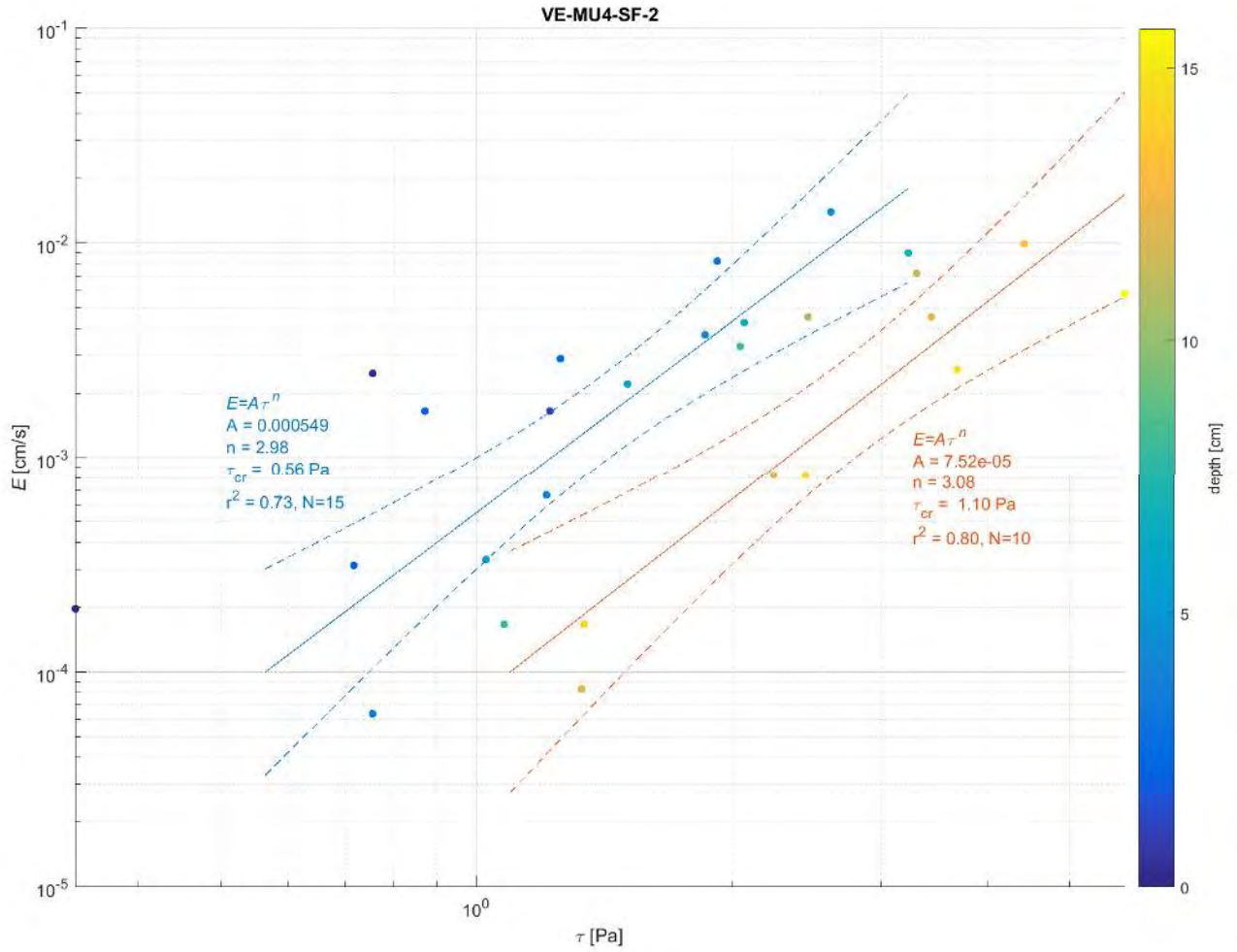


Figure 3-24: Erosion rate versus shear stress for core VE-MU4-SF-2. The erosion testing data are indicated with colored circles. The color of the data point corresponds to the depth below the sediment-water interface. Regression lines and fit parameters are provided for the two layers evident in the erosion data. The dashed lines represent the 95-percent confidence intervals in fit parameters.

Sample #	Depth (cm)	Bulk Density (g/cm ³)	d ₁₀ (μm)	d ₅₀ (μm)	d ₉₀ (μm)	% Sand	% Silt	% Clay
1	1.50	1.18	6.9	34.5	141.7	33.5	62.7	3.8
2	7.55	1.27	6.9	33.3	124.1	30.9	65.3	3.8
3	13.75	1.30	7.5	35.8	136.6	33.9	63.0	3.2
4	16.225	1.34	6.7	34.4	138.1	32.9	63.0	4.0

Summary of Results

Data generated from sedflume testing indicated that distinct sediment layers with varied erosional processes and behaviors could be identified in each core collected from the Penobscot River, with the exception of core MM-MU6-SF-1. Frequently, the bounds of these layers were associated with zones of observed bioturbation. Other commonly observed markers of erosion layers included the “surface layer” of the upper 1 cm of sediment, changes in sediment grain size, and changes in bulk density. In general it was found that erosion rates tended to decreased with depth down core; however, instances of more easily erodible layers were observed at depth in some cores. Critical shear stresses ranged from 0.11-1.21 Pa across all sediment layers. For identified “surface layers” the range of critical shear stress was found to be 0.11-0.43 Pa. A summary of the erosion parameters determined from the cores is provided in Table 3-13.

ID	Depth1 [cm]	Depth2 [cm]	τ_c [Pa]	$\tau_{c_95_1}$ [Pa]	$\tau_{c_95_2}$ [Pa]	A	A95_1	A95_2	n
BU-MU1-SF-1	0.18	8.33	0.54	0.49	0.59	1.03E-03	7.05E-04	1.49E-03	3.75
BU-MU1-SF-1	9.18	13.05	1.21	0.72	2.02	4.06E-05	3.42E-06	4.83E-04	4.82
FF-MU7-SF-1	0.00	0.68	0.30	0.28	0.31	1.93E-03	1.70E-03	2.20E-03	2.44
FF-MU7-SF-1	1.50	4.03	0.60	0.51	0.72	4.49E-04	2.67E-04	7.53E-04	2.97
FF-MU7-SF-1	5.45	8.38	0.45	0.32	0.65	6.40E-03	9.65E-04	4.24E-02	5.24
MM-MU6-SF-1	0.05	7.55	0.79	0.64	0.99	2.05E-04	1.05E-04	4.02E-04	3.09
ON-MU2-SF-1	0.15	1.05	0.43	0.23	0.81	2.79E-03	2.32E-04	3.35E-02	3.94
ON-MU2-SF-1	2.00	6.03	0.75	0.63	0.89	2.57E-04	1.45E-04	4.57E-04	3.29
ON-MU2-SF-1	10.40	10.63	0.21	0.01	5.16	3.17E-04	3.03E-05	3.32E-03	0.73
ON-MU13-SF-1	0.00	0.83	0.16	0.07	0.35	4.70E-03	8.81E-04	2.51E-02	2.07
ON-MU13-SF-1	1.70	4.58	0.54	0.50	0.59	1.03E-03	7.42E-04	1.42E-03	3.80
ON-MU13-SF-1	4.90	16.13	0.93	0.71	1.22	1.27E-04	5.34E-05	3.04E-04	3.21
OR-MU1-SF-1	0.00	0.68	0.18	0.01	3.21	2.85E-03	1.05E-05	7.72E-01	1.93
OR-MU1-SF-1	1.80	9.25	1.05	0.80	1.37	8.56E-05	3.52E-05	2.09E-04	3.28
OR-MU1-SF-1	10.30	15.20	0.78	0.59	1.02	2.20E-04	9.32E-05	5.21E-04	3.17
OR-MU3-SF-1B	0.00	0.80	0.11	0.05	0.25	4.93E-03	1.12E-03	2.18E-02	1.75
OR-MU3-SF-1B	1.60	14.03	0.27	0.20	0.36	1.08E-03	6.28E-04	1.86E-03	1.82
VE-MU3-SF-1B	0.00	4.00	0.15	0.09	0.23	3.25E-03	1.41E-03	7.50E-03	1.83
VE-MU3-SF-1B	4.35	7.25	0.60	0.52	0.69	6.59E-04	3.90E-04	1.11E-03	3.65
VE-MU4-SF-2	0.97	8.22	0.56	0.46	0.69	5.49E-04	3.00E-04	1.00E-03	2.98
VE-MU4-SF-2	10.75	15.70	1.10	0.70	1.73	7.52E-05	1.86E-05	3.05E-04	3.08
VN-MU3-SF-1	0.00	0.93	0.20	0.02	2.15	9.81E-03	1.12E-05	8.56E+00	2.86
VN-MU3-SF-1	1.88	5.65	0.42	0.37	0.49	1.15E-03	7.61E-04	1.73E-03	2.83
VN-MU3-SF-1	6.58	14.43	0.74	0.60	0.91	2.77E-04	1.40E-04	5.50E-04	3.39
VN-MU4-SF-1	1.70	4.10	0.20	0.17	0.22	2.88E-03	2.22E-03	3.73E-03	2.07
VN-MU4-SF-1	4.48	10.25	1.07	0.81	1.42	7.79E-05	2.87E-05	2.11E-04	3.53
VW-MU14-SF-1	0.00	8.68	0.26	0.20	0.34	1.49E-03	8.73E-04	2.56E-03	2.03
VW-MU14-SF-1	8.93	16.80	0.96	0.82	1.14	1.16E-04	5.98E-05	2.26E-04	3.99

References

McNeil, J., Taylor, C., and Lick, W. 1996. 'Measurements of erosion of undisturbed bottom sediments with depth', *Journal of Hydraulic Engineering*, 122(6), 316-324.

APPENDIX E

Amendment Test Plot Resampling Study: Penobscot River, Maine (Provided On CD)

Technical Memorandum

Date: April 25, 2018
To: Nelson Walter, Amec Foster Wheeler, Portland, ME
From: Karen Merritt, Amec Foster Wheeler, Portland, ME
Ref: Penobscot River Phase III Engineering Study
Re: Amendment Test Plot Resampling Study

EXECUTIVE SUMMARY

This Technical Memorandum summarizes the results of the 2017 resampling of the Amendment Test Plots performed by the Smithsonian Environmental Research Center (SERC). The Test Plots were initially established by SERC as a component of the Phase II Study of the Penobscot River Estuary. As detailed in the Phase II Study, the establishment and monitoring of amendment test plots was designed to assess the effectiveness of amendments as a remediation strategy for mercury in Mendall Marsh. While four amendments (iron as FeCl_2 , lime, activated carbon formulated as SediMite® and biochar) were initially applied in 2010, iron and lime were dropped from further evaluation in 2012 based on the results of interim sampling and analysis. The 2017 sampling focused on the test plots containing SediMite® and biochar. The overall objective of 2017 sampling was consistent with the Phase II objectives, namely evaluation of the effectiveness of SediMite® and biochar in reducing soil and porewater concentrations of total mercury and methyl mercury relative to concentrations in control plots with no amendment addition.

Results of the 2017 resampling demonstrate that SediMite® and biochar applied in 2010 remain visible and measurable after 7 years in the field. Marsh accretion has buried the amendments to a current depth of 2-3 centimeters. Based on analytical measurement of soil carbon, the retention rate of SediMite® through 2017 was $127 \pm 57\%$ at the Central site and $90 \pm 32\%$ at the West site. For biochar, the retention rate was $62 \pm 26\%$ at the Central site, and $29 \pm 11\%$ at the West site.

For depth-integrated porewater analyses (0 – 5 cm), the addition of both SediMite® and biochar decreased porewater concentrations of total mercury and methyl mercury relative to the control for the Central location but not the West location. Overall, throughout this study, SediMite® was more effective than biochar in reducing concentrations of porewater total mercury and methyl mercury.

For depth-integrated marsh soil analyses (0 – 3 cm), the addition of SediMite® appears to have minimal impact on concentrations of total mercury and methyl mercury in either the Central or West location. In contrast, the addition of biochar, while having no impact on the soil total mercury concentration in either the Central or West location, significantly increased the soil concentration of methyl mercury in both test locations. The increased concentration of soil-associated methyl

mercury following the addition of biochar may result from the ability of biochar to sorb or bind methyl mercury and inhibit demethylation back to inorganic mercury.

For both total mercury and methyl mercury, distribution coefficients (K_d) increase following addition of either SediMite® or biochar in the Central location but not in the West location. The increase in K_d calculated for total mercury and methyl mercury results from either/both an increase in soil concentration and/or a decrease in porewater concentration for both analytes in the Central location.

Based on the review of these data, Amec Foster Wheeler does not recommend application of amendments as a component of site remedy for the Penobscot River Estuary. It is currently not possible to evaluate whether the amendments, either applied as a stand-alone remedy or incorporated into a thin layer cap, result in decreased biological uptake and trophic transfer of methyl mercury as there are only limited data on biota uptake of mercury with amendment addition. While SediMite® was more effective than biochar in reducing porewater concentrations of total mercury and methyl mercury over the study period (2010 – 2017), the impact of SediMite® addition was not equally apparent between the Central and West locations. Moreover, changes in soil redox conditions in 2017 relative to the earlier sampling period adds uncertainty to the evaluation of the long-term effectiveness of amendment addition by complicating interpretation of 2017 data relative to 2010 – 2012 data. The uncertainty in ecological function of the amendments is therefore coupled with significant cost uncertainties regarding development of this remedy. While it is possible to estimate a cost associated with a single amendment application to Mendall Marsh, there are significant uncertainties associated with evaluating the frequency with which amendments would require re-application across the marsh platform to achieve long-term ecological goals.

The costs estimated in the Alternatives Evaluation Report (Amec Foster Wheeler 2018) for implementation of a single application of activated carbon amendment and for installation of a thin layer cap were approximately equal. However, since frequent re-application (every two to five years) of carbon amendment is likely to be necessary, thin layer capping appears to be significantly more cost effective than carbon amendments, and capping has a proven record of effectiveness in reducing biological exposure to mercury in sediment and soil.

If this technique is to be further developed for field scale application, a 5-10-year pilot study should be undertaken to evaluate the potential for scale-up of test plots results. It is recommended that the pilot study: (1) incorporate biota uptake to evaluate bioavailability of methyl mercury as the relevant pilot scale research endpoint; and (2) encompass a larger area for field application to evaluate factors that influence mercury methylation rates (e.g., inundation frequency, oxidation/reduction dynamics, quality of organic carbon) as well as to assess the effectiveness of amendment across appropriately-scaled home ranges/habitats for target organisms. For biota studies, both caged animals (e.g., amphipods) and field-caught species should be included, with field-caught species selected to have home ranges no larger than plot sizes. Because redox changes across small elevation gradients can affect both the production rate and accumulation of methyl mercury in sediment and soil, plot replication and experimental design should include gradients in elevation and vegetation type. If biochar is to be considered for further pilot-scale testing, it will be important to assess the bioavailability of methyl mercury that appears to sorb to

biochar. This assessment should include evaluation of biota uptake in the field as well as under laboratory conditions.

BACKGROUND AND PURPOSE

This Technical Memorandum summarizes the results of the 2017 resampling of the Amendment Test Plots established as a component of the Phase II Study of the Penobscot River Estuary (PRMSP 2013). As detailed in the Phase II Study, the establishment and monitoring of amendment test plots was designed to assess the effectiveness of amendments for remediating mercury and methyl mercury in soil and porewater in Mendall Marsh (Chapter 19, PRMSP 2013). Initially (2010), this study included four commercially available amendments – iron as FeCl_2 , lime, activated carbon formulated as SediMite® and biochar. SediMite® is a patented formulation of approximately 50 percent (%) activated carbon (AC) and a 50% mixture of sand and clay. The AC used to formulate SediMite® was coconut shell AC which was composed of 90.8% carbon. The biochar was sourced from pine dust. The initial dosing rate of these amendments was 1 kilogram (kg) of activated carbon (in SediMite®), biochar or iron per square meter, and 0.5 kg of lime per square meter. Amendments were broadcast by hand during a stage of the tide in which the marsh was not overtopped.

Based on the results of 2012 sampling, the iron and lime amendments were considered ineffective and were dropped from further evaluation (PRMSP 2013). The 2017 resampling therefore focused on the test plots containing SediMite® and biochar. The overall objective of 2017 sampling was consistent with the Phase II objectives, namely evaluation of the effectiveness of SediMite® and biochar at reducing soil and porewater concentrations of total mercury and methyl mercury relative to concentrations in control plots with no amendment addition. Details of the study design, amendments, application method and results through the initial two years of the study are also presented in Gilmour et al. (2018).

APPROACH

Details regarding the establishment of test plots are as presented in Chapter 19 of the Phase II Study (PRMSP 2013). Briefly, amendments were initially applied in two locations in Mendall Marsh defined as “Central” and “West” (**Figure 1**). Individual amendment test plots measured 3 feet × 3 feet and for each location (Central or West), and each amendment was assessed in triplicate plots. The study was a full-crossed study with two treatments and a control that contained no amendment. The two locations were separated from each other by approximately 500 feet.

The test sites were chosen to represent two different habitats in the marsh, each with somewhat different soil chemistry, with the West site soil being more reducing (less well oxygenated) than the Central site soil. As presented in the Phase II Study, ambient surface soil total mercury concentrations in both locations were similar, ranging from 200 to 250 nanograms per gram (ng/g) (PRMSP 2013). Surface soil methyl mercury concentrations in both locations ranged from 10 to 20 ng/g. Porewater total mercury concentrations ranged from 25 to 70 nanograms per liter (ng/L) in the Central site and 15 to 25 ng/L at the West site. Porewater methyl mercury concentrations ranged from 10 to 40 ng/L in the Central site and 5 to 10 ng/L in the West site (PRMSP 2013).

The initial amendment applications occurred in September 2010, with 4 subsequent re-sampling events occurring in 2011 – 2012. Re-sampling in 2011 – 2012 occurred in June and in September of each year. The amendment test plot re-sampling event discussed in this Technical

Memorandum occurred in September 2017. Analyses associated with this re-sampling included total mercury in soil and porewater, methyl mercury in soil and porewater, amendment carbon in soil, and a suite of ancillary chemical measures in soil and porewater. Data from the 2017 sampling event, including comparison with Phase II data (2010 – 2012) are included in **Attachment A**. Copies of SERC field notes, sample logs, and field measurements are included in **Attachment B**. Photographs of SERC field sampling and sample processing and handling are included in **Attachment C**. Figures 2 through 9 were supplied by SERC.

FINDINGS

Amendment Stability - 2017

The retention rate of both amendments in the soil following 7 years was high. Short cores (5 centimeter [cm]) collected at the Central and West sites showed visual evidence of SediMite® and biochar within the cores (**Figure 2**). For both amendments, a black band associated with the amendment was apparent between 2 cm and 3 cm deep in the core. Carbon analysis confirmed that the visible black band corresponded with a carbon concentration that was elevated relative to the concentration at other depths in soil cores (**Figure 3**). Based on data presented in Gilmour et al. (2018), the retention rate of SediMite® after one year in the field was 55 ± 20 percent (%); the retention rate of biochar was $28 \pm 35\%$. Retention rate is defined relative to the initial loading rate of 1 kilogram of carbon (in either SediMite® or biochar) per square meter of field plot area. Following seven years in the field, the retention rate of SediMite® was 127 ± 57 % for the Central site and $90 \pm 32\%$ for the West site. For biochar, the retention rate after seven years in the field was $62 \pm 26\%$ for the Central site, and 29 ± 11.0 % for the West site. For carbon analysis, the 2017 assessment was more robust than assessments from earlier years and included depth profiles, a greater number of samples and more replication.

Depth Integrated Porewater (0 – 5 cm) - 2017

For test plots containing SediMite®, the depth integrated porewater concentrations of total mercury and methyl mercury were significantly lower than concentrations measured in the control plots for the Central location ($p < 0.05$), but not for the West location (**Figure 4** and **Figure 5**).

For the Central location, the mean concentration of total mercury in the control (no amendment) plots was 4.21 ng/L, while in the SediMite® plots it was 1.62 ng/L. For the West location, the mean concentration of total mercury in the control plots was 2.83 ng/L, while in the SediMite® plots it was 7.50 ng/L.

For the Central location, the mean concentration of methyl mercury in the control (no amendment) plots was 2.59 ng/L, while in the SediMite® plots it was 0.56 ng/L. For the West location, the mean concentration of methyl mercury in the control plots was 0.78 ng/L, while in the SediMite® plots it was 1.95 ng/L.

For test plots containing biochar, the porewater concentration of total mercury and methyl mercury were significantly lower than concentrations measured in the control plots for the Central location ($p < 0.05$), but not for the West location (**Figure 4** and **Figure 5**).

For the Central location, the mean concentration of total mercury in the control (no amendment) plots was 4.21 ng/L, while in the biochar plot it was 0.99 ng/L. For the West location, the mean concentration of total mercury in the control plots was 2.83 ng/L, while in the biochar plots it was 4.54 ng/L.

For the Central location, the mean concentration of methyl mercury in the control (no amendment) plots was 2.59 ng/L, while in the biochar plots it was 0.26 ng/L. For the West location, the mean concentration of methyl mercury in the control plots was 0.78 ng/L, while in the biochar plots it was 2.46 ng/L.

Depth Integrated Soil (0 – 3 cm) - 2017

For test plots containing SediMite®, the soil concentrations of total mercury and methyl mercury were similar to concentrations in control plots for both the Central location and the West location (**Figure 6** and **Figure 7**).

For the Central location, the mean concentration of total mercury in the control (no amendment) plots was 224.0 ng/g, while in the SediMite® plots it was 215.7 ng/g. For the West location, the mean concentration of total mercury in the control plots was 169.0 ng/g, while in the SediMite® plots it was 163.5 ng/g.

For the Central location, the mean concentration of methyl mercury in the control plots was 9.65 ng/g, while in the SediMite® plots it was 8.14 ng/g. For the West location, the mean concentration of methyl mercury in the control plots was 8.39 ng/g, while in the SediMite® plots it was 6.74 ng/g.

For test plots containing biochar, the soil concentrations of total mercury were similar to concentrations in control plots for both the Central and West locations. In contrast, the soil concentrations of methyl mercury were significantly higher ($p < 0.05$) than concentrations in control plots for both the Central and West locations (**Figure 7**).

For the Central location, the mean concentration of total mercury in the control plots was 224.0 ng/g, while in the biochar plot it was 230.3 ng/g. For the West location, the mean concentration of total mercury in the control plots was 169.0 ng/g, while in the biochar plots it was 197.5 ng/g.

For the Central location, the mean concentration of methyl mercury in the control (no amendment) plots was 9.65 ng/g, while in the biochar plots it was 24.57 ng/g. For the West location, the mean concentration of methyl mercury in the control plots was 8.39 ng/g, while in the biochar plots it was 19.08 ng/g.

Distribution Coefficients (K_d)

Soil and porewater data can be presented as a distribution coefficient (K_d) which defines a ratio of the concentration of the analyte in the soil to the concentration in porewater. K_d values, which can range from 10^3 – 10^6 for total mercury, and are generally between 1 and 2 orders of magnitude lower than this range for methyl mercury (PRMSP 2013), are often presented in terms of their logarithmic value: that is, $K_d = 10^3$ is equivalent to $\log K_d = 3$.

For total mercury, the average (mean) $\log K_d$ in the Central location control plot was 4.72 and in the West location control plot was 4.84. Mean $\log K_d$ values following addition of SediMite® were 5.18 (Central) and 4.86 (West). Mean $\log K_d$ values following addition of biochar were 5.38 (Central) and 4.70 (West).

For methyl mercury, the average (mean) $\log K_d$ in the Central location control plot was 3.58 and in the West location control plot was 4.74. Mean $\log K_d$ values following addition of SediMite® were 4.32 (Central) and 4.48 (West). Mean $\log K_d$ values following addition of biochar were 4.98 (Central) and 4.01 (West).

Because K_d values are calculated from the ratio of soil concentration to porewater concentration, statistically significant differences in concentration for porewater and soil data (as discussed above) follow through to the presentation of the K_d ratio. That is, for both total mercury and methyl mercury, K_d values significantly increase ($p < 0.05$) following addition of either amendment in the Central location but not in the West location (**Figure 8**). The increase in K_d results from either/both an increase in soil concentration and/or a decrease in porewater concentration.

Efficacy of Amendment Addition (2010 – 2017)

For porewater total mercury (**Figure 4**), the addition of SediMite reduced concentrations relative to the control for the Central location across all sampling dates (simple ANOVA by treatment). For the West location, there was no long-term reduction in porewater total mercury concentration following addition of either amendment (simple ANOVA by treatment).

For the Central location, analysis of covariance (ANCOVA) with either a redox variable (sulfide) or sampling date as the co-variate, the addition of either SediMite® or biochar reduced porewater concentrations of total mercury relative to the control. For the West location, application of ANCOVA with a redox variable (sulfide) as a covariate suggests that the addition of SediMite® (but not biochar) reduced porewater total mercury concentrations relative to the control.

For porewater methyl mercury (**Figure 5**), the addition of either biochar or SediMite® reduced concentrations relative to the control for the Central location across all sampling dates. This reduction was apparent applying ANOVA, as well as ANCOVA with either a redox variable (sulfide) or sampling date as the co-variate. For the West location, only the addition of SediMite® reduced porewater concentrations relative to the control across all sampling dates, as determined by ANOVA and ANCOVA with a redox variable (sulfide) as a co-variable.

Overall for porewater, interpretation of the efficacy of amendment addition is complicated by the fact that concentrations of total mercury and methyl mercury were significantly lower during the 2017 sampling than during previous sampling dates. For all data considered together (2010 – 2017), methyl mercury concentrations were strongly correlated with total mercury as well as with porewater sulfide concentrations (**Figure 9**).

The lower overall concentrations of total mercury and methyl mercury measured in 2017 relative to 2010 – 2012 were likely the result of more oxidizing conditions in 2017, as evidenced by lower concentrations of porewater sulfide in 2017 relative to concentrations in previous sampling years. Oxidation/reduction dynamics in marshes are controlled by factors including temperature and the

extent and frequency of tidal inundation, variables that are challenging to control for in field experiments. For the 2017 field program, sampling at comparable redox conditions as well as comparable total mercury and methyl mercury concentrations as during prior sampling programs would have provided a better test of the efficacy of amendment addition over a longer term. For the initial period of this study (2010 – 2012), the application of carbon-containing amendments resulted in some statistically significant declines in porewater total mercury and methyl mercury concentrations, although the results are inconsistent between amendment, location, and sampling date.

Overall, for soil, total mercury concentrations did not change over time (**Figure 6**). For test plots containing SediMite®, there was a small (~5% average across all dates) but significant decrease in total mercury concentration relative to control plots, likely due to dilution of soil total mercury concentration by addition of SediMite®. The addition of biochar did not change the concentration of total mercury measurable in soils. These results are based on a standard least square model of site, date and treatment, using appropriately transformed variables ($r^2 = 0.67$, $p < 0.0001$, $n = 72$) and Student's t-test of least square means ($\alpha < 0.05$) for main effects. Analysis included all amendment dates and both locations.

For methyl mercury, soil concentrations were slightly but significantly decreased by addition of SediMite® (~10% on average) and increased (~20% on average) by addition of biochar (**Figure 7**). These results are based on a standard least square model of site, date and treatment (plus significant interaction terms) for all post-amendment sampling dates ($r^2 = 0.81$; $p < 0.0001$; $n = 72$).

Overall conclusions from the amendment test plot resampling indicate that:

- Over the course of the study, the retention rate of amendments was high. Retention of SediMite® was not significantly different from 100%; retention of biochar was about 60%. Both amendments were buried by accretion of marsh soils over time and in Fall 2017 were visible and measurable at a soil depth of 2 cm to 3 cm.
- Over the course of the study, the addition of amendments decreased porewater concentrations of total mercury and methyl mercury relative to the control for the Central location, but not the West location.
- Over the course of the study, application of SediMite® was more effective at reducing porewater concentrations of total mercury and methyl mercury than application of biochar.
- The addition of SediMite® had minimal to no impact on soil concentrations of total mercury and methyl mercury in either the Central or West location. In contrast, the addition of biochar, while having no impact on the soil total mercury concentration in either the Central or West location, significantly increased the soil concentration of methyl mercury in both test locations for all sampling dates.
- The increased concentration of soil-associated methyl mercury following the addition of biochar may result from the ability of biochar to sorb or bind methyl mercury and inhibit

demethylation back to inorganic mercury. Increased soil concentrations of methyl mercury following addition of biochar has also been observed at Berry's Creek, NJ, another location in which biochar has been tested as an amendment for remediating mercury-impacted sites (C. Gilmour, personal communication).

RECOMMENDATIONS

Based on the review of these data, Amec Foster Wheeler does not recommend application of amendments as a component of site remedy for the Penobscot River Estuary. It is currently not possible to evaluate whether the amendments, either applied as a stand-alone remedy or incorporated into a thin layer cap, result in decreased biological uptake and trophic transfer of methyl mercury as there are only limited data on biota uptake of mercury with amendment addition. While SediMite® was more effective than biochar in reducing porewater concentrations of total mercury and methyl mercury through the study period (2010 – 2017), the impact of SediMite® addition was not equally apparent between the Central and West locations. Moreover, changes in soil redox conditions in 2017 relative to the earlier sampling period adds uncertainty to the evaluation of the long-term effectiveness of amendment addition by complicating interpretation of 2017 data relative to 2010 – 2012 data. The uncertainty in ecological function of the amendments is therefore coupled with significant cost uncertainties regarding development of this remedy. While it is possible to estimate a cost associated with a single amendment application to Mendall Marsh, there are significant uncertainties associated with evaluating the frequency with which amendments would require re-application across the marsh platform to achieve long-term ecological goals.

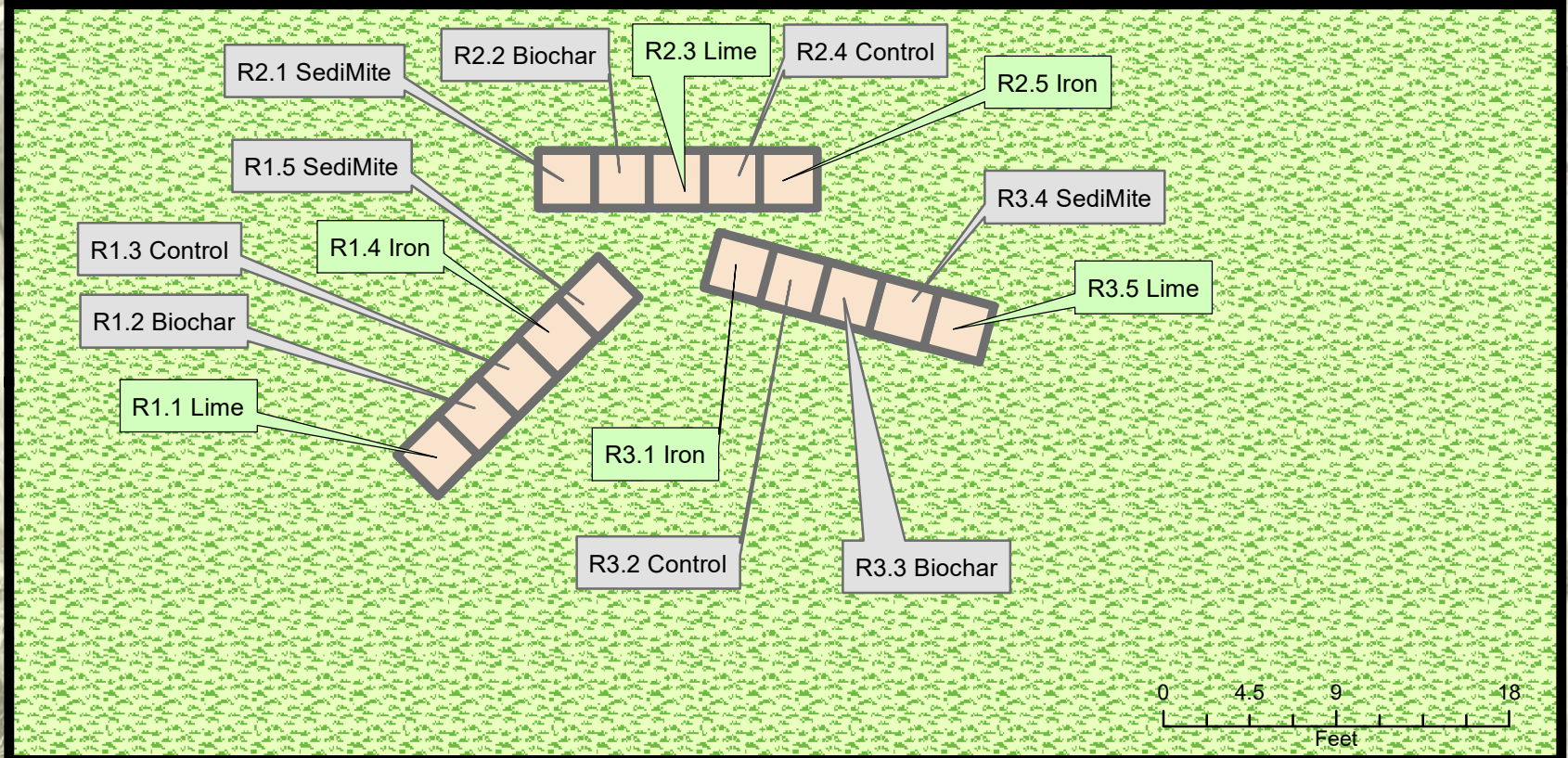
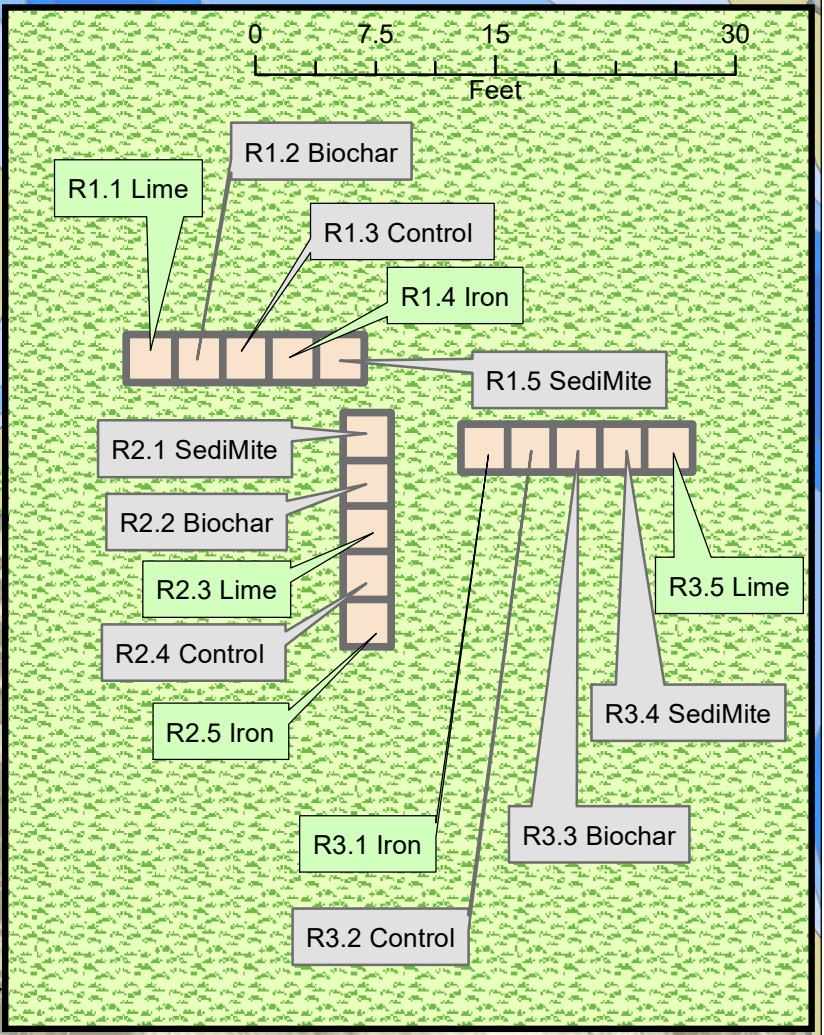
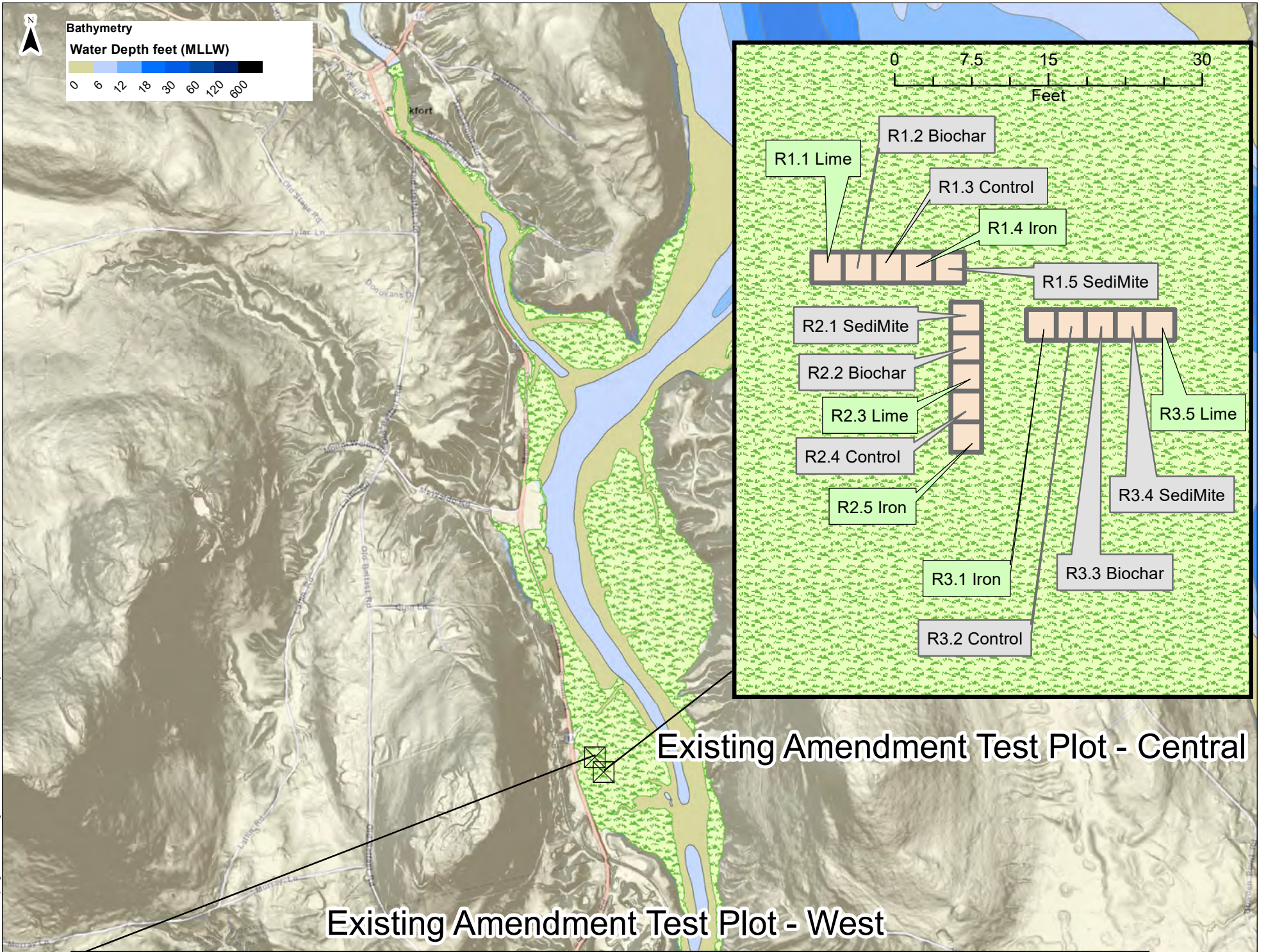
The costs estimated in the Alternatives Evaluation Report (Amec Foster Wheeler 2018) for implementation of a single application of activated carbon amendment and for installation of a thin layer cap were approximately equal. However, since frequent re-application (every two to five years) of carbon amendment is likely to be necessary, thin layer capping appears to be significantly more cost effective than carbon amendments, and capping has a proven record of effectiveness for reducing biological exposure to mercury in sediment and soil.

If this technique is to be further developed for field scale application, a 5-10-year pilot study should be undertaken to evaluate the potential for scale-up of test plots results. It is recommended that the pilot study: (1) incorporate biota uptake to evaluate bioavailability of methyl mercury as the relevant pilot scale research endpoint; and (2) encompass a larger area for field application to evaluate factors that influence mercury methylation rates (e.g., inundation frequency, oxidation/reduction dynamics, quality of organic carbon) as well as to assess the effectiveness of amendment across appropriately-scaled home ranges/habitats for target organisms. For biota studies, both caged animals (e.g., amphipods) and field-caught species should be included, with field-caught species selected to have home ranges no larger than plot sizes. Because redox changes across small elevation gradients can affect both the production rate and accumulation of methyl mercury in sediment and soil, plot replication and experimental design should include gradients in elevation and vegetation type. If biochar is to be considered for further pilot-scale testing, it will be important to assess the bioavailability of methyl mercury that appears to sorb to biochar. This assessment should include evaluation of biota uptake in the field as well as under laboratory conditions.

REFERENCES

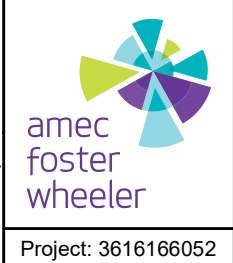
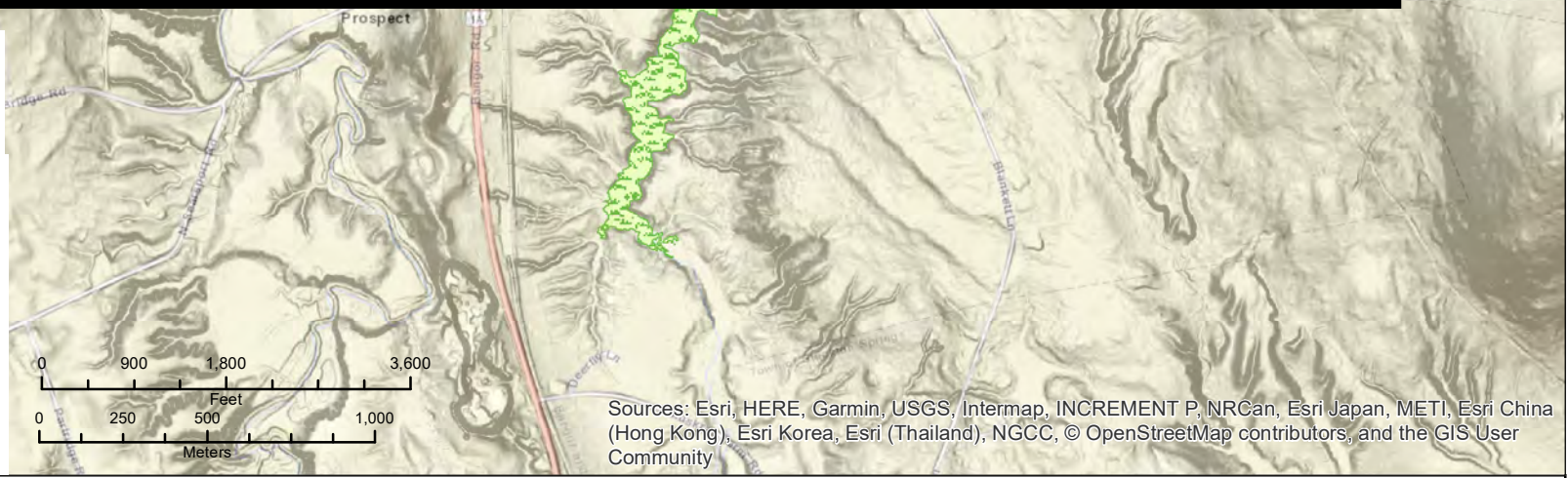
- Amec Foster Wheeler. 2018. Alternatives Evaluation Report. Penobscot River Phase III Engineering Study. Penobscot River Estuary, Maine.
- Gilmour, C., T. Bell, A. Soren, G. Riedel, G. Riedel, D. Kopec, D. Bodaly, and U. Ghosh. 2018. Activated carbon thin-layer placement as an *in situ* mercury remediation tool in a Penobscot River salt marsh. *Science of the Total Environment*. 621: 839-848.
- PRMSP. 2013. Penobscot River Mercury Study Final Report: Mercury Contamination of the Penobscot River Estuary: Current Situation, Remediation Targets, and Possible Remediation Procedures. April.

Attachment(s): Figures
 Attachment A
 Attachment B
 Attachment C



Symbol Key

- Existing Amendment Plot
- = Plot resampled for analytical parameters in 2017
- = Plot not resampled for analytical parameters in 2017



Symbol Key

- Amendment Test Plot Location
- Marsh Platform
- Intertidal Zone

Figure 1
Sample Collection Locations
Mendall Marsh

Document: P:\Projects\USDC - Penobscot River\AER - Resampling\Tech Memo\Figure 1 - 4/26/2018 9:41:44 AM lan.desjarlais



Figure 2
Retention and Depth of Amendment Carbon in Mendall Marsh Soils

Amendment Test Plot Resampling Study
Penobscot River Estuary Phase III Engineering Study

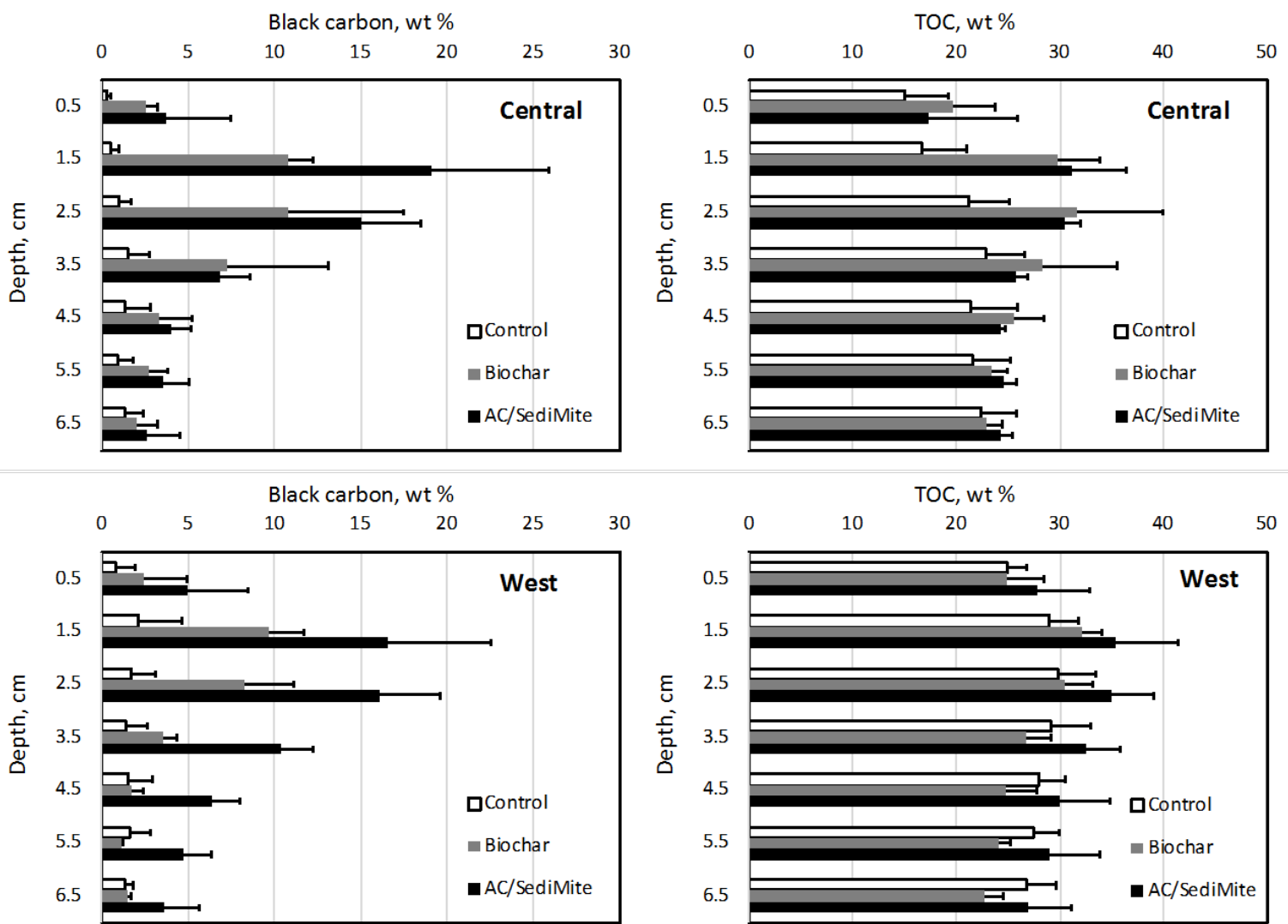
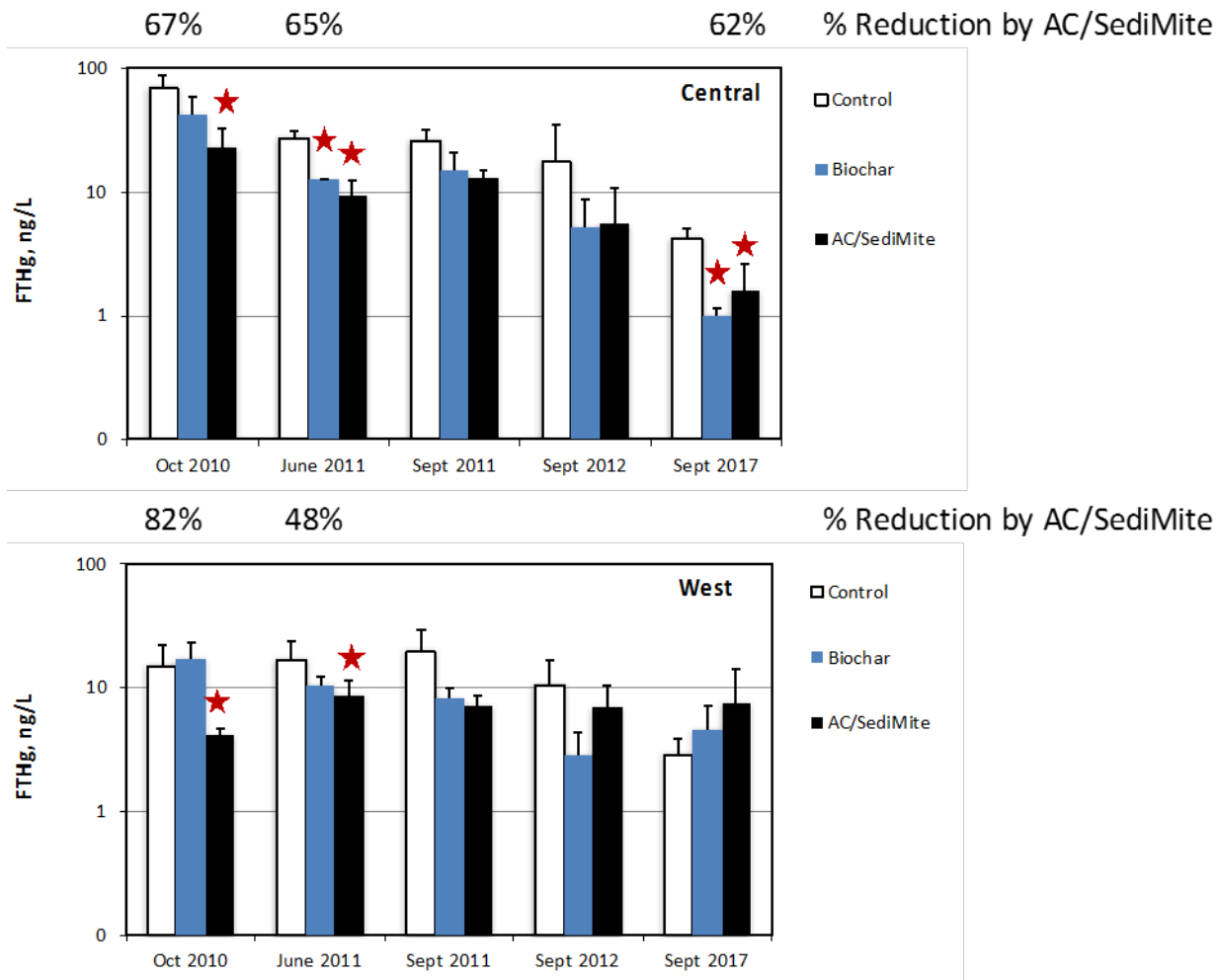


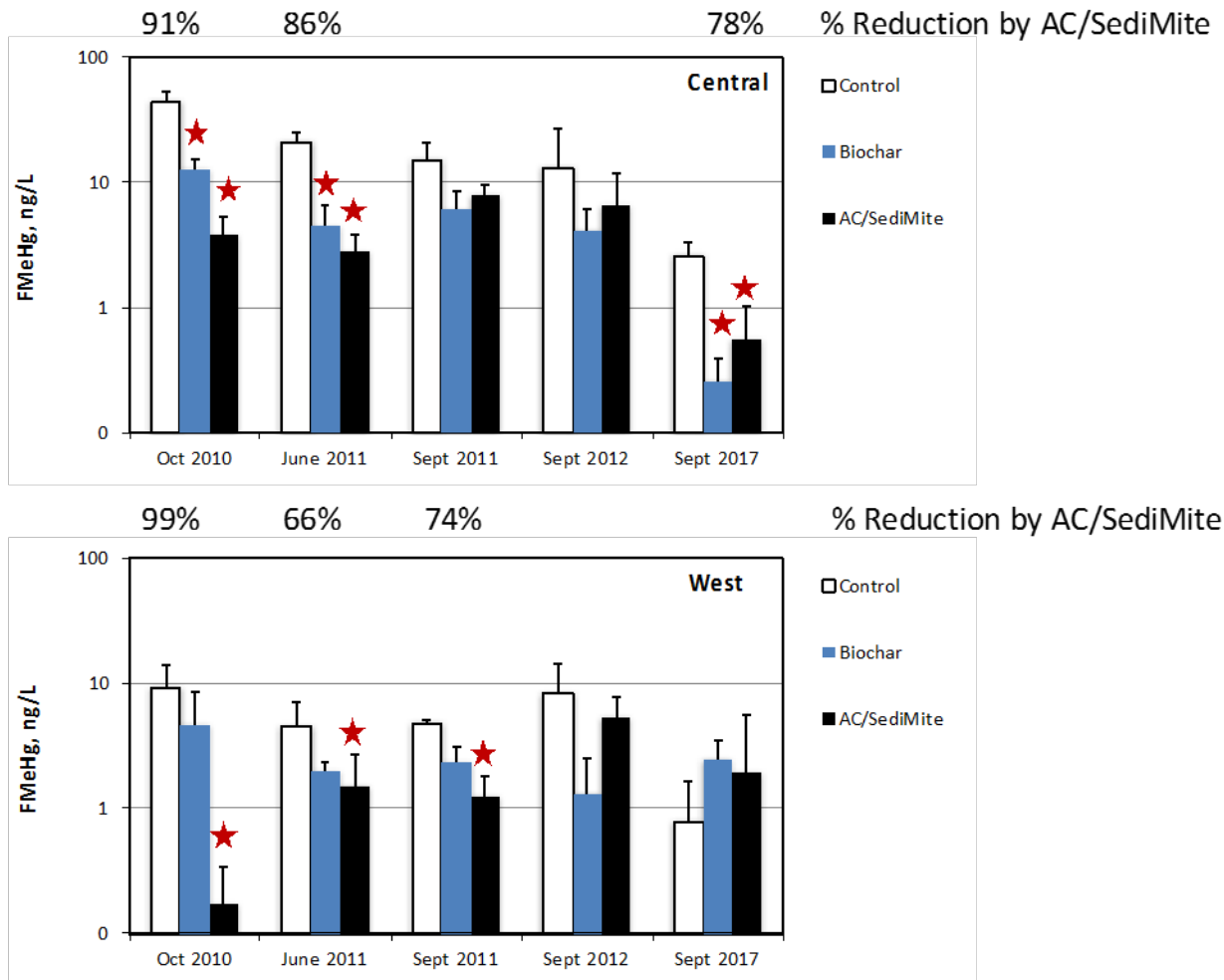
Figure 3
Retention of Amendment Carbons in Mendall Marsh Soils
Amendment Test Plot Resampling Study
Penobscot River Estuary Phase III Engineering Study



Total filterable mercury concentration (FTHg) in surficial (0–5 cm) soil pore waters of study plots over time. Bars are the averages from triplicate plots for each treatment, with standard deviation. Each plot sample was a composite of four samples. Treatments that were significantly different from the control on any individual date (based on LS Means $\alpha < 0.05$) are designated with a star. Percentage values above each plot give the reduction in pore water total mercury for each sampling date and site, where reductions were significant, calculated as the average concentration in treated plots relative to control plots.

Figure 4
Results Across all Post-Application Sampling Dates
Porewater – Total Mercury
0-5 cm Depth

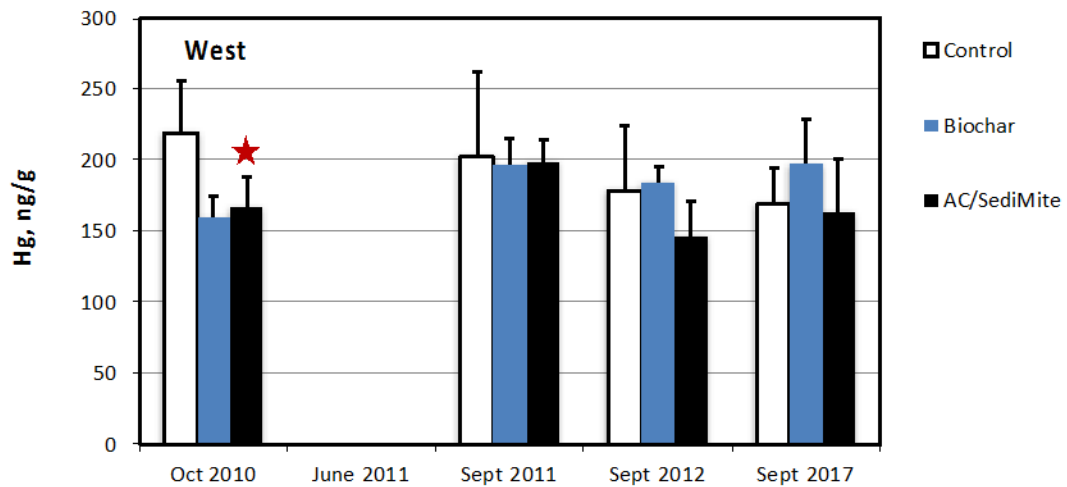
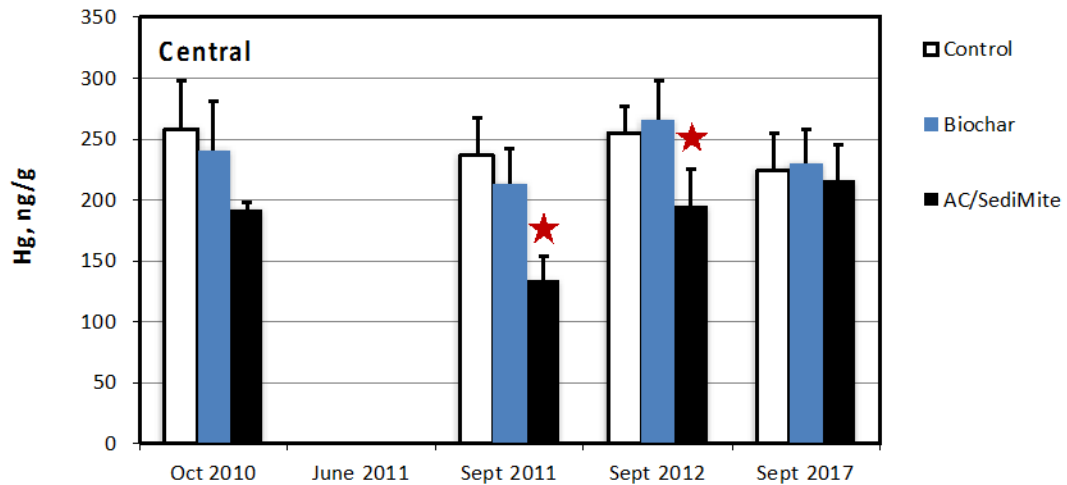
Amendment Test Plot Resampling Study
Penobscot River Estuary Phase III Engineering Study



Total filterable methyl mercury (FMeHg) in surficial (0–5 cm) soil pore waters of study plots over time. Bars are the averages from triplicate plots for each treatment, with standard deviation. Each plot sample was a composite of four samples. Treatments that were significantly different from the control on any individual date (based on LS Means $\alpha < 0.05$) are designated with a star. Percentage values above each plot give the reduction in pore water methyl mercury for each sampling date and site where reductions were significant, calculated as the average concentration in treated plots relative to control plots.

Figure 5
Results Across all Post-Application Sampling Dates
Porewater – Methyl Mercury
0-5 cm Depth

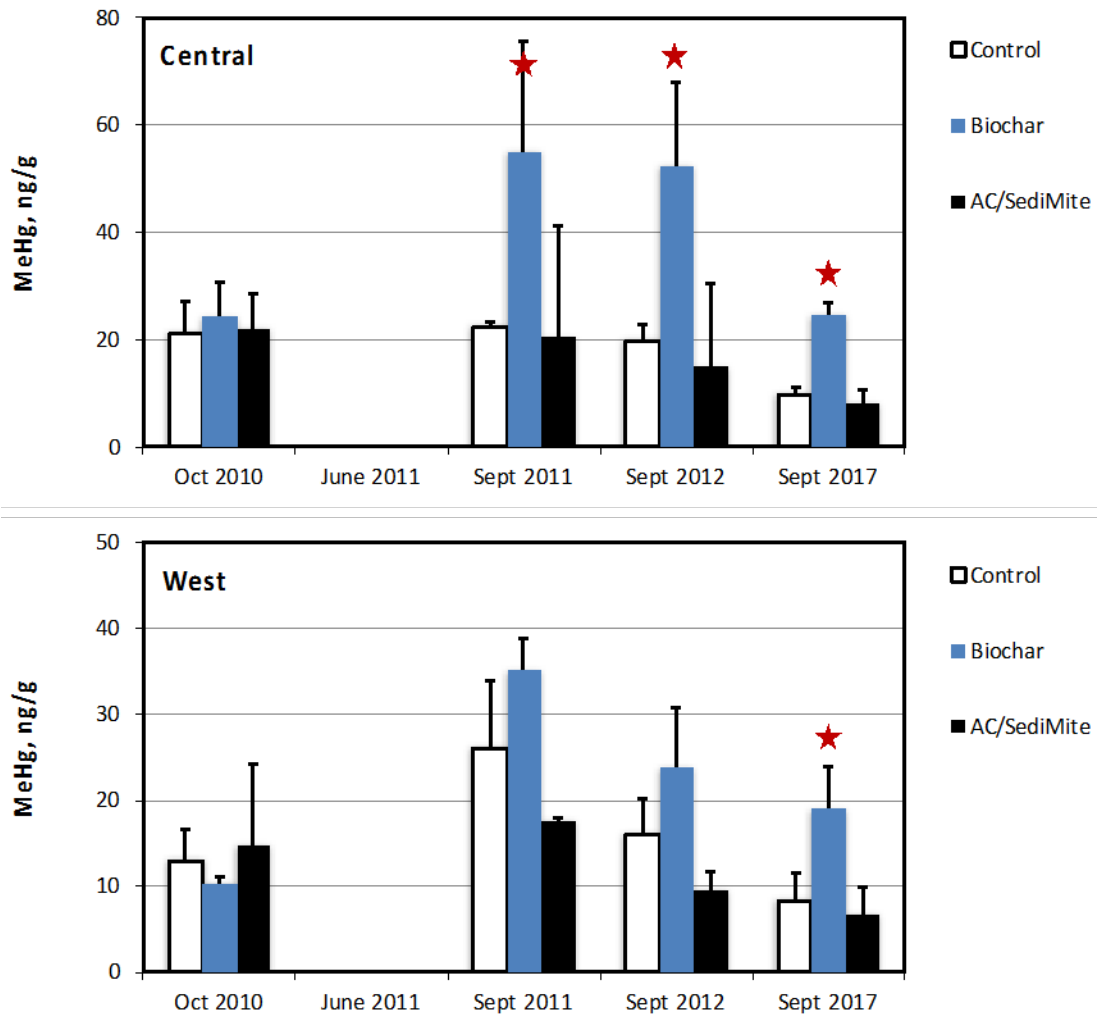
Amendment Test Plot Resampling Study
Penobscot River Estuary Phase III Engineering Study



Soil total mercury concentrations (0 – 3 cm) over time. Bars are the averages from triplicate plots for each treatment, with standard deviation. Each plot sample was a composite of four samples. Treatments that were significantly different from the control on any individual date (based on LS Means $\alpha < 0.05$) are designated with a star.

Figure 6
Results Across All Post-Application Sampling Dates
Soil – Total Mercury
0 – 3 cm Depth

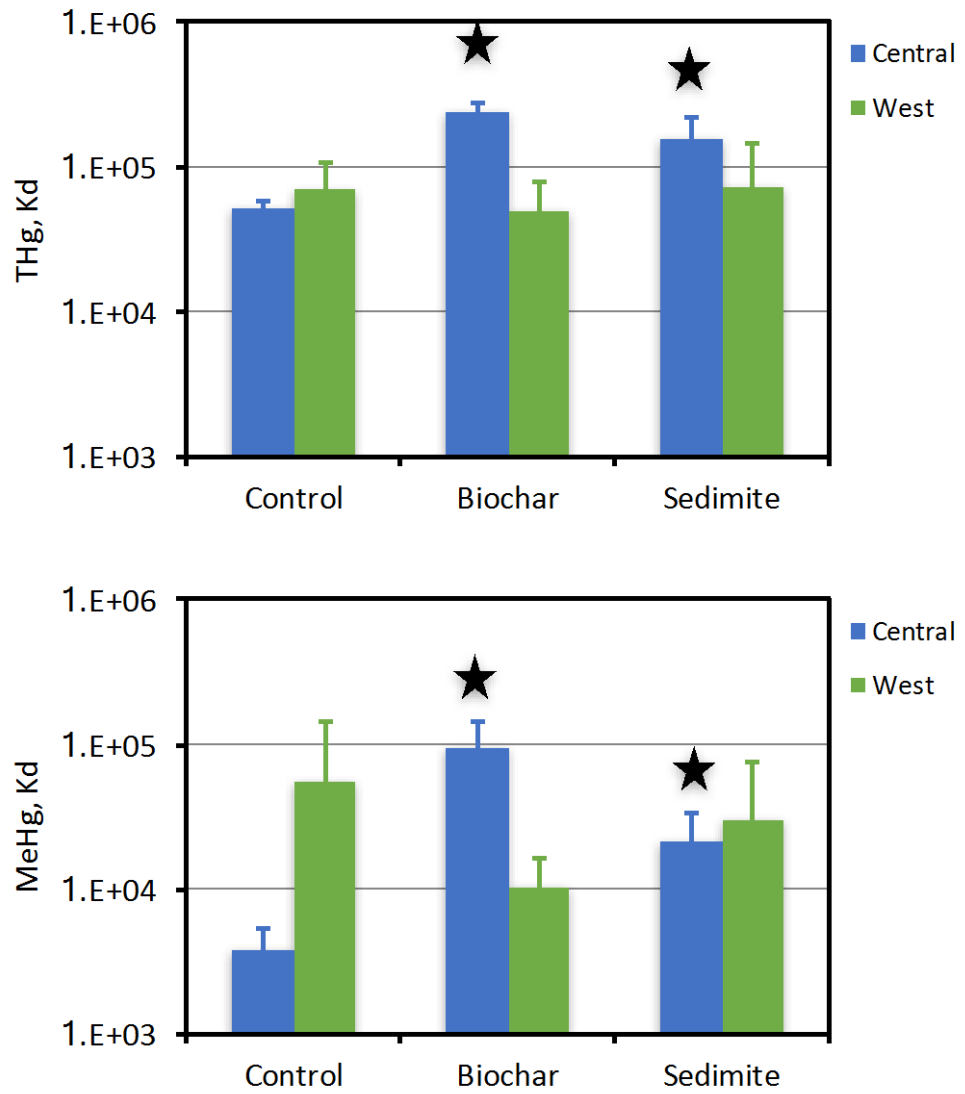
Amendment Test Plot Resampling Study
Penobscot River Estuary Phase III Engineering Study



Soil methyl mercury concentrations (0–3 cm) over time. Bars are the averages from triplicate plots for each treatment, with standard deviation. Each plot sample was a composite of four samples. Treatments that were significantly different from the control on any individual date (based on LS Means $\alpha < 0.05$) are designated with a star.

Figure 7
Results Across all Post-Application Sampling Dates
Soil - Methyl Mercury
0 – 3 cm Depth

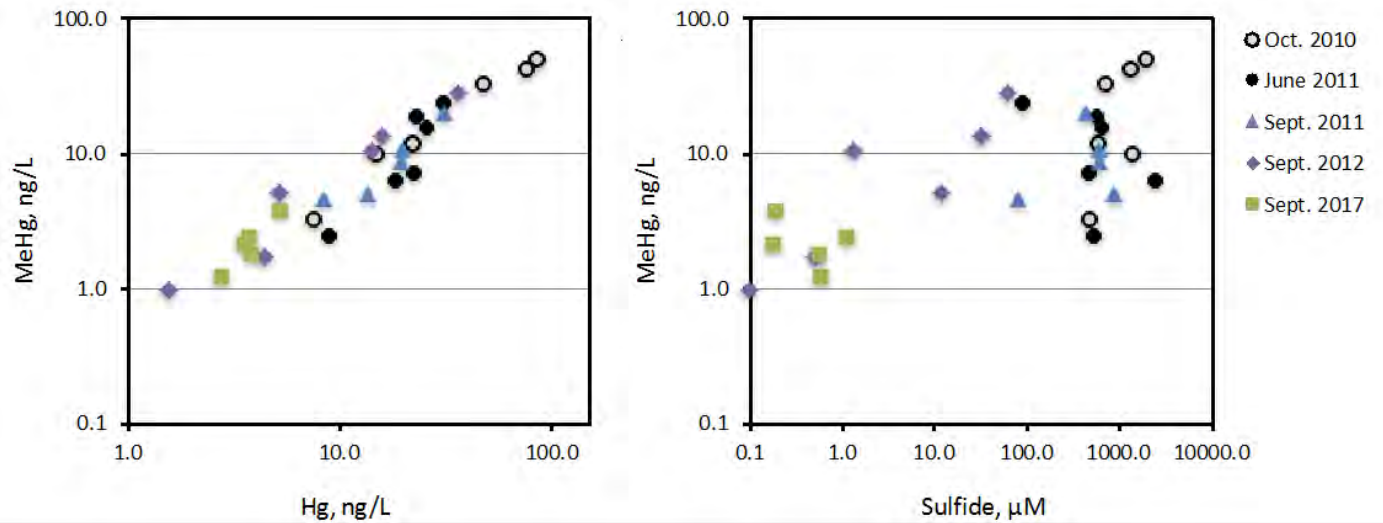
Amendment Test Plot Resampling Study
Penobscot River Estuary Phase III Engineering Study



Distribution coefficients (Kd) for total mercury (THg) and methyl mercury (MeHg) in soil. Treatments that were significantly different from the control on any individual date (based on LS Means $\alpha < 0.05$) are designated with a star.

Figure 8
Distribution Coefficients for Total Mercury and Methyl Mercury

Amendment Test Plot Resampling Study
Penobscot River Estuary Phase III Engineering Study



Relationship between porewater total mercury (Hg) and methyl mercury (MeHg) (left; $r^2= 0.85$, $p<0.0001$, $n=29$) and porewater sulfide and methyl mercury (right; $r^2= 0.46$, $p<0.0001$, $n=29$). Sulfide is a redox indicator for surface soils in the marsh at the time of sampling. Data points are for individual plots by sampling date, showing control plots only, for both sites (Central and West). $N = 6$ for each sampling date corresponding to 3 control plots at each of 2 locations.

Figure 9
Relationships Between Total Mercury, Methyl Mercury and Sulfide in Porewater
0-5 cm Depth

Amendment Test Plot Resampling Study
Penobscot River Estuary Phase III Engineering Study

ATTACHMENT A

(Posted in Separate Folder in Sharepoint)

ATTACHMENT B

(Posted in Separate Folder in Sharepoint)

ATTACHMENT C

(Provided on Disc)

APPENDIX F

2017 Sediment Data Summary Figures: Penobscot River, Maine (Provided on CD)



BO-05
Unconsolidated Core

Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0 - 0.1	191.1	4.51
0.1 - 0.3	70.9	1.51
0.3 - 0.5	30.6	(-)
0.5 - 1.0	97.8	(-)

BO-04

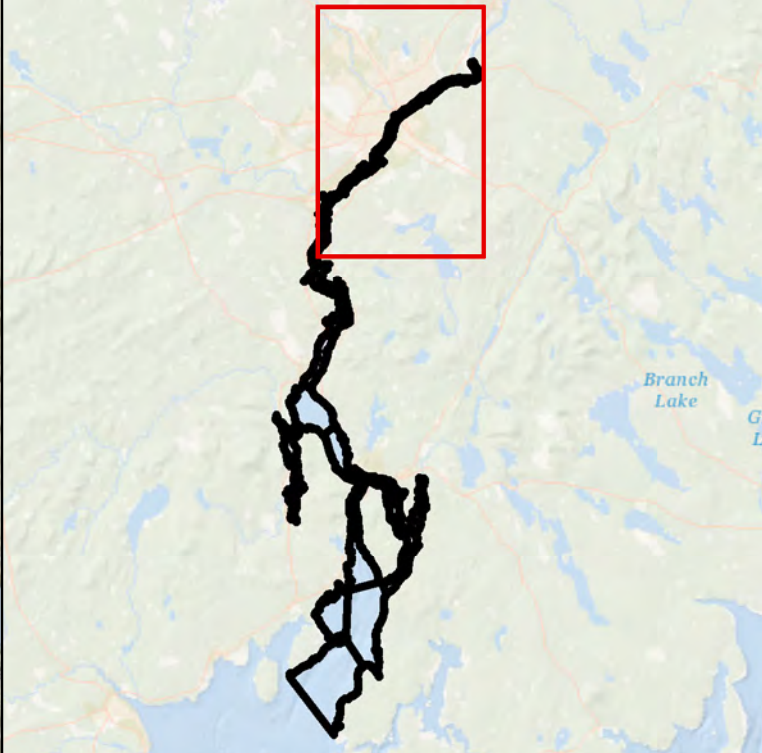
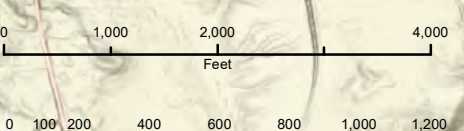
Unconsolidated Core			Grab Sample		
Core Depth	Hg	MeHg	Ponar	Hg	MeHg
feet	ng/g	ng/g	Depth feet	ng/g	ng/g
0.0 - 0.1	773	8.7	0.0 - 0.3	17.8	2.5 U
0.1 - 0.3	360	6.4			
0.3 - 0.5	1,220	(-)			

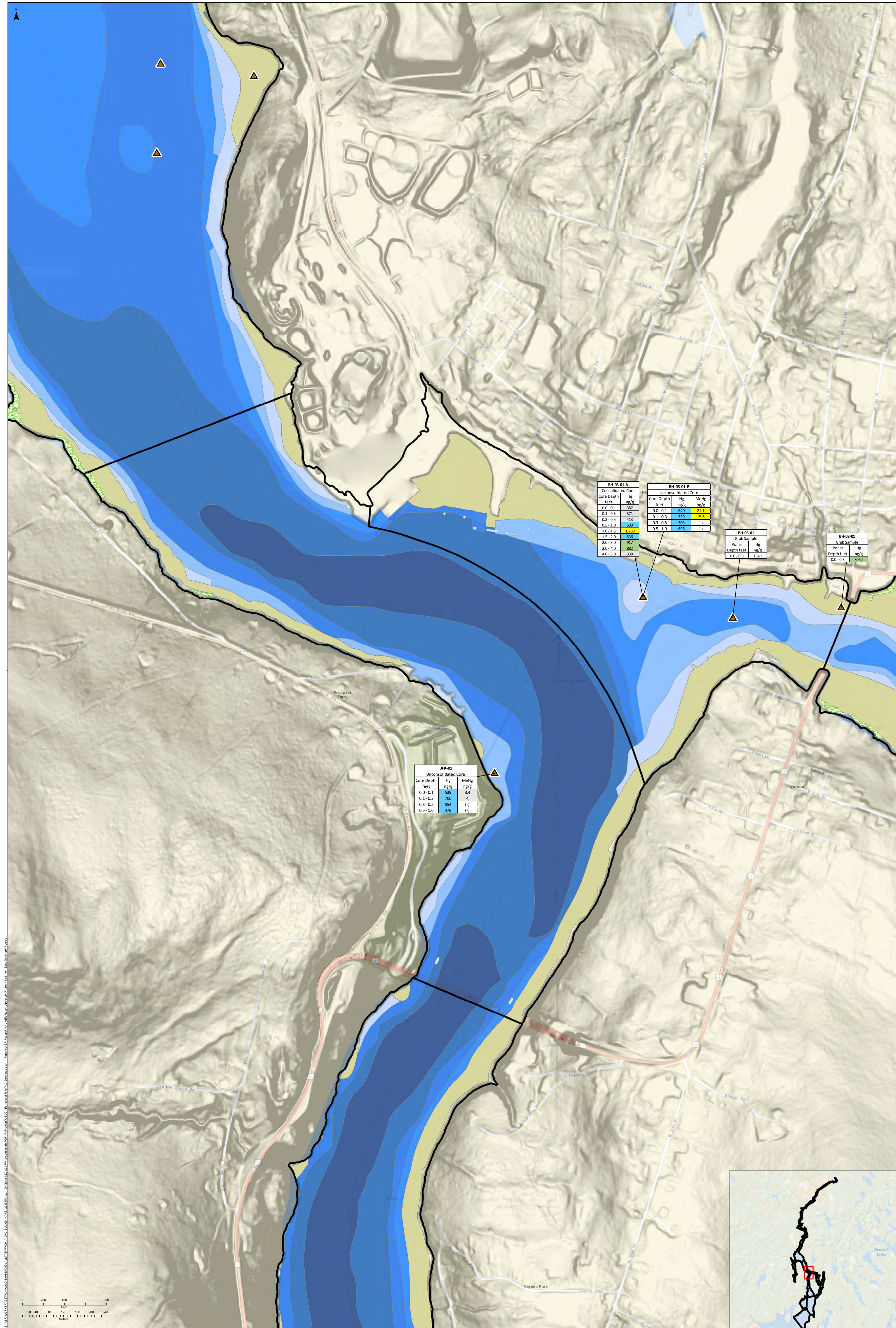
PBR-10-A
Consolidated Core

Core Depth	Hg
feet	ng/g
0.0 - 0.1	856
0.1 - 0.3	888
0.3 - 0.5	1,150
0.5 - 1.0	1,690
1.0 - 1.5	1,350
1.5 - 2.0	628

PBR-04-C
Consolidated Core

Core Depth	Hg
feet	ng/g
0.0 - 0.1	1,931
0.1 - 0.3	1,84
0.3 - 0.5	1,97
0.5 - 1.0	2,46
1.0 - 1.5	2,68
1.5 - 2.0	2,41
2.0 - 3.0	2,85





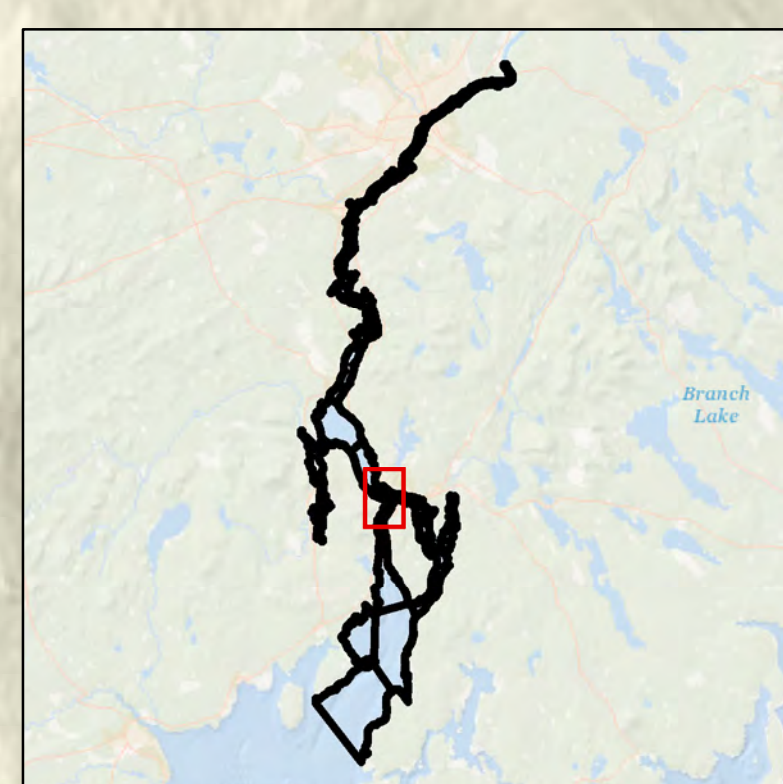
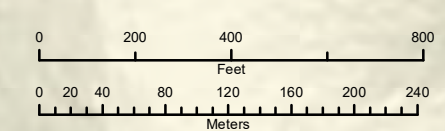
BH-03-01-A Consolidated Core		
Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	367	
0.1 - 0.3	371	
0.3 - 0.5	413	
0.5 - 1.0	500	
1.0 - 1.5	1,250	
1.5 - 2.0	536	
2.0 - 3.0	917	
3.0 - 4.0	882	
4.0 - 5.0	338	

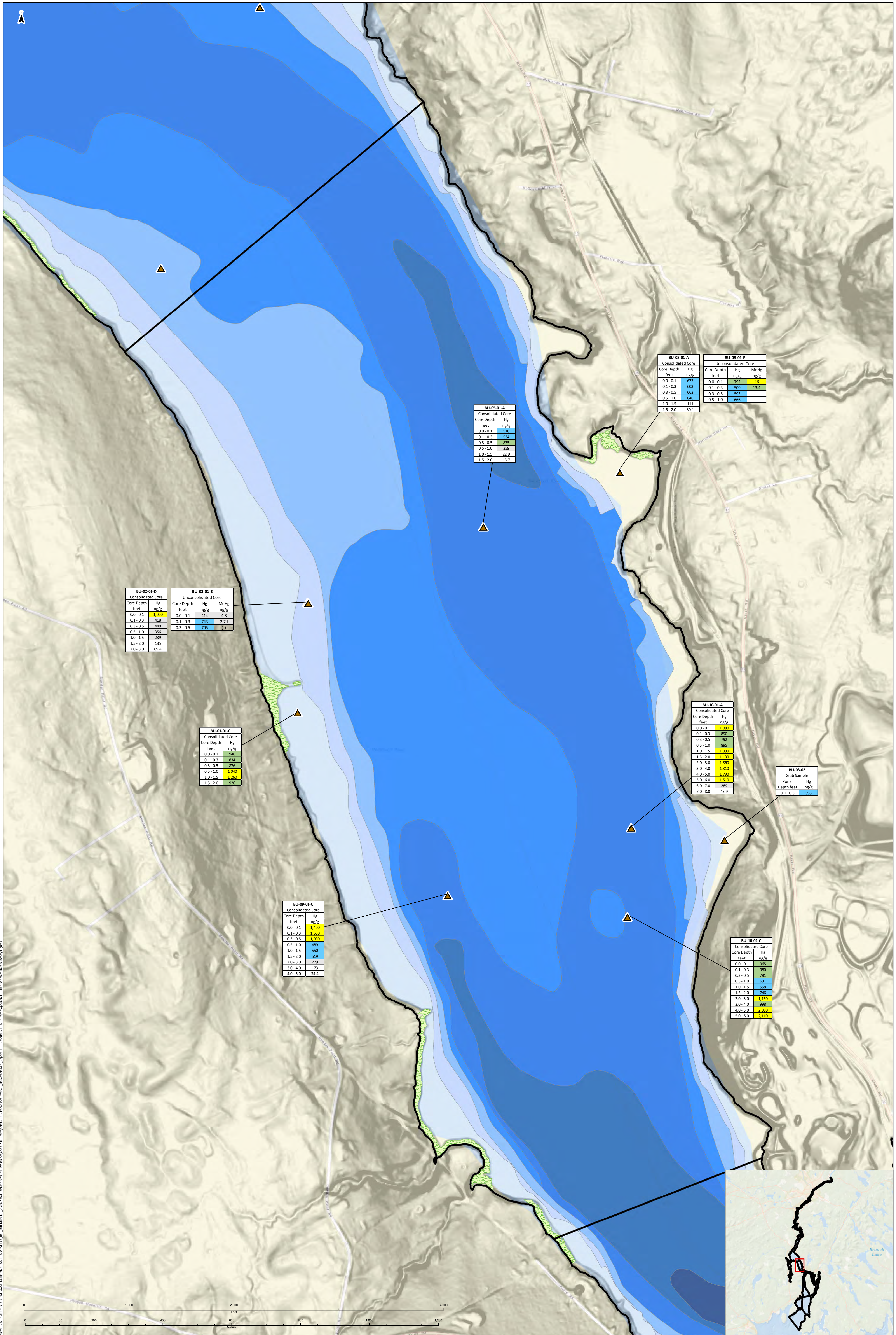
BH-03-01-E Unconsolidated Core		
Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	640	21.1
0.1 - 0.3	539	35.6
0.3 - 0.5	503	(-)
0.5 - 1.0	696	(-)

BH-05-01 Grab Sample		
Depth feet	Hg ng/g	MeHg ng/g
Ponar		
0.0 - 0.3	1347	

BH-08-01 Grab Sample		
Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.3	2563	

BFK-01 Unconsolidated Core			
Core Depth feet	Hg ng/g	MeHg ng/g	MeHg ng/g
0.0 - 0.1	539	3.4	
0.1 - 0.3	706	4	
0.3 - 0.5	654	(-)	
0.5 - 1.0	478	(-)	





BU-02-01-D		BU-02-01-E		
Consolidated Core		Unconsolidated Core		
Core Depth	Hg	Core Depth	Hg	MeHg
feet	ng/g	feet	ng/g	ng/g
0.0-0.1	1,090	0.0-0.1	414	4.3
0.1-0.3	418	0.1-0.3	743	2.7
0.3-0.5	460	0.3-0.5	705	(-)
0.5-1.0	356			
1.0-1.5	230			
1.5-2.0	135			
2.0-3.0	69.4			

BU-01-01-C	
Consolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	946
0.1-0.3	834
0.3-0.5	876
0.5-1.0	1,040
1.0-1.5	1,260
1.5-2.0	926

BU-09-01-C	
Consolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	1,420
0.1-0.3	1,630
0.3-0.5	1,030
0.5-1.0	489
1.0-1.5	550
1.5-2.0	510
2.0-3.0	279
3.0-4.0	173
4.0-5.0	34.4

BU-05-01-A	
Consolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	516
0.1-0.3	534
0.3-0.5	873
0.5-1.0	359
1.0-1.5	22.9
1.5-2.0	15.7

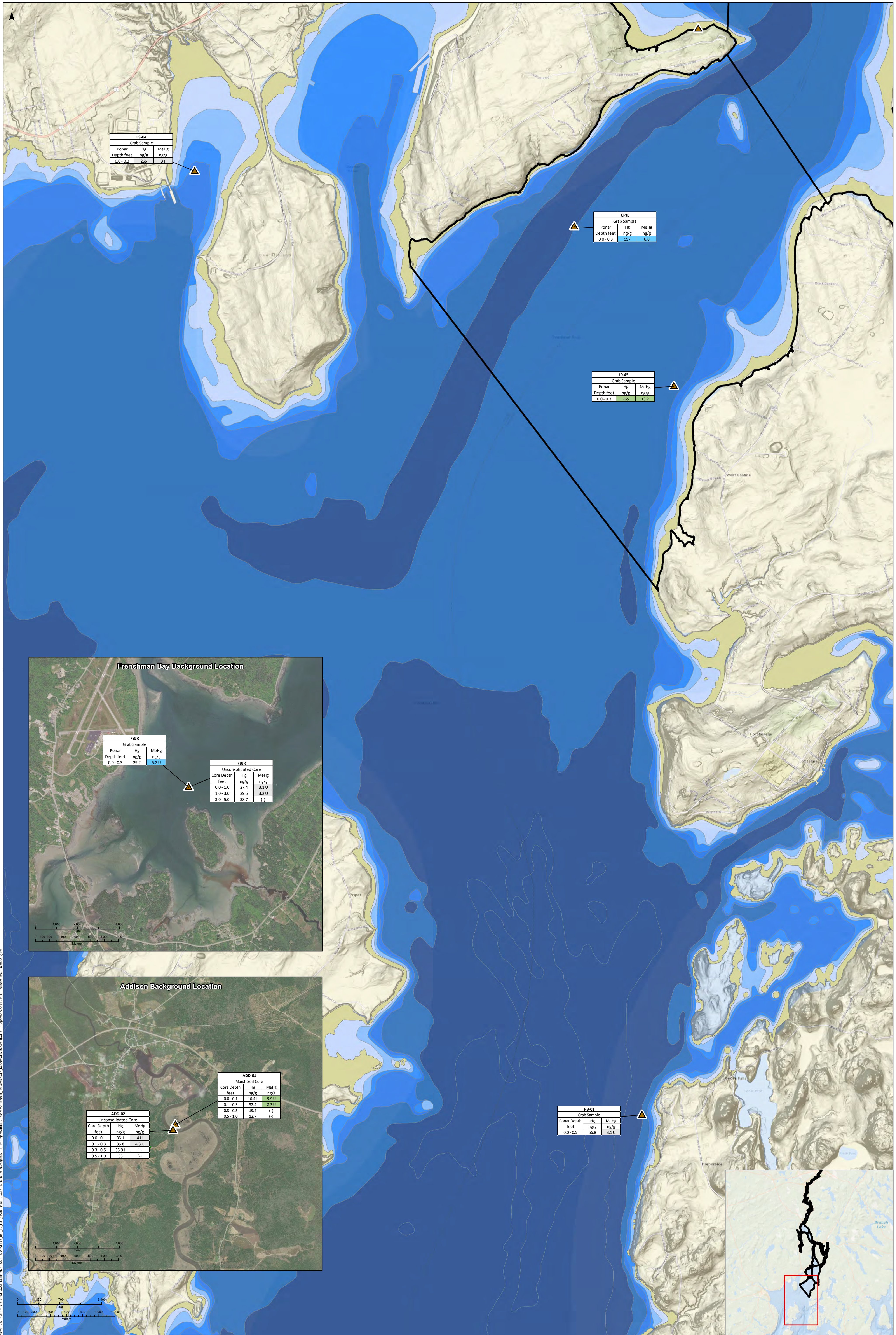
BU-08-01-A	
Consolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	673
0.1-0.3	603
0.3-0.5	663
0.5-1.0	646
1.0-1.5	111
1.5-2.0	30.1

BU-08-01-E		
Unconsolidated Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	792	15
0.1-0.3	509	13.4
0.3-0.5	693	(-)
0.5-1.0	666	(-)

BU-10-01-A	
Consolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	1,090
0.1-0.3	890
0.3-0.5	792
0.5-1.0	895
1.0-1.5	1,090
1.5-2.0	1,130
2.0-3.0	1,860
3.0-4.0	1,310
4.0-5.0	1,790
5.0-6.0	1,510
6.0-7.0	289
7.0-8.0	45.9

BU-08-02	
Grab Sample	
Penar	Hg
Depth feet	ng/g
0.1-0.3	598

BU-10-02-C	
Consolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	965
0.1-0.3	980
0.3-0.5	781
0.5-1.0	631
1.0-1.5	558
1.5-2.0	746
2.0-3.0	1,150
3.0-4.0	998
4.0-5.0	2,080
5.0-6.0	2,110



ES-04 Grab Sample		
Ponar Depth feet	Hg ng/g	MeHg ng/g
0.0-0.3	266	3.1

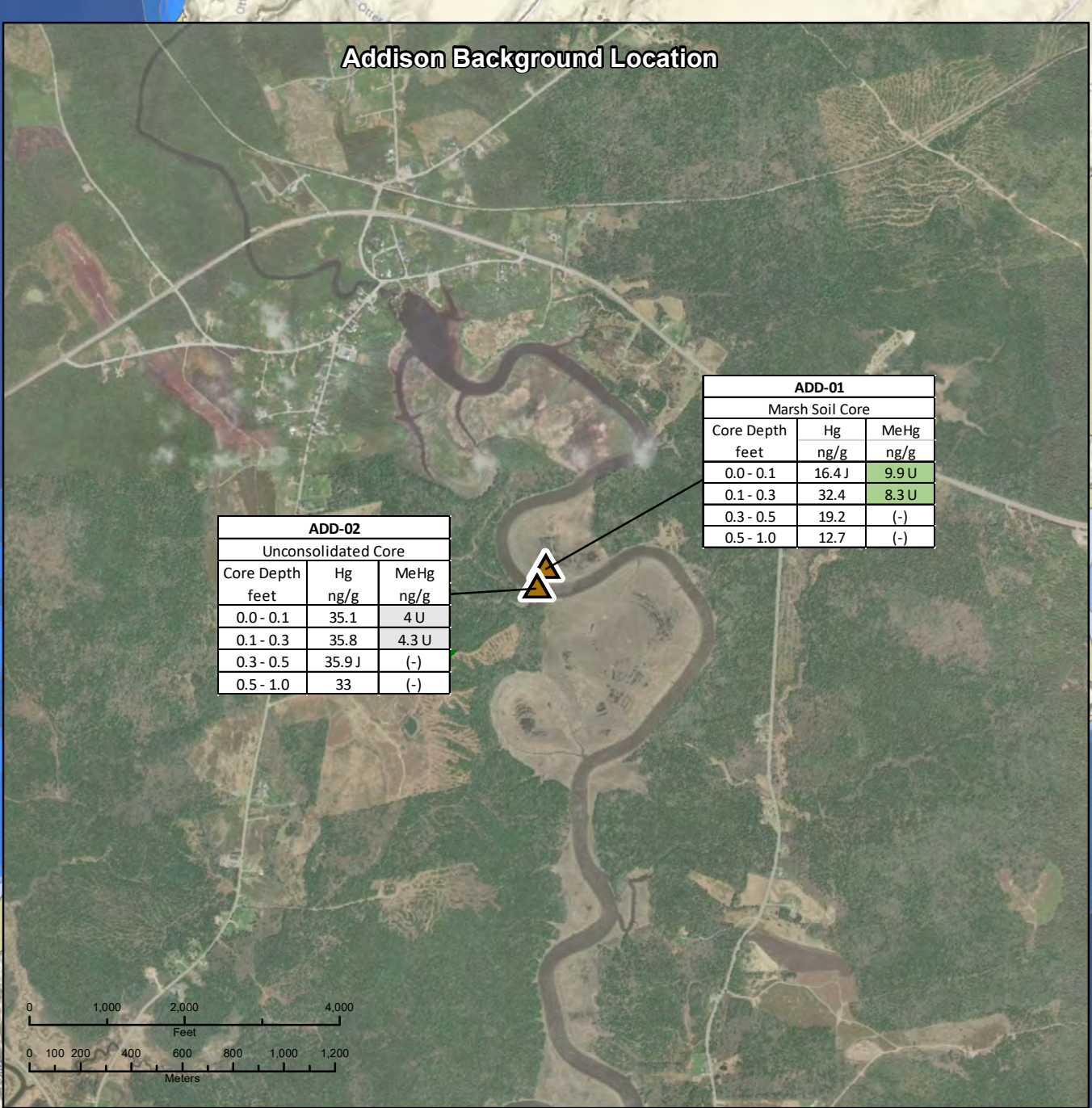
CP11 Grab Sample		
Ponar Depth feet	Hg ng/g	MeHg ng/g
0.0-0.3	597	6.8

19-45 Grab Sample		
Ponar Depth feet	Hg ng/g	MeHg ng/g
0.0-0.3	765	13.2



FBUR Grab Sample		
Ponar Depth feet	Hg ng/g	MeHg ng/g
0.0-0.3	29.2	5.2 U

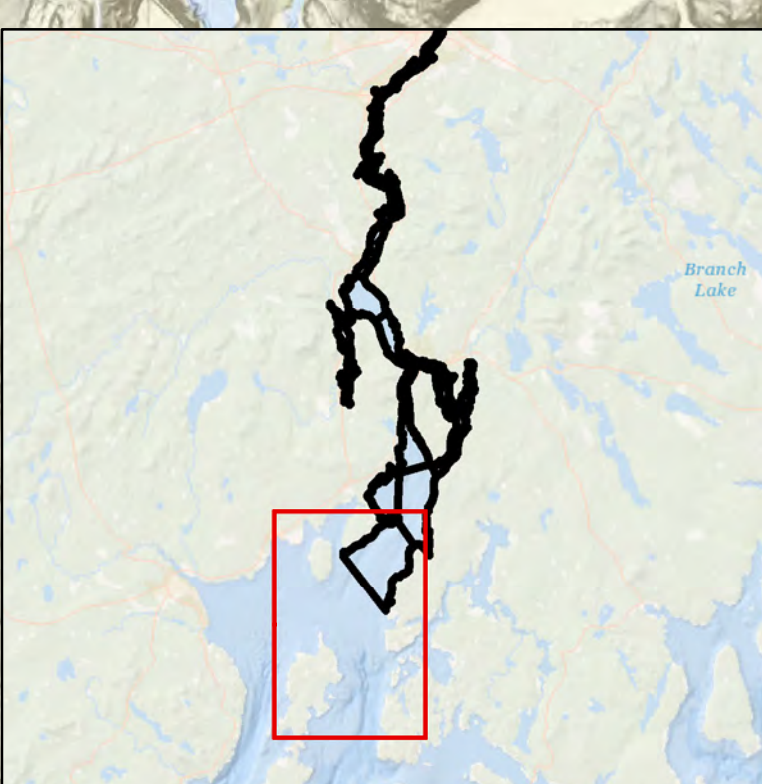
FBUR Unconsolidated Core		
Core Depth feet	Hg ng/g	MeHg ng/g
0.0-1.0	27.4	3.1 U
1.0-3.0	29.5	3.2 U
3.0-5.0	38.7	(-)

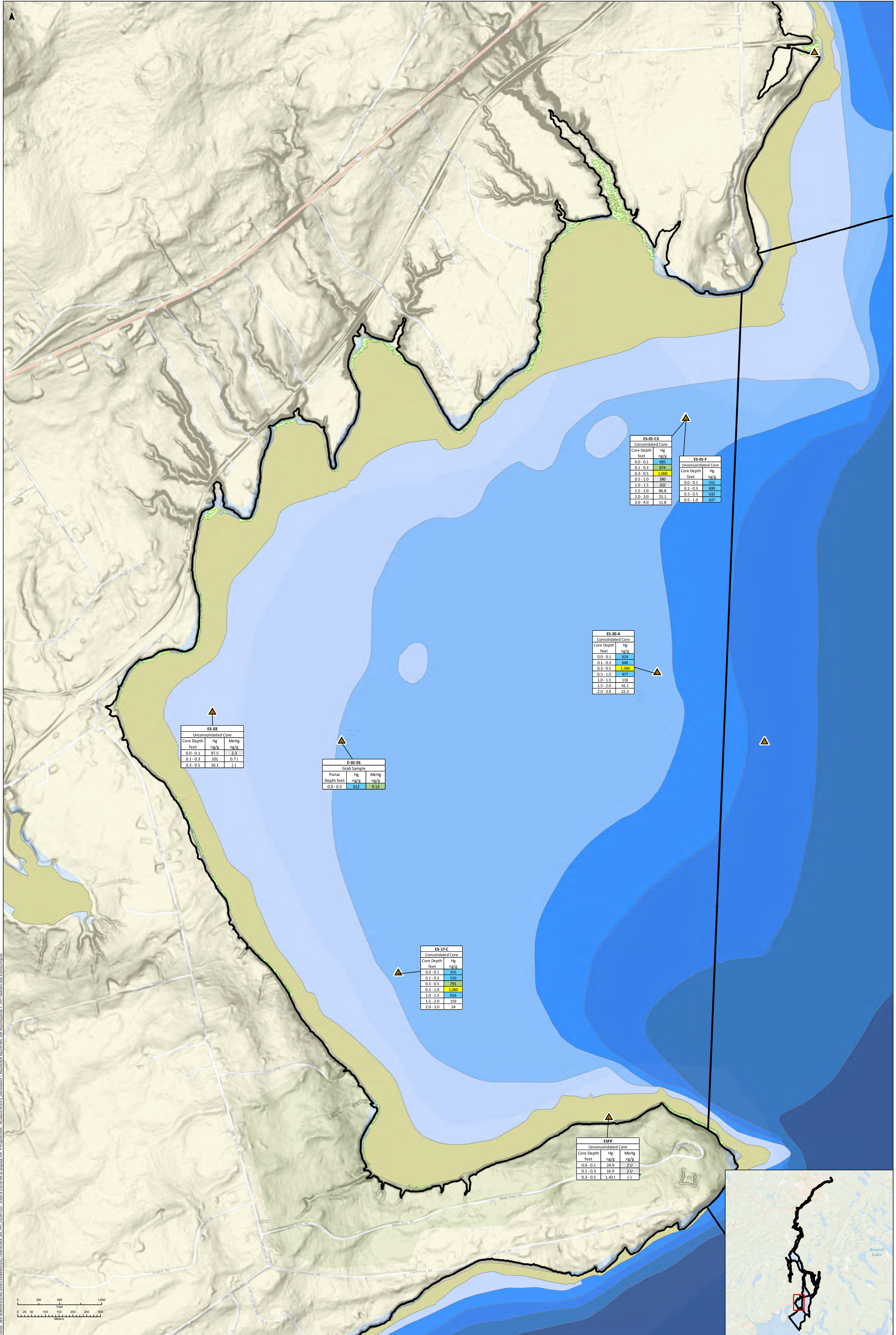


ADD-02 Unconsolidated Core		
Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	35.1	4 U
0.1-0.3	35.8	4.3 U
0.3-0.5	35.9 J	(-)
0.5-1.0	33	(-)

ADD-01 Marsh Soil Core		
Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	16.4 J	9.9 U
0.1-0.3	32.4	8.3 U
0.3-0.5	19.2	(-)
0.5-1.0	12.7	(-)

HB-01 Grab Sample		
Ponar Depth feet	Hg ng/g	MeHg ng/g
0.0-0.5	26.8	3.1 U





ES-02
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	97.5	2.3
0.1 - 0.3	101	0.71
0.3 - 0.5	10.1	(-)

E-01-01
Grab Sample

Ponar Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.3	612	9.13

ES-17-C
Consolidated Core

Core Depth feet	Hg ng/g
0.0 - 0.1	551
0.1 - 0.3	510
0.3 - 0.5	791
0.5 - 1.0	1,060
1.0 - 1.5	616
1.5 - 2.0	159
2.0 - 3.0	24

ESFP
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	24.9	2 U
0.1 - 0.3	16.9	2 U
0.3 - 0.5	1,421	(-)

ES-01-C3
Consolidated Core

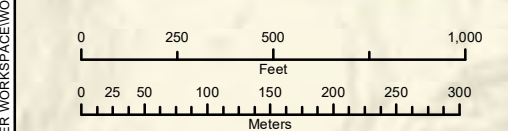
Core Depth feet	Hg ng/g
0.0 - 0.1	685
0.1 - 0.3	874
0.3 - 0.5	1,060
0.5 - 1.0	380
1.0 - 1.5	202
1.5 - 2.0	86.8
2.0 - 3.0	25.1
3.0 - 4.0	11.8

ES-01-F
Unconsolidated Core

Core Depth feet	Hg ng/g
0.0 - 0.1	512
0.1 - 0.3	699
0.3 - 0.5	637
0.5 - 1.0	637

ES-20-A
Consolidated Core

Core Depth feet	Hg ng/g
0.0 - 0.1	614
0.1 - 0.3	646
0.3 - 0.5	1,360
0.5 - 1.0	477
1.0 - 1.5	116
1.5 - 2.0	41.1
2.0 - 3.0	22.3



amc foster wheeler
Project: 3616166052 Prepared: ICD 9/4/2018 Checked: JPP 9/4/2018

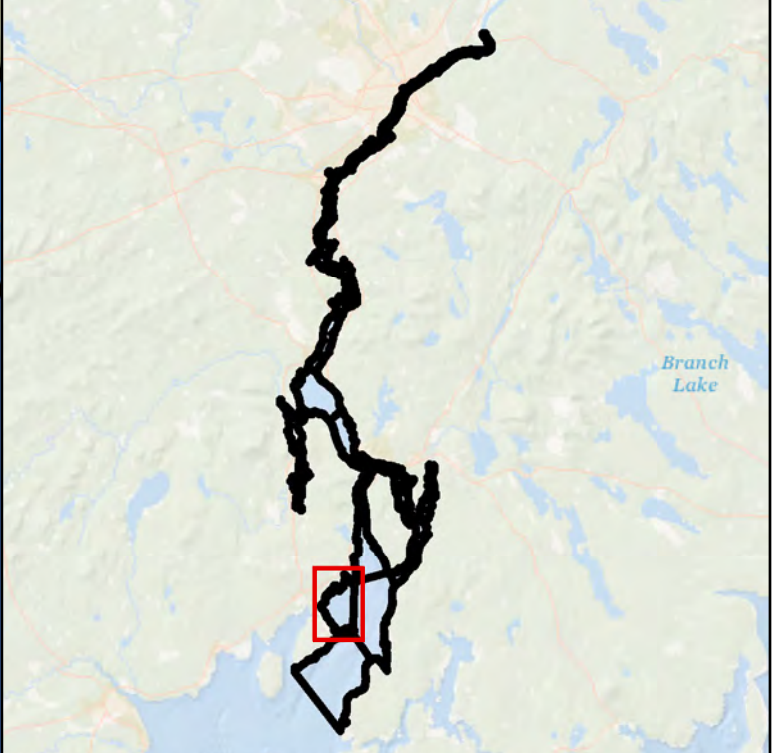
Bathymetry
Water Depth feet (MLLW)

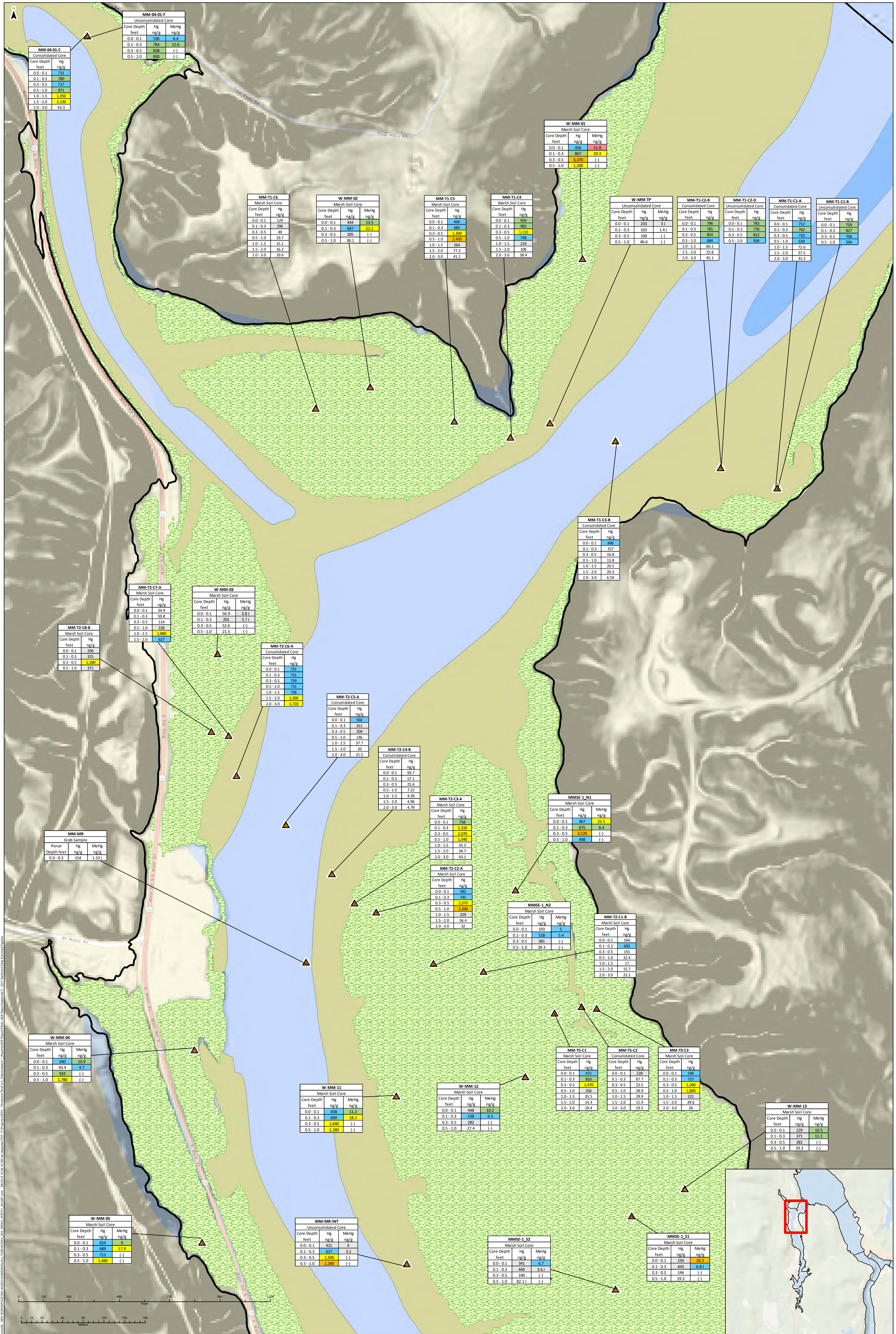
Symbol Key

- ▲ Sediment Sampling Location
- ▭ Official Study Reach
- Marsh Platform
- Intertidal Zone

Mercury [µg/g] **Methyl Mercury [MeHg] (ng/g)**

< 200	< 2
200 - 499	2 - 4.5
500 - 750	4.5 - 7.5
750 - 1,000	7.5 - 15
1,000 - 2,000	15 - 25
2,000 - 5,000	25 - 50
> 5,000	> 50





MM-04-01-F
Unconsolidated Core

Core Depth (feet)	Hg (ng/g)	MeHg (ng/g)
0.0-0.1	536	6.4
0.1-0.3	784	12.6
0.3-0.5	838	(-)
0.5-1.0	830	(-)

MM-04-01-C
Consolidated Core

Core Depth (feet)	Hg (ng/g)
0.0-0.1	791
0.1-0.3	780
0.3-0.5	717
0.5-1.0	971
1.0-1.5	1,350
1.5-2.0	2,130
2.0-3.0	43.3

Bathymetry
Water Depth feet (MLLW)

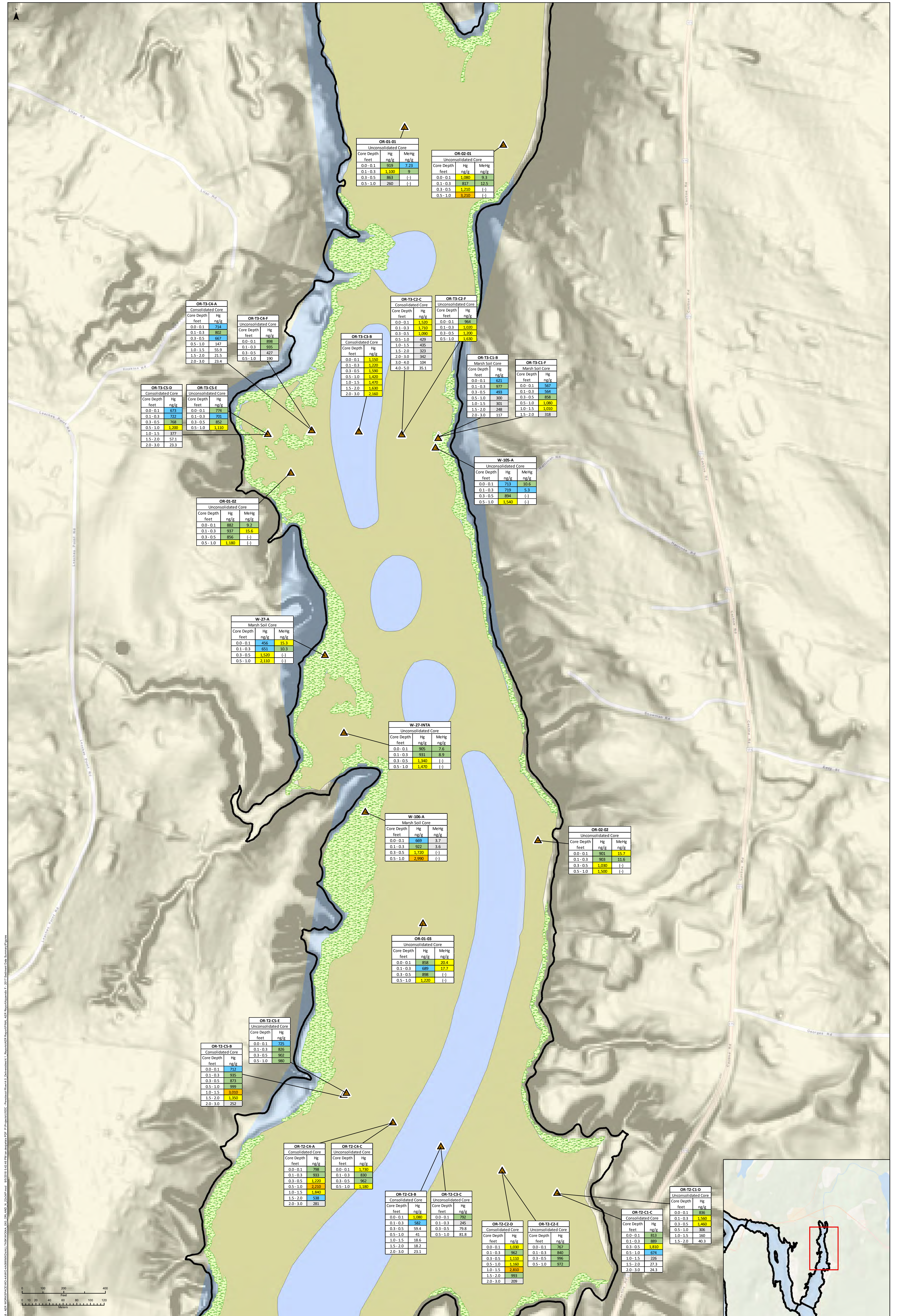
Symbol Key

- ▲ Sediment Sampling Locations
- ▭ Study Reach
- ▭ Marsh Platform
- ▭ Intertidal Zone

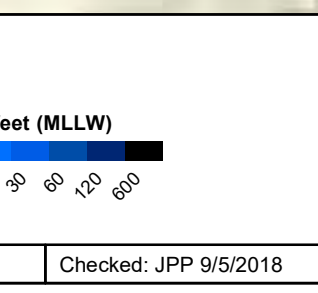
Mercury [µg] [ng/g]

no.	Mercury [µg]	Methyl Mercury [MeHg] (ng/g)
< 200	< 2	< 2
200-400	2-4.5	2-4.5
400-750	4.5-7.5	4.5-7.5
750-1,000	7.5-15	7.5-15
1,000-2,000	15-30	15-30
2,000-5,000	30-50	30-50
> 5,000	> 50	> 50

Project: 361616052 Prepared: ICD 9/6/2018 Checked: JPP 9/6/2018



Project: 361616052 Prepared: ICD 9/5/2018 Checked: JPP 9/5/2018



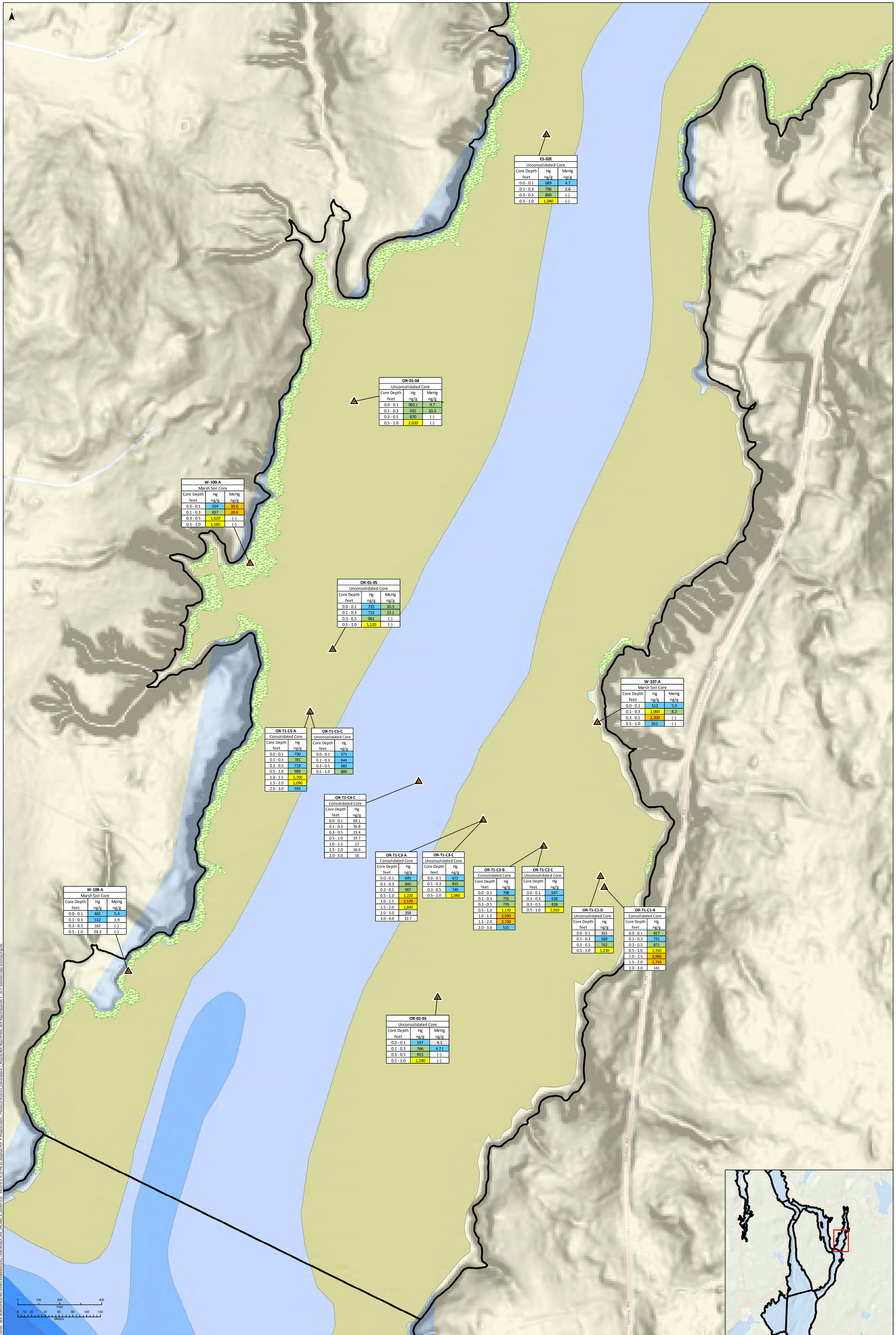
Mercury [µg/g]

< 200	< 2
200-499	2-4.5
500-799	4.5-7.5
800-1,099	7.5-15
1,100-2,099	15-25
2,100-5,000	25-50
> 5,000	> 50

Methyl Mercury [MeHg] (ng/g)

< 200	< 2
200-499	2-4.5
500-799	4.5-7.5
800-1,099	7.5-15
1,100-2,099	15-25
2,100-5,000	25-50
> 5,000	> 50

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 Sources: Env. HSE, Geomatics, USGS, Inverness, WCHS/WHYP/WCHS, Env. Japan, METI, East China (Hong Kong), East Korea, East (Thailand), NOAA, © OpenStreetMap contributors, and the GIS User Community



ES-02E		
Unconsolidated Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	689	4.7
0.1-0.3	796	2.6
0.3-0.5	890	(-)
0.5-1.0	1,040	(-)

OR-01-04		
Unconsolidated Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	955	9.7
0.1-0.3	995	10.3
0.3-0.5	870	(-)
0.5-1.0	2,020	(-)

W-100-A		
Marsh Soil Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	554	30.6
0.1-0.3	837	28.6
0.3-0.5	1,620	(-)
0.5-1.0	1,180	(-)

OR-01-05		
Unconsolidated Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	735	10.3
0.1-0.3	715	13.1
0.3-0.5	951	(-)
0.5-1.0	1,120	(-)

W-107-A		
Marsh Soil Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	513	5.9
0.1-0.3	1,050	8.2
0.3-0.5	2,200	(-)
0.5-1.0	651	(-)

OR-T1-C5-A		OR-T1-C5-C	
Consolidated Core		Unconsolidated Core	
Core Depth	Hg	Core Depth	Hg
feet	ng/g	feet	ng/g
0.0-0.1	730	0.0-0.1	571
0.1-0.3	781	0.1-0.3	664
0.3-0.5	719	0.3-0.5	682
0.5-1.0	989	0.5-1.0	880
1.0-1.5	1,700		
1.5-2.0	1,090		
2.0-3.0	593		

OR-T1-C4-C	
Consolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	69.1
0.1-0.3	36.8
0.3-0.5	23.4
0.5-1.0	19.7
1.0-1.5	17
1.5-2.0	16.6
2.0-3.0	16

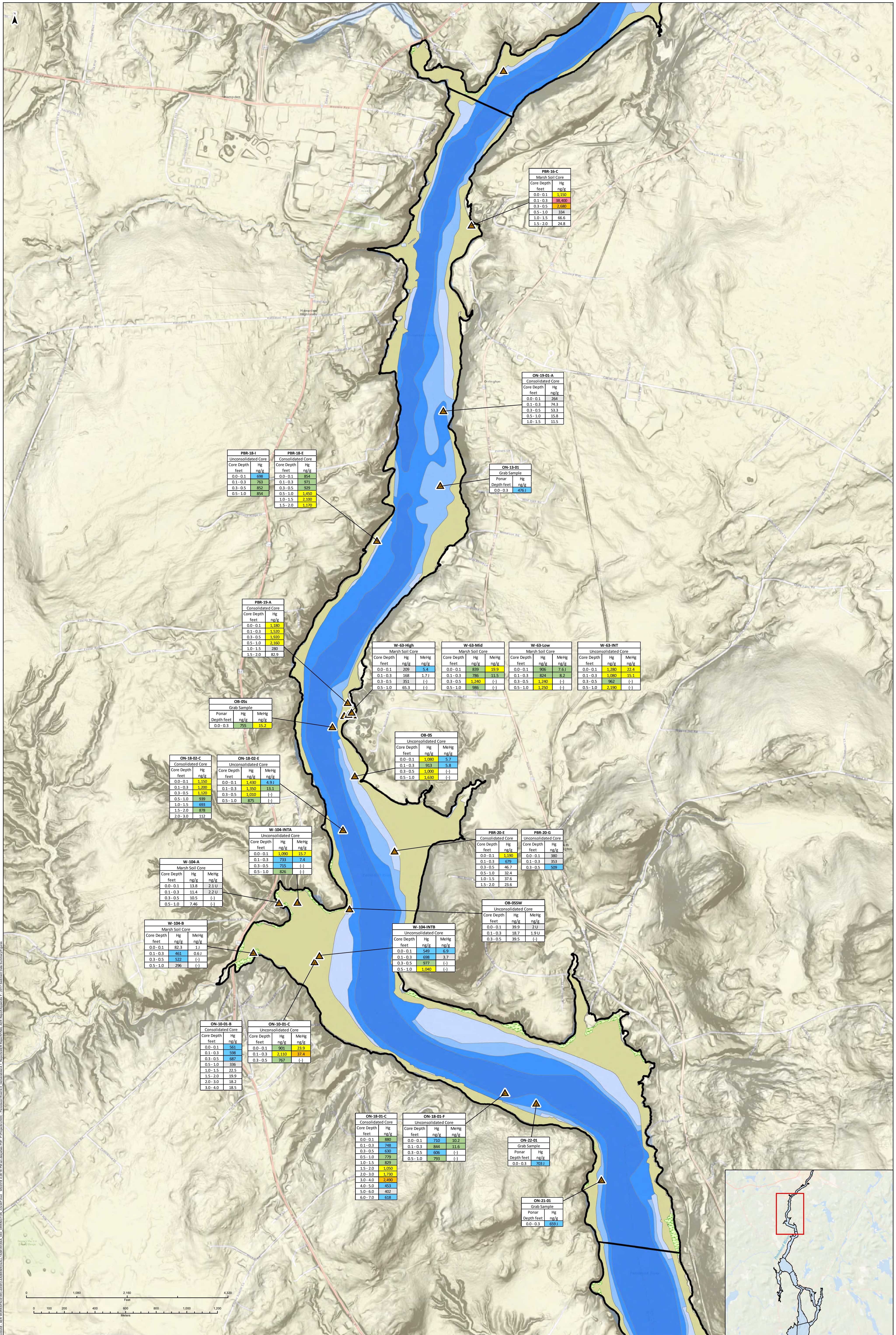
OR-T1-C3-A		OR-T1-C3-C	
Consolidated Core		Unconsolidated Core	
Core Depth	Hg	Core Depth	Hg
feet	ng/g	feet	ng/g
0.0-0.1	695	0.0-0.1	672
0.1-0.3	845	0.1-0.3	815
0.3-0.5	907	0.3-0.5	749
0.5-1.0	1,220	0.5-1.0	1,060
1.0-1.5	2,570		
1.5-2.0	1,860		
2.0-3.0	359		
3.0-4.0	32.7		

OR-T1-C3-B		OR-T1-C3-C	
Consolidated Core		Unconsolidated Core	
Core Depth	Hg	Core Depth	Hg
feet	ng/g	feet	ng/g
0.0-0.1	708	0.0-0.1	647
0.1-0.3	755	0.1-0.3	638
0.3-0.5	776	0.3-0.5	818
0.5-1.0	1,170	0.5-1.0	1,010
1.0-1.5	2,590		
1.5-2.0	2,730		
2.0-3.0	515		

OR-T1-C1-D		OR-T1-C1-B	
Unconsolidated Core		Consolidated Core	
Core Depth	Hg	Core Depth	Hg
feet	ng/g	feet	ng/g
0.0-0.1	351	0.0-0.1	817
0.1-0.3	589	0.1-0.3	731
0.3-0.5	762	0.3-0.5	871
0.5-1.0	1,230	0.5-1.0	1,350
		1.0-1.5	2,960
		1.5-2.0	2,750
		2.0-3.0	141

W-108-A		
Marsh Soil Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	465	5.4
0.1-0.3	512	1.9
0.3-0.5	162	(-)
0.5-1.0	29.3	(-)

OR-02-03		
Unconsolidated Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	547	4.1
0.1-0.3	766	4.7
0.3-0.5	915	(-)
0.5-1.0	1,190	(-)



PBR-16-C
Marsh Soil Core

Core Depth feet	Hg ng/g
0.0-0.1	1,150
0.1-0.3	38,400
0.3-0.5	7,680
0.5-1.0	834
1.0-1.5	66.6
1.5-2.0	24.8

ON-19-01-A
Consolidated Core

Core Depth feet	Hg ng/g
0.0-0.1	284
0.1-0.3	74.3
0.3-0.5	53.3
0.5-1.0	15.8
1.0-1.5	11.5

ON-13-01
Grab Sample

Ponar Depth feet	Hg ng/g
0.0-0.3	476.1

PBR-18-I
Unconsolidated Core

Core Depth feet	Hg ng/g
0.0-0.1	698
0.1-0.3	763
0.3-0.5	852
0.5-1.0	854

PBR-18-E
Consolidated Core

Core Depth feet	Hg ng/g
0.0-0.1	854
0.1-0.3	971
0.3-0.5	929
0.5-1.0	1,450
1.0-1.5	2,100
1.5-2.0	1,170

PBR-19-A
Consolidated Core

Core Depth feet	Hg ng/g
0.0-0.1	1,180
0.1-0.3	1,520
0.3-0.5	1,920
0.5-1.0	2,160
1.0-1.5	280
1.5-2.0	82.9

W-63-High
Marsh Soil Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	209	5.4
0.1-0.3	168	17.1
0.3-0.5	351	(-)
0.5-1.0	65.3	(-)

W-63-Mid
Marsh Soil Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	859	19.9
0.1-0.3	786	11.5
0.3-0.5	1,240	(-)
0.5-1.0	986	(-)

W-63-Low
Marsh Soil Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	906	76.1
0.1-0.3	824	8.2
0.3-0.5	1,240	(-)
0.5-1.0	1,250	(-)

W-63-INT
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	1,260	22.4
0.1-0.3	1,080	15.1
0.3-0.5	962	(-)
0.5-1.0	2,190	(-)

OB-05s
Grab Sample

Ponar Depth feet	Hg ng/g	MeHg ng/g
0.0-0.3	755	15.2

OB-05
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	1,080	5.7
0.1-0.3	1,350	13.1
0.3-0.5	1,010	(-)
0.5-1.0	1,630	(-)

ON-19-02-C
Consolidated Core

Core Depth feet	Hg ng/g
0.0-0.1	1,150
0.1-0.3	1,250
0.3-0.5	1,120
0.5-1.0	939
1.0-1.5	693
1.5-2.0	878
2.0-3.0	112

ON-19-02-E
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	1,430	4.97
0.1-0.3	1,350	13.1
0.3-0.5	1,010	(-)
0.5-1.0	875	(-)

W-104-A
Marsh Soil Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	13.8	2.1 U
0.1-0.3	11.4	2.2 U
0.3-0.5	10.5	(-)
0.5-1.0	7.46	(-)

W-104-INTA
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	1,090	15.7
0.1-0.3	733	7.4
0.3-0.5	715	(-)
0.5-1.0	826	(-)

PBR-20-E
Consolidated Core

Core Depth feet	Hg ng/g
0.0-0.1	1,190
0.1-0.3	679
0.3-0.5	46.7
0.5-1.0	32.4
1.0-1.5	37.6
1.5-2.0	23.6

PBR-20-G
Unconsolidated Core

Core Depth feet	Hg ng/g
0.0-0.1	380
0.1-0.3	353
0.3-0.5	509

OB-05SW
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	39.9	2.1 U
0.1-0.3	18.7	1.9 U
0.3-0.5	39.5	(-)

W-104-B
Marsh Soil Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	82.3	1.1
0.1-0.3	46.1	0.6 U
0.3-0.5	522	(-)
0.5-1.0	296	(-)

W-104-INTB
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	549	6.9
0.1-0.3	698	3.7
0.3-0.5	977	(-)
0.5-1.0	1,040	(-)

ON-10-01-B
Consolidated Core

Core Depth feet	Hg ng/g
0.0-0.1	561
0.1-0.3	596
0.3-0.5	687
0.5-1.0	336
1.0-1.5	22.5
1.5-2.0	19.9
2.0-3.0	18.7
3.0-4.0	18.5

ON-10-01-C
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	901	23.9
0.1-0.3	2,110	37.4
0.3-0.5	767	(-)

ON-18-01-C
Consolidated Core

Core Depth feet	Hg ng/g
0.0-0.1	880
0.1-0.3	748
0.3-0.5	630
0.5-1.0	779
1.0-1.5	820
1.5-2.0	1,050
2.0-3.0	1,730
3.0-4.0	2,490
4.0-5.0	451
5.0-6.0	402
6.0-7.0	618

ON-18-01-F
Unconsolidated Core

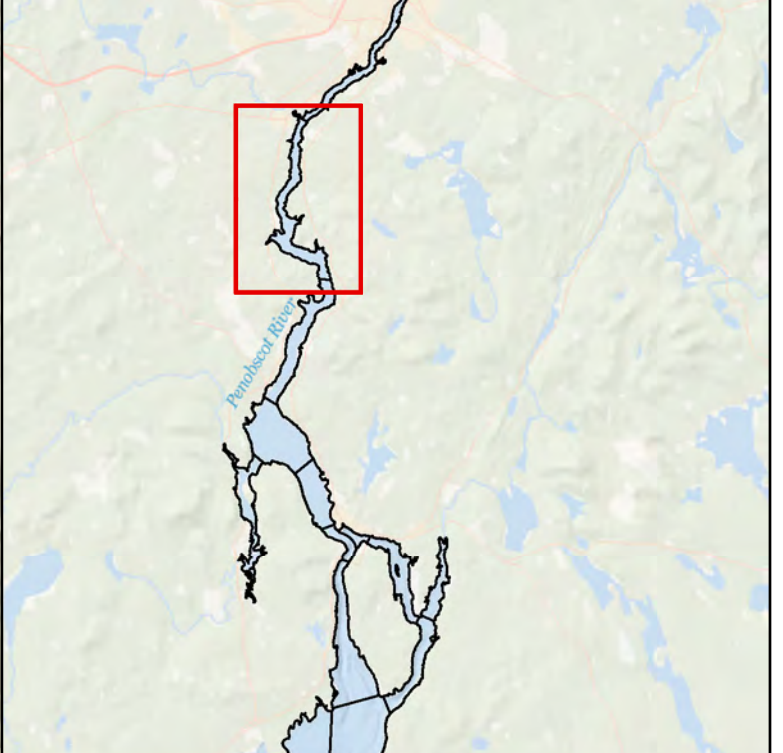
Core Depth feet	Hg ng/g	MeHg ng/g
0.0-0.1	750	10.2
0.1-0.3	844	11.6
0.3-0.5	606	(-)
0.5-1.0	793	(-)

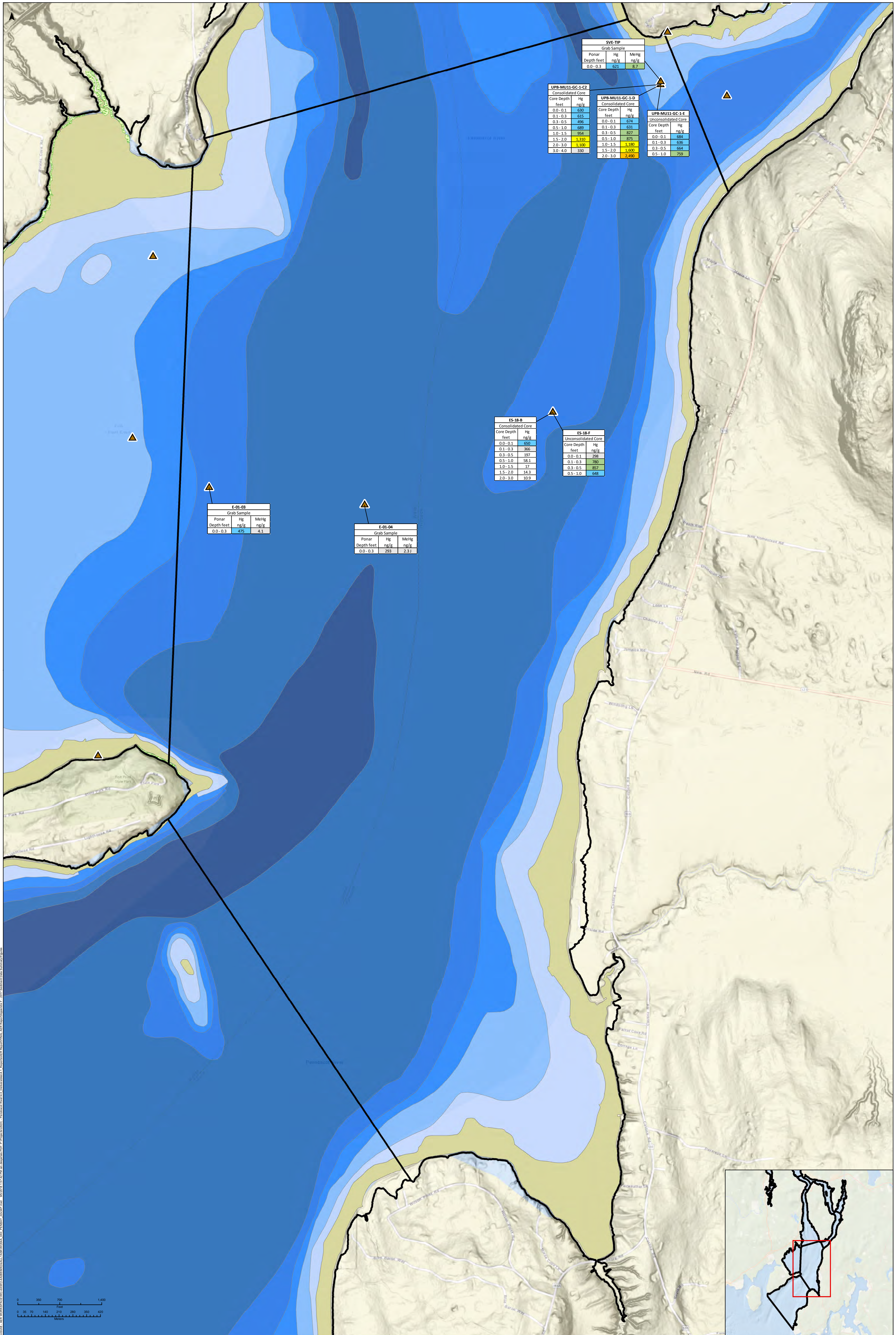
ON-22-01
Grab Sample

Ponar Depth feet	Hg ng/g
0.0-0.3	763

ON-21-01
Grab Sample

Ponar Depth feet	Hg ng/g
0.0-0.3	659.1





SVE-TIP			
Grab Sample			
Ponar Depth feet	Hg ng/g	MeHg ng/g	
0.0 - 0.3	621	8.7	

UPB-MU11-GC-1-C2			
Consolidated Core			
Core Depth feet	Hg ng/g		
0.0 - 0.1	659		
0.1 - 0.3	615		
0.3 - 0.5	496		
0.5 - 1.0	689		
1.0 - 1.5	994		
1.5 - 2.0	1,310		
2.0 - 3.0	1,100		
3.0 - 4.0	330		

UPB-MU11-GC-1-D			
Consolidated Core			
Core Depth feet	Hg ng/g		
0.0 - 0.1	674		
0.1 - 0.3	631		
0.3 - 0.5	827		
0.5 - 1.0	875		
1.0 - 1.5	1,180		
1.5 - 2.0	1,600		
2.0 - 3.0	2,450		

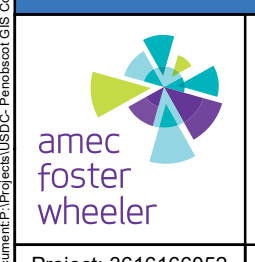
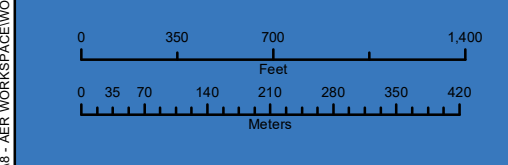
UPB-MU11-GC-1-E			
Unconsolidated Core			
Core Depth feet	Hg ng/g		
0.0 - 0.1	684		
0.1 - 0.3	636		
0.3 - 0.5	664		
0.5 - 1.0	795		

E-18-B			
Consolidated Core			
Core Depth feet	Hg ng/g		
0.0 - 0.1	650		
0.1 - 0.3	365		
0.3 - 0.5	197		
0.5 - 1.0	58.1		
1.0 - 1.5	17		
1.5 - 2.0	14.3		
2.0 - 3.0	10.9		

E-18-F			
Unconsolidated Core			
Core Depth feet	Hg ng/g		
0.0 - 0.1	788		
0.1 - 0.3	780		
0.3 - 0.5	857		
0.5 - 1.0	648		

E-01-03			
Grab Sample			
Ponar Depth feet	Hg ng/g	MeHg ng/g	
0.0 - 0.3	475	4.1	

E-01-04			
Grab Sample			
Ponar Depth feet	Hg ng/g	MeHg ng/g	
0.0 - 0.3	293	2.3	

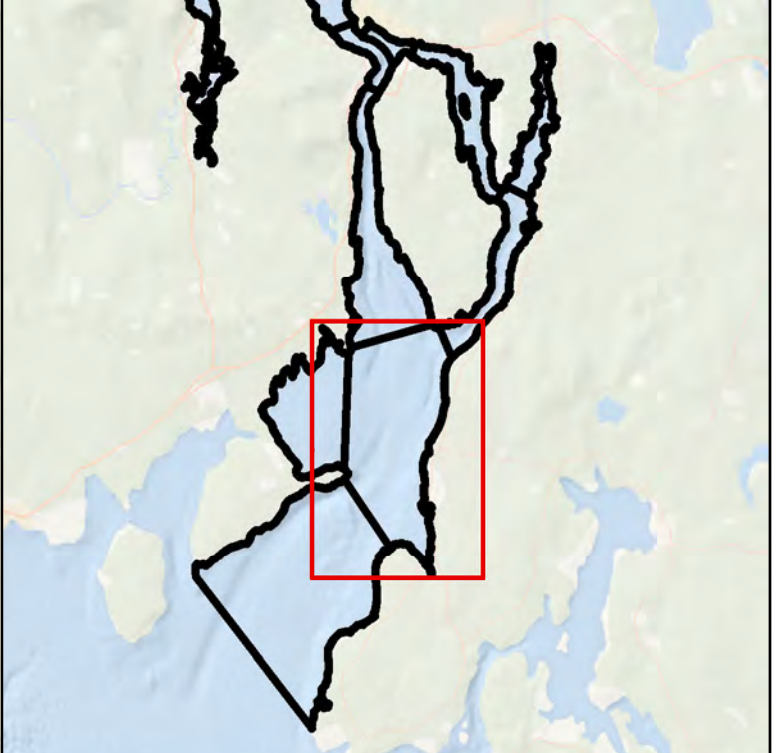


Project: 3616166052 Prepared: ICD 9/5/2018 Checked: JPP/5/2018

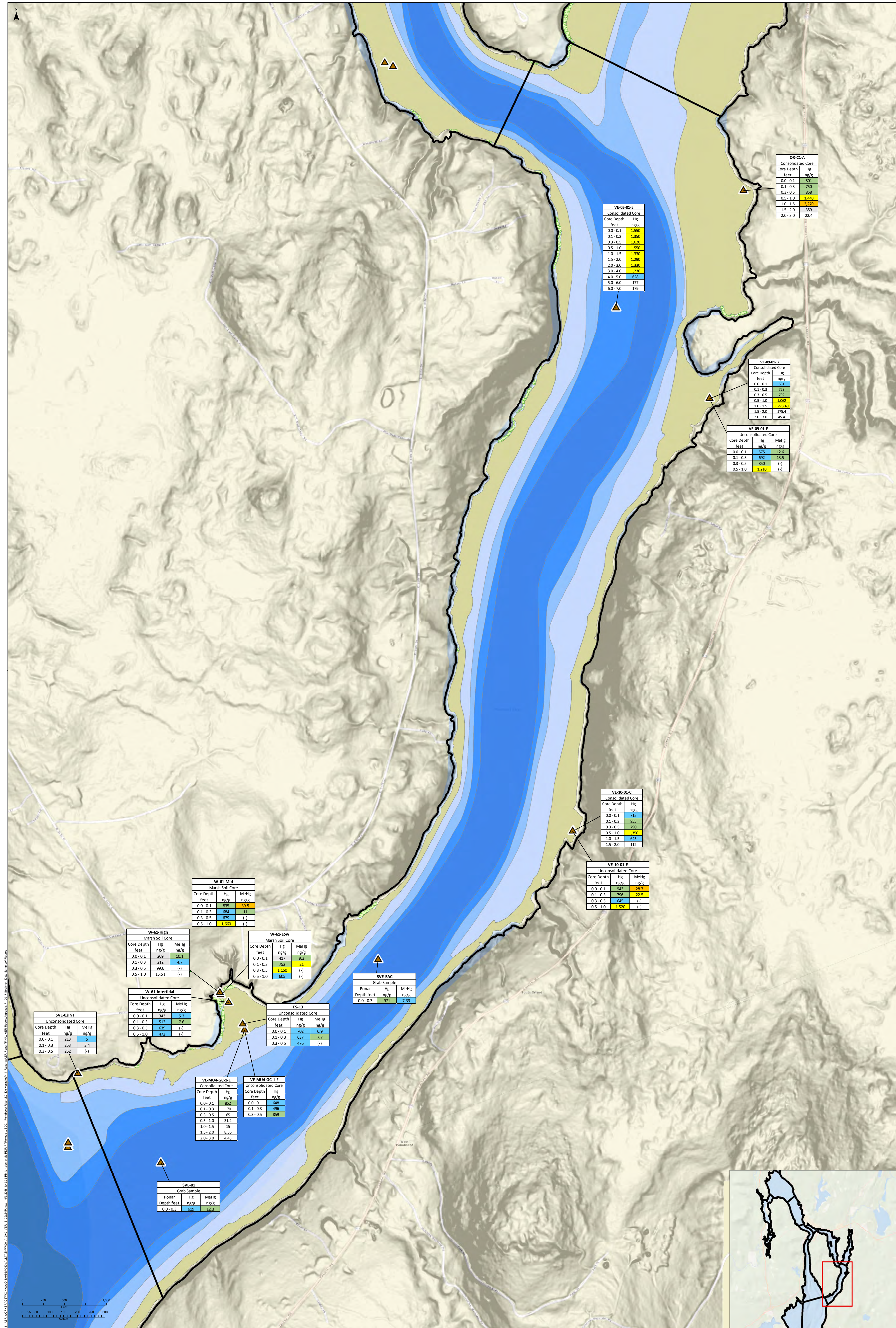
Service Layer Credits: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
 Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, Esri (Chicago), IGN, S. OpenStreetMap contributors, and the GIS User Community

- Symbol Key**
- ▲ Sediment Sampling Location
 - ▭ Study Reach
 - ▨ Marsh Platform
 - ▩ Intertidal Zone

Mercury [µg] (ng/g)	Methyl Mercury [Mer] (ng/g)
< 200	< 2
200 - 400	2 - 4.5
400 - 750	4.5 - 7.5
750 - 1,000	7.5 - 15
1,000 - 2,000	15 - 25
2,000 - 5,000	25 - 50
> 5,000	> 50



2017 Sediment Data Summary
Upper Penobscot Bay Reach



OR-C1-A	
Core Depth	Hg
feet	ng/g
0.0-0.1	801
0.1-0.3	750
0.3-0.5	858
0.5-1.0	1,440
1.0-1.5	2,270
1.5-2.0	359
2.0-3.0	22.4

VE-09-01-E	
Consolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	1,550
0.1-0.3	1,350
0.3-0.5	1,620
0.5-1.0	1,550
1.0-1.5	1,330
1.5-2.0	1,290
2.0-3.0	1,230
3.0-4.0	1,230
4.0-5.0	628
5.0-6.0	177
6.0-7.0	179

VE-09-01-B	
Consolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	631
0.1-0.3	753
0.3-0.5	792
0.5-1.0	1,062
1.0-1.5	1,275.46
1.5-2.0	175.4
2.0-3.0	45.4

VE-09-01-E		
Unconsolidated Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	575	12.6
0.1-0.3	692	13.5
0.3-0.5	850	(-)
0.5-1.0	1,210	(-)

VE-10-01-C	
Consolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	715
0.1-0.3	855
0.3-0.5	790
0.5-1.0	1,350
1.0-1.5	645
1.5-2.0	112

VE-10-01-E		
Unconsolidated Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	943	28.7
0.1-0.3	796	22.5
0.3-0.5	645	(-)
0.5-1.0	1,520	(-)

W-61-Mid		
Marsh Soil Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	855	39.5
0.1-0.3	684	11
0.3-0.5	679	(-)
0.5-1.0	1,660	(-)

W-61-High		
Marsh Soil Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	209	10.1
0.1-0.3	212	4.7
0.3-0.5	99.6	(-)
0.5-1.0	15.5	(-)

W-61-Low		
Marsh Soil Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	417	9.3
0.1-0.3	252	21
0.3-0.5	1,150	(-)
0.5-1.0	605	(-)

SVE-EAC		
Grab Sample		
Ponar	Hg	MeHg
Depth	ng/g	ng/g
feet	ng/g	ng/g
0.0-0.3	971	7.33

W-61-Intertidal		
Unconsolidated Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	243	5.3
0.1-0.3	512	7.6
0.3-0.5	639	(-)
0.5-1.0	472	(-)

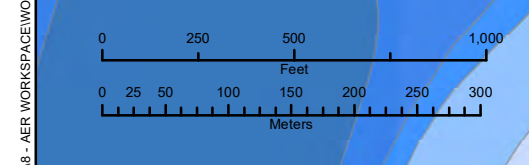
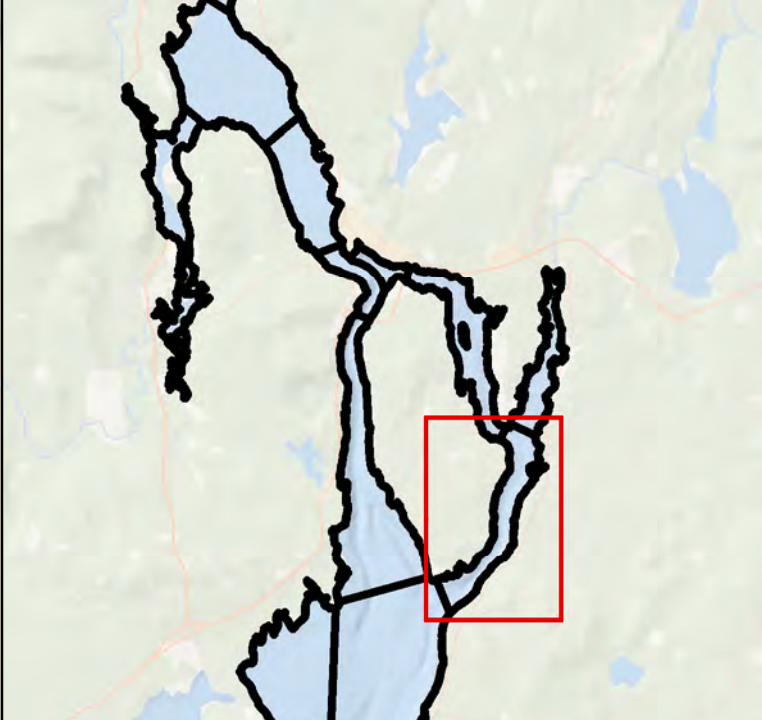
ES-13		
Unconsolidated Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	702	6.9
0.1-0.3	637	7.7
0.3-0.5	476	(-)

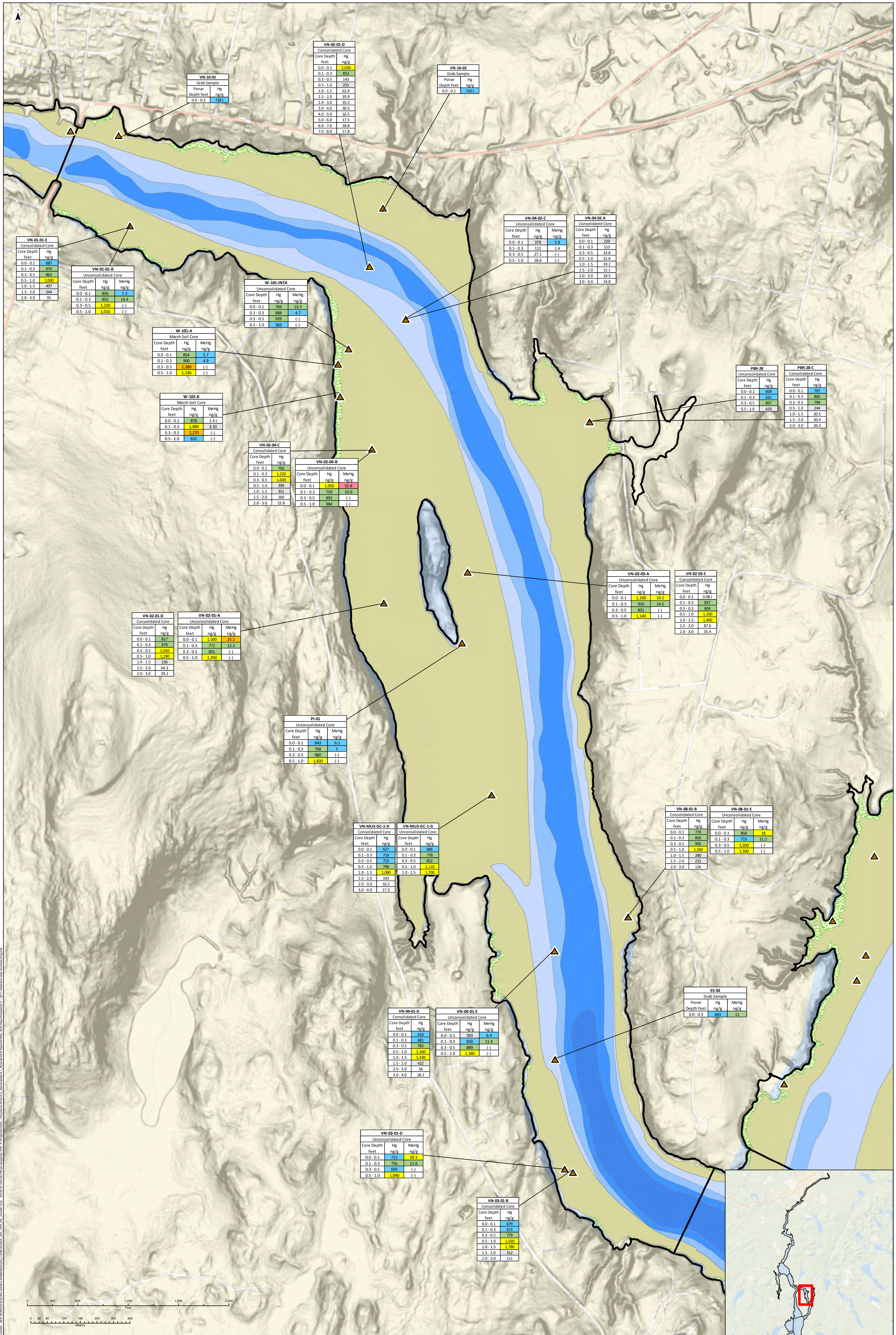
SVE-02INT		
Unconsolidated Core		
Core Depth	Hg	MeHg
feet	ng/g	ng/g
0.0-0.1	213	5
0.1-0.3	253	3.4
0.3-0.5	252	(-)

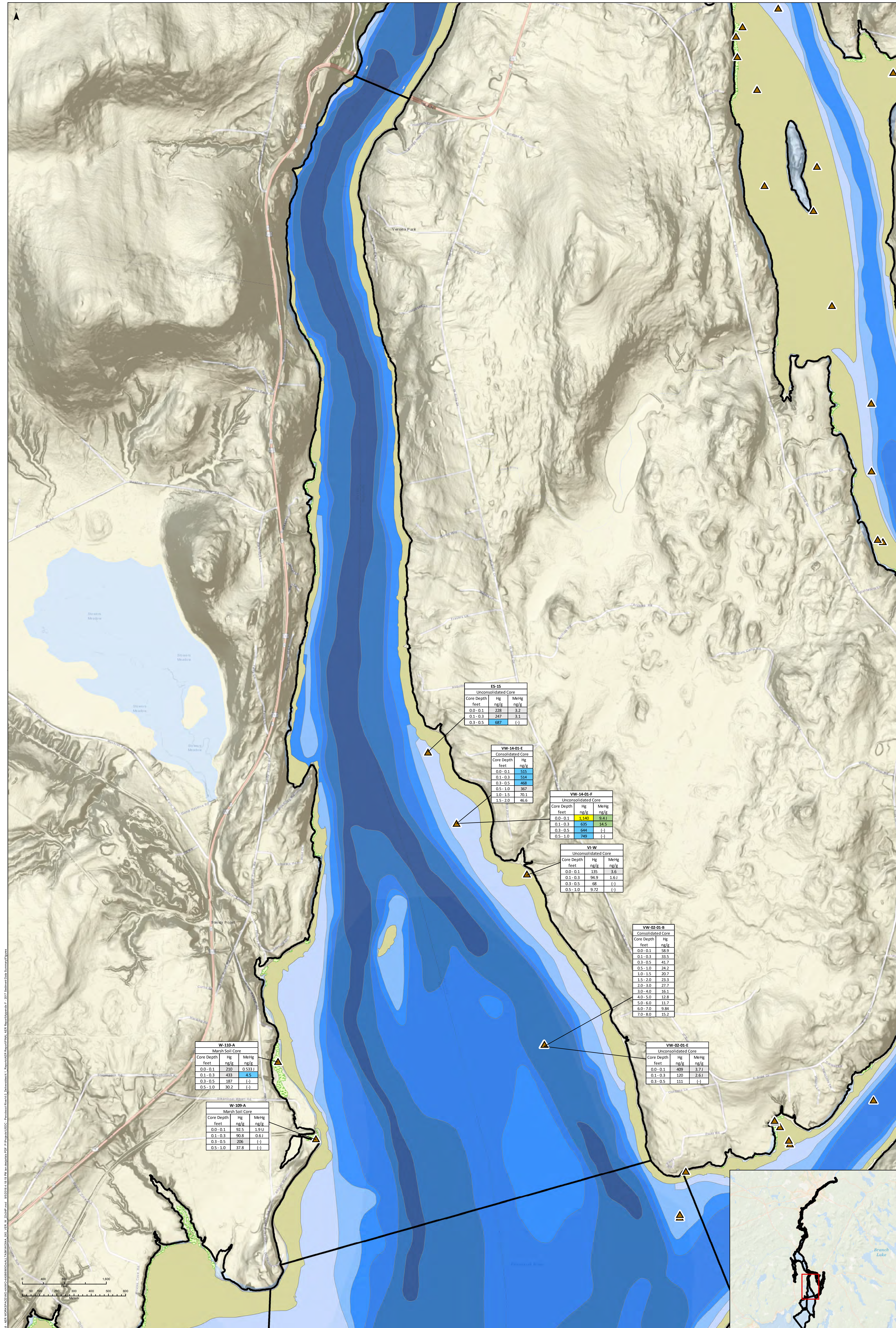
VE-MU4-GC-1-E	
Consolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	824
0.1-0.3	170
0.3-0.5	65
0.5-1.0	31.2
1.0-1.5	15
1.5-2.0	8.56
2.0-3.0	4.43

VE-MU4-GC-1-F	
Unconsolidated Core	
Core Depth	Hg
feet	ng/g
0.0-0.1	648
0.1-0.3	496
0.3-0.5	859

SVE-01		
Grab Sample		
Ponar	Hg	MeHg
Depth	ng/g	ng/g
feet	ng/g	ng/g
0.0-0.3	619	12.3







ES-15
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	228	3.2
0.1 - 0.3	247	3.1
0.3 - 0.5	687	(-)

VW-14-01-E
Consolidated Core

Core Depth feet	Hg ng/g
0.0 - 0.1	515
0.1 - 0.3	514
0.3 - 0.5	468
0.5 - 1.0	367
1.0 - 1.5	70.1
1.5 - 2.0	46.6

VW-14-01-F
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	1,340	9.4
0.1 - 0.3	625	14.5
0.3 - 0.5	644	(-)
0.5 - 1.0	749	(-)

V1-W
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	135	3.6
0.1 - 0.3	94.9	1.6
0.3 - 0.5	68	(-)
0.5 - 1.0	9.72	(-)

VW-02-01-B
Consolidated Core

Core Depth feet	Hg ng/g
0.0 - 0.1	58.9
0.1 - 0.3	33.5
0.3 - 0.5	41.7
0.5 - 1.0	24.2
1.0 - 1.5	20.7
1.5 - 2.0	23.3
2.0 - 3.0	22.7
3.0 - 4.0	16.1
4.0 - 5.0	12.8
5.0 - 6.0	11.7
6.0 - 7.0	9.84
7.0 - 8.0	15.2

VW-02-01-E
Unconsolidated Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	409	3.7
0.1 - 0.3	120	2.6
0.3 - 0.5	111	(-)

W-110-A
Marsh Soil Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	210	0.533
0.1 - 0.3	423	4.5
0.3 - 0.5	187	(-)
0.5 - 1.0	30.2	(-)

W-109-A
Marsh Soil Core

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	92.5	1.9 U
0.1 - 0.3	90.8	0.6
0.3 - 0.5	206	(-)
0.5 - 1.0	37.8	(-)

Project: 3616166052 Prepared: ICD 9/5/2018 Checked: JPP 9/5/2018

Bathymetry
Water Depth feet (MLLW)

Symbol Key

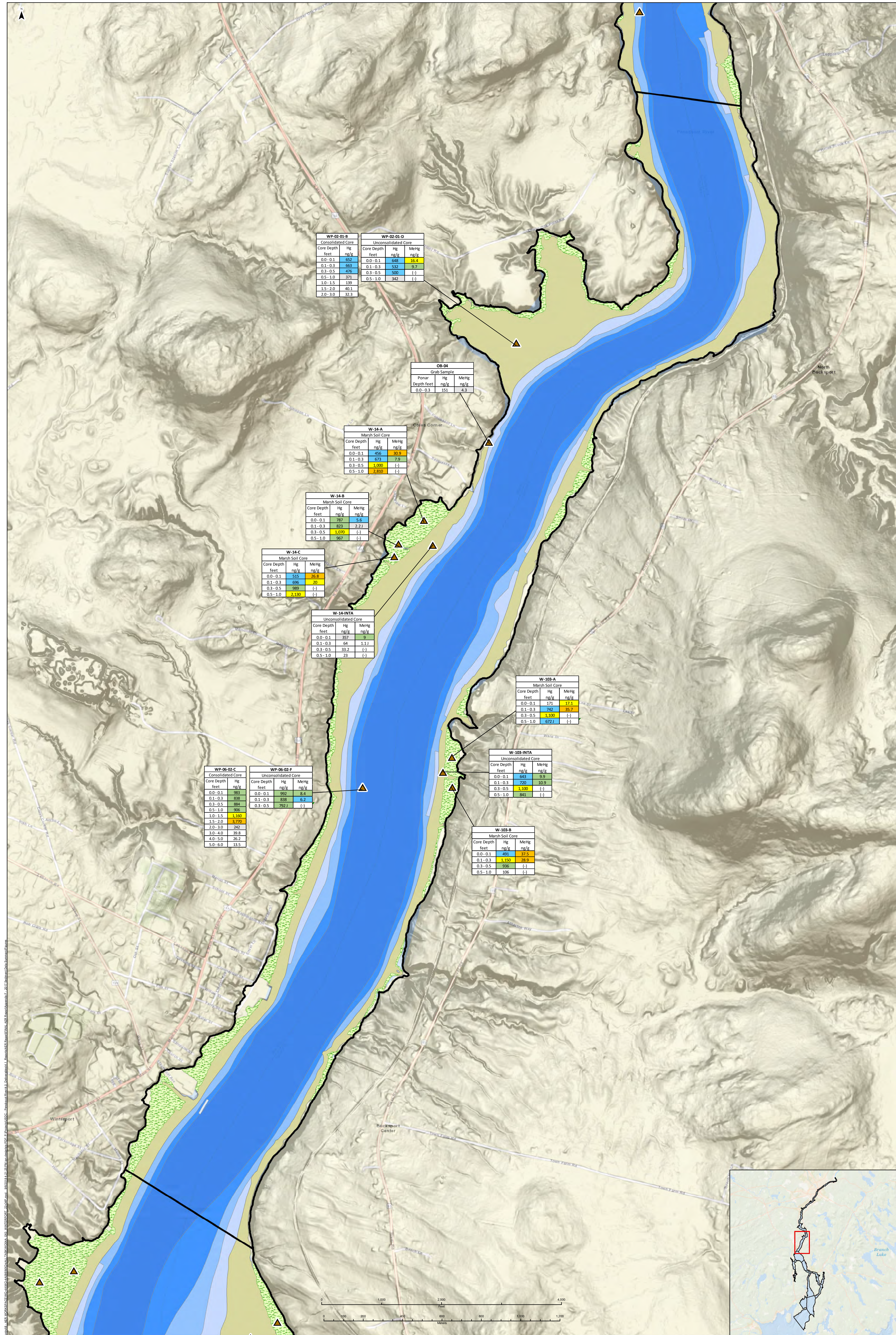
- ▲ Sediment Sampling Locations
- ▭ Official Study Reach
- ▨ Marsh Platform
- ▩ Intertidal Zone

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Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong).

Mercury [ug/L] [ng/g]	Methyl Mercury [MeHg] [ng/g]
< 200	< 2
200 - 400	2 - 4.5
400 - 750	4.5 - 7.5
750 - 1,000	7.5 - 15
1,000 - 2,000	15 - 25
2,000 - 5,000	25 - 50
> 5,000	> 50

2017 Sediment Data Summary
Verona West Reach

Alternatives Evaluation Report
Penobscot River Phase III Engineering Study



APPENDIX G

Analysis of Lignin Oxidation Products in Sediment

Technical Memorandum

Date: February 22, 2018

To: Nelson Walter, Amec Foster Wheeler, Portland, ME

From: Khalil Abusaba, Amec Foster Wheeler, Oakland, CA
Karen Merritt, Amec Foster Wheeler, Portland, ME

Ref: Penobscot River Estuary Phase III Engineering Study

Re: **Analysis of Lignin Oxidation Products in Sediments**

BACKGROUND

Characterizing sources of organic carbon to the Penobscot River estuary helps understand particle transport dynamics. Knowledge of the sources of organic carbon in sediments also advances understanding of food web structure, including routes of potential transfer of particle-associated contaminants such as mercury from organic matter into biota. This memorandum briefly summarizes the findings of a geochemistry assessment demonstrating the utility of lignin breakdown products as an analytical tool for quantifying the contribution of legacy wood waste vs. contemporary vascular plant matter to the overall organic carbon budget in estuary sediments.

Lignin is one of the most abundant naturally occurring plant polymers, second only to cellulose. It is more stable than cellulose and its presence in aquatic environments is an indicator of terrigenous organic matter (Hedges and Parker 1976; Prah et al. 1994; Louchouart et al. 2010). Lignin oxidation products (LOP) are used to characterize the origins of lignin. To analyze for relevant LOP, samples are oxidized at high temperatures, breaking the lignin polymer down into its component structural units. Diagnostic structural units are grouped into three separate families: syringyl (S), vanillyl (V), and cinnamyl (C) (**Figure 1**). Ratios of these families of oxidation products (i.e., S/V and C/V) have been used extensively to determine the terrestrial versus aquatic origins of organic matter (Hedges and Mann 1979; Thevenot et al. 2010).

The key signatures for organic matter sources relevant to this study are summarized in **Table 1**. In **Table 1**, relative lignin abundance is indicated by the sum of the mass of S, V and C families per 100 milligrams (mg) of organic carbon (Λ_8). For context in interpreting Penobscot River estuary results, suspended particulate matter from typical U.S. rivers has Λ_8 values in the range of 0.5 to 3.2 mg lignin / 100 mg organic carbon, whereas fresh wood has Λ_8 in the range of 5 to 25 mg lignin / 100 mg organic carbon (Onstad et al. 2000). For the Penobscot River estuary, the predominant historic source of particulate wood waste has been eastern white pine (*Pinus strobus*). The expected signature for white pine in a sample comprised entirely of wood waste would be an S/V ratio < 0.3, indicating lignin of gymnosperm origin, and a C/V ratio < 0.05, indicating very little soft plant tissue present (Hedges and Mann 1979; Thevenot et al. 2010; Jex et al. 2014).

Carbon to nitrogen (C/N) ratios are also useful indicators for plant origins, although somewhat less specific than the use of lignin families or relative lignin abundance. Wood generally has C/N ratios > 100, whereas terrestrial vascular plants, seaweed, and phytoplankton generally have

C/N ratios significantly lower than 100. The C/N ratio for marine phytoplankton is ~ 7 (Kepkay et al. 1997).

This study evaluates the diagnostic ratios summarized in **Table 1** for six Penobscot River sediment samples that are composed of varying proportions of wood waste. These six sediment samples represent a subset of the samples analyzed under WO – 003 and discussed in the Analytical Methods Technical Memorandum (Amec 2018).

APPROACH

Six sediment samples were chosen from the initial mobile pool characterization performed by Amec Foster Wheeler under WO-003 in the summer of 2016. The same six samples were used for the analytical methods comparison performed under WO 4A-010. The samples were collected from Bucksport, Gross Point, and Hampden where grab samples typically yield mixtures of sediment and wood waste. The sample identifiers (labels), collection dates, field sample IDs and total mercury concentrations for the samples used in this study are summarized in **Table 2**.

Samples were homogenized by Eurofins Frontier Geosciences (Eurofins) using an industrial food processor. Replicate subsamples of each of the homogenized samples were collected by Eurofins for multiple interlaboratory analytical methods comparisons conducted under WO-04A-010. Three replicate subsamples of each homogenized sample were sent to Dr. Richard Smith of Global Aquatic Research (GAR) for analysis of carbon, nitrogen, and lignin oxidation products.

Samples received by GAR were freeze-dried and homogenized to a fine powder. Analysis of organic carbon and nitrogen stable isotopes was performed by elemental analysis isotope ratio mass spectrometry (EA-IRMS) after decarbonation via acid fumigation according to the method of Hedges and Stern (1984), as modified by Smith et al. (2015). Lignin oxidation products were analyzed by gas chromatography / mass spectrometry (GC-MS) after oxidation via cupric oxide, following the method of Hedges and Ertel (1982) as modified by Smith et al. (2015). Complete analytical results are reported in **Attachment A**.

A draft of this Technical Memorandum was previously provided to Dr. Smith (GAR) for review. Dr. Smith's peer review is included as **Attachment B**; his comments have been incorporated into this version of the Technical Memorandum.

RESULTS

For the 6 samples analyzed, the abundance of lignin in Penobscot River estuary sediment is much higher than the lignin content of particulate organic matter transported by typical U.S. rivers (**Table 3, Figure 2**). For the Penobscot River estuary samples, the sum of oxidation products (Λ_8) ranges from 7 to 24 mg lignin / 100 mg organic carbon, compared to between 0.5 and 3.2 mg lignin / 100 mg organic carbon for particulate organic matter from typical U.S. rivers (Onstad et al., 2000).

The relative abundance of lignin in the samples analyzed indicates that organic carbon in these samples is more enriched in lignin oxidation products than particulate organic matter from U.S. rivers and is within the range of lignin oxidation product values calculated for fresh wood (in which Λ_8 ranges from 5 to 25 mg lignin / 100 mg organic carbon). These data suggest that the organic carbon in these samples is predominantly derived from terrigenous plant matter.

Results for lignin oxidation products (**Table 3, Figure 2**) suggest that lignin in the samples analyzed is primarily of gymnosperm origins (S/V much less than 0.3 in all samples), with very little soft plant tissue (C/V ratios less than or equal to 0.05). This predominance of gymnosperm wood origin is evident for sediment samples that are primarily comprised of wood chips, such as Bucksport-1 (51 percent [%] organic carbon), as well as for mixtures of sediment and wood waste in which the organic carbon content ranges from 3 – 10 %.

Regarding C/N ratios, the percent organic carbon (50.8%) and the C/N ratio (111) for the Bucksport-1 sample confirms that the sediment sample is enriched in wood waste (**Table 3, Figure 3**). The C/N ratio at Bucksport-21 (61.3) also suggests enrichment in wood waste. In the other four samples analyzed, C/N ratios do not clearly indicate a high carbon/low nitrogen wood signature. For these 4 samples with lower C/N ratios, the relative lignin abundance – as indicated by the Λ_8 values above 5 mg lignin / 100 mg carbon - and the low S/V and C/V ratios suggest organic carbon derived from wood waste of gymnosperm origin.

Overall, these data support the hypothesis that the organic carbon in the six Penobscot River estuary sediment samples analyzed is predominantly derived from wood waste of gymnosperm origin.

DISCUSSION

Lignin oxidation products are a useful tool for determining the origins of organic carbon in Penobscot River sediments. Analysis of six sediment samples provides evidence that organic carbon in these samples is predominantly derived from wood waste. These six samples are from unconsolidated surface sediments that have been characterized as a component of the mobile sediment pool. Although results presented in this Technical Memorandum suggest enrichment in terrestrially-derived wood waste, they do not necessarily suggest that all organic carbon in the mobile sediment pool is predominantly terrestrially-derived.

Follow-up investigations of the mobile sediment pool carried out under WO 4A-020 and WO 4A-070 have confirmed the widespread distribution of wood waste in unconsolidated surface sediments in the estuary. If further confirmatory analysis of lignin biomarkers is necessary to refine this conclusion regarding the source of organic carbon in estuary sediments, analysis of frozen archived sediment samples could be undertaken. Lignin degrades slowly and analysis of frozen archived samples would be possible for another 1 – 2 years.

Beyond additional confirmatory sampling, another potential application of this tool is in characterizing sources of particulate matter accreting on the Mendall Marsh platform. The assessment of remedial alternatives for Mendall Marsh requires evaluating the recontamination potential of the marsh platform. That is, sediment accreting on the marsh platform likely comes from both within the estuary and from the upgradient watershed, two sources characterized by broadly different mercury concentrations. While the deposition of uncontaminated sediments from upgradient sources may facilitate marsh recovery, deposition of sediment transported from elsewhere in the estuary may slow marsh recovery. To the extent that “new” particulate matter from upgradient has a distinct lignin signature compared to particulate matter recirculating and redistributing within the estuary, this comparative analysis of source “fingerprints” could be applied to materials captured in sediment traps placed within the marsh and used to quantify the relative contribution of these sources of organic matter to Mendall Marsh. The extent to which this distinction exists between source fingerprints for “new” organic matter versus recirculated organic matter in the Penobscot River estuary is unknown.

A third potential application for the use of lignin biomarkers is in characterizing the geochemical fate of wood waste in the estuary. Changes in the ratios of acidic to aldehyde forms of S and V compounds are indicative of lignin oxidative breakdown and have been used as indicators for fungal degradation of wood waste (Benner et al. 1986; Hedges et al., 1988; Opsahl and Benner, 1995). Specifically, with regard to the p-hydroxy breakdown products shown in **Figure 1**, the ratio of p-hydroxy phenols (P) to the sum of S and V phenols provides evidence of terrestrial decomposition while exposed to air (Jex et al 2014; Bianchi et al. 2016). Understanding degradation pathways for wood waste is important for assessing whether and how the food web in the estuary has been affected by the presence of this distinct (and substantial) carbon source. Although bacteria can degrade lignin (Benner et al. 1986), in general, wood waste is degraded by brown and white rot fungi (Blanchette 2000), and a significant increase in wood waste and its degraders may influence the abundance and distribution of organisms that feed on fungi.

While this food web question is important for assessing a fate, transport and biological exposure pathway for wood waste enriched in total mercury and methyl mercury, it is not essential to the goals of scoping and costing a remedy. Moreover, because of the slow rate of wood degradation in the aquatic environment, this type of study would take years and extend beyond the timeline for the Phase III Engineering Study. Preliminary analysis of the sediment samples analyzed for this study does suggest that the samples with the highest relative lignin contribution (to overall sample organic content) also contained the freshest (least degraded) lignin (Smith 2017; data not shown). Smith (2017) interpret this conclusion as suggesting that within the Penobscot River estuary, lignin-rich wood waste is being diluted by relatively lignin-poor new sediment. This new sediment likely originated from soils in the upgradient watershed.

The organic carbon study scoped under WO 04A-010 also proposed the use of carbon-14 dating as an indicator of wood waste origin. This approach was predicated on the assumption that discharges of wood waste to the Penobscot River ceased decades ago, and that mature trees harvested more than fifty years ago would have a carbon age of at least 75 years. However, discussions with the radiological laboratory led us to conclude that modern day releases of man-made carbon-14 would confound data interpretation because sediment and wood waste recirculating within the estuary are not isolated from modern carbon-14 releases (such as those resulting from aboveground nuclear testing). For this reason, the carbon-14 analysis was not requested.

In conclusion, the data presented in this preliminary study demonstrate that lignin oxidation products are useful diagnostic tools for differentiating between sources of organic carbon. Applying these tools to Penobscot River estuary sediment samples supports the conclusion – consistent with data from other components of the Phase III Engineering Study – that organic carbon in Penobscot River estuary sediment is, in places, dominated by a terrestrially-derived source comprised of wood waste. Two potential additional applications of this tool – identifying sources of material depositing in Mendall Marsh and monitoring the geochemical fate and degradation rate of wood waste – are relevant to both remedial investigations and the assessment of system recovery rates, although the field work and analysis required for these applications would extend beyond the duration of the Phase III Engineering Study. These additional applications of this diagnostic tool are therefore not recommended for this project.

REFERENCES

- Amec Foster Wheeler (Amec). 2018. Analytical Methods Comparison Technical Memorandum. Penobscot River Phase III - Engineering Study, Penobscot River, Maine. February 2018.
- Benner, R., Moran, M. A., Hodson, R. E. 1986. Biogeochemical cycling of lignocellulosic carbon in marine and freshwater ecosystems: relative contributions of procaryotes and eucaryotes. *Limnology and Oceanography* 31: 89-100.
- Bianchi, T. S., Schreiner, K. M., Smith, R. W., Burdige, D. J., Woodard, S., Conley, D. J. 2016. Redox effects on organic matter storage in coastal sediments during the Holocene: A biomarker/proxy perspective. *Annual Review of Earth and Planetary Sciences* 44: 295-319.
- Hedges, J. I., Parker, P. L. 1976. Land-derived organic matter in surface sediments from the Gulf of Mexico. *Geochimica et Cosmochimica Acta*. 40: 1019-1029.
- Hedges, J. I., & Ertel, J. R. (1982). Characterization of lignin by gas capillary chromatography of cupric oxide oxidation products. *Analytical Chemistry*, 54(2), 174-178.
- Hedges, J. I., & Mann, D. C. (1979). The characterization of plant tissues by their lignin oxidation products. *Geochimica et Cosmochimica Acta*, 43(11), 1803-1807.
- Hedges, J. I., & Stern, J. H. (1984). Carbon and nitrogen determinations of carbonate-containing solids. *Limnology and oceanography*, 29(3), 657-663.
- Hedges, J. I., Blanchette, R. A., Weliky, K., & Devol, A. H. (1988). Effects of fungal degradation on the CuO oxidation products of lignin: a controlled laboratory study. *Geochimica et Cosmochimica Acta*, 52(11), 2717-2726.
- Jex, C. N., Pate, G. H., Blyth, A. J., Spencer, R. G. M., Hernes, P. J., Khan, S. J., Baker, A. 2014. Lignin biogeochemistry: from modern processes to Quaternary archives. *Quaternary Science Reviews* 87: 46-59.
- Kepkey, P.E., Jellet, J.F. & Niven, S.E.H. 1997. Respiration and the carbon-to-nitrogen ratio of a phytoplankton bloom. *Marine Ecology Progress Series* 150: 249 – 261.
- Louchouart, P., Amon, R. M., Duan, S., Pondell, C., Seward, S. M., & White, N. (2010). Analysis of lignin-derived phenols in standard reference materials and ocean dissolved organic matter by gas chromatography/tandem mass spectrometry. *Marine Chemistry*, 118(1), 85-97.
- Meyers, P. A., Leenheer, M. J., Bourbonniere, R. A. 1995. Diagenesis of vascular plant organic matter components during burial in lake sediments. *Aquatic Geochemistry* 1: 35—52.
- Onstad, G. D., Canfield, D. E., Quay, P. D., & Hedges, J. I. (2000). Sources of particulate organic matter in rivers from the continental USA: lignin phenol and stable carbon isotope compositions. *Geochimica et Cosmochimica Acta*, 64(20), 3539-3546.

- Opsahl, S., & Benner, R. (1995). Early diagenesis of vascular plant tissues: lignin and cutin decomposition and biogeochemical implications. *Geochimica et Cosmochimica Acta*, 59(23), 4889-4904.
- Prahl, F. G., Ertel, J. R., Goni, M. A., Sparrow, M. A., Eversmeyer, B. 1994. Terrestrial organic carbon contributions to sediments on the Washington margin. *Geochimica et Cosmochimica Acta* 58: 3035-3048.
- Smith, R. W., Bianchi, T. S., Allison, M., Savage, C., & Galy, V. (2015). High rates of organic carbon burial in fjord sediments globally. *Nature Geoscience*, 8(6), 450-453.
- Smith, R.W. 2017. A peer-review of “Analysis of Lignin Oxidation Products in Sediments”, a Penobscot River Phase III Engineering Study in Bangor, Maine. [included as Attachment B to this Technical Memorandum].
- Thevenot, M., Dignac, M. F., & Rumpel, C. (2010). Fate of lignins in soils: a review. *Soil Biology and Biochemistry*, 42(8), 1200-1211.

Tables

- 1 Summary of Elemental and Lignin Oxidation Product Indicators Used in This Study
- 2 Sample Identifiers, Dates Collected, Field Sample IDs and Total Mercury Concentrations of Samples Used in This Study
- 3 Summary of Key Results of Carbon (%OC), Nitrogen (%N), Carbon / Nitrogen Ratios (C/N), and Diagnostic Lignin Oxidation Product Ratios (S/V and P/V)

Figures

- 1 Chemical Structures of Three Major Classes of Lignin Oxidation Products (Vanillyl, Syringyl, and Cinnamyl) plus p-Hydroxy Phenol Degradation Products
- 2 Ratios of S to V, C to V, and Lignin Abundance as Indicated by Λ_8
- 3 Total Organic Carbon Concentrations and Carbon to Nitrogen Ratios.

Attachments

Attachment A - Analytical Laboratory Report from Global Aquatic Research

Attachment B - Global Aquatic Research LLC Peer Review

TABLES

TABLE 1

**SUMMARY OF ELEMENTAL AND LIGNIN OXIDATION PRODUCT INDICATORS
 USED IN THIS STUDY**

Penobscot River Phase III Engineering Study
 Penobscot River Estuary, Maine

Organic Carbon Source	Lignin Oxidation Product Indicator	Carbon / Nitrogen Ratio Indicator
Particulate organic matter from typical U.S. rivers ¹	$0.5 < \Lambda_8 < 3.2$	11 +/- 2
Fresh wood ¹	$5 < \Lambda_8 < 25$	Not Presented
Gymnosperm (soft wood, plants with seeds in cones) ^{2,3}	$S / V < 0.3$	C/N > 100
Gymnosperm needles ⁴	Not Presented	30 - 60
Angiosperm (hard wood, plants with seeds in fruiting bodies) ^{2,3}	$S / V > 0.3$	C/N > 100 (hardwoods) C/N < 50 (vascular plants)
Woody tissue ⁵	$C/V < 0.05$	Not Presented
Soft (non-woody) tissue ^{3,5}	$C / V > 0.2$	C/N < 100

Notes:

1. Onstad et al. (2000)
2. C/V and S/V ratios Thevenot et al. 2010
3. C/N ratios: <https://www.planetnatural.com/composting-101/making/c-n-ratio>, last accessed 11/20/2017
4. Meyers et al. (1995)
5. Jex et al. (2014)

TABLE 2

SAMPLE IDENTIFIERS, DATES COLLECTED, FIELD SAMPLE IDS AND TOTAL MERCURY CONCENTRATIONS OF SAMPLES USED IN THIS STUDY.

Penobscot River Phase III Engineering Study
Penobscot River Estuary, Maine

Label	Date Sampled	Field Sample ID	Total Hg¹ (ng/g)
Bucksport-2	6/9/2016	T_Bu2_060916_SED_G	1,000
Bucksport-3	6/9/2016	T-Bu3_060916_SED_G	901
Bucksport-1	6/10/2016	T_Bu1_061016_SED_G_WC	950
Bucksport-21	6/10/2016	T_Bu21R_061016_SED	324
Gross Point	6/9/2016	T_GP33H_060916_SED_C	274
Hampden	6/9/2016	HA1_060916_SED_G	1,220

Notes:

1. Method 1631 with hot aqua regia
2. ng/g = nanograms per gram

TABLE 3

**SUMMARY OF KEY RESULTS OF CARBON (%OC), NITROGEN (%N),
CARBON/NITROGEN RATIOS (C/N), AND DIAGNOSTIC LIGNIN OXIDATION PRODUCT
RATIOS (S/V AND P/V).**

Penobscot River Phase III Engineering Study
Penobscot River Estuary, Maine

Label	% OC	% N	C/N	Λ_8	S/V	C/V
Bucksport-2	6.9	0.3	21.9	23.7	0.10	0.03
Bucksport-3	9.8	0.4	24.0	21.9	0.11	0.03
Bucksport-1 (Wood Chips)	50.8	0.5	111	9.80	0.05	0.06
Bucksport-21	2.9	0.0	61.3	7.15	0.03	0.05
Gross Point	4.1	0.1	28.4	9.05	0.12	0.04
Hampden	8.9	0.5	18.5	17.3	0.14	0.05

FIGURES

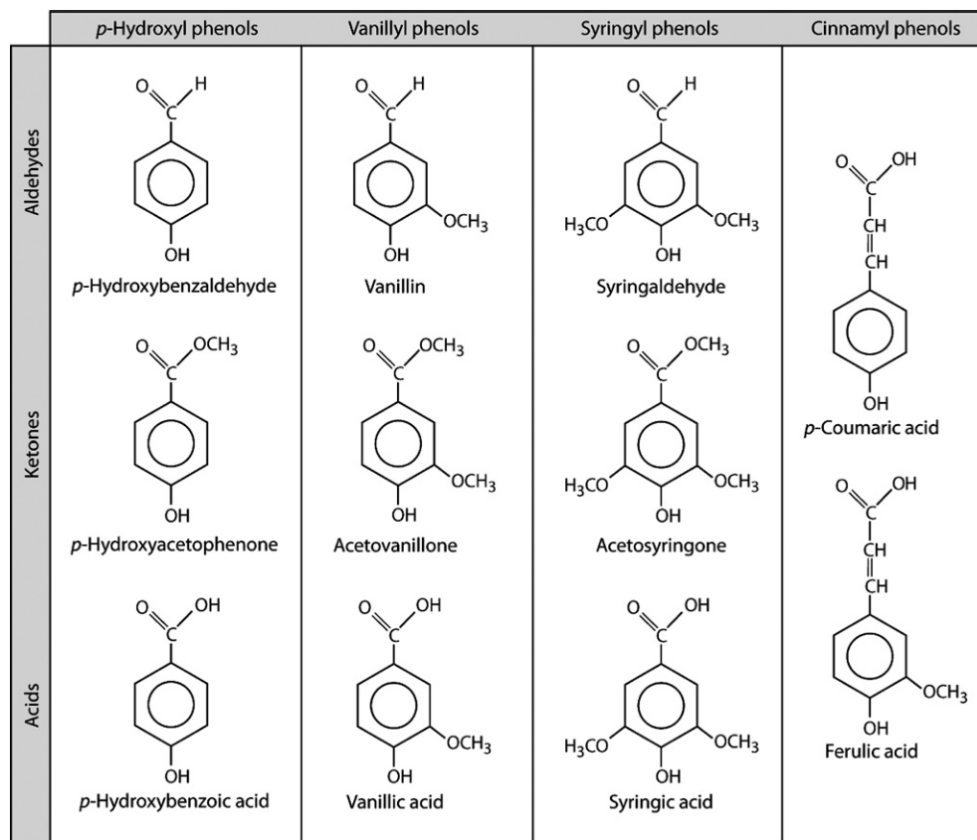


Figure 1
Chemical Structures of Three Major Classes of Lignin Oxidation Products (Vanillyl, Syringyl, and Cinnamyl) plus *p*-Hydroxyl Phenol Degradation Products

Analysis of Lignin Oxidation Products in Sediments
 Penobscot River Phase III Engineering Study

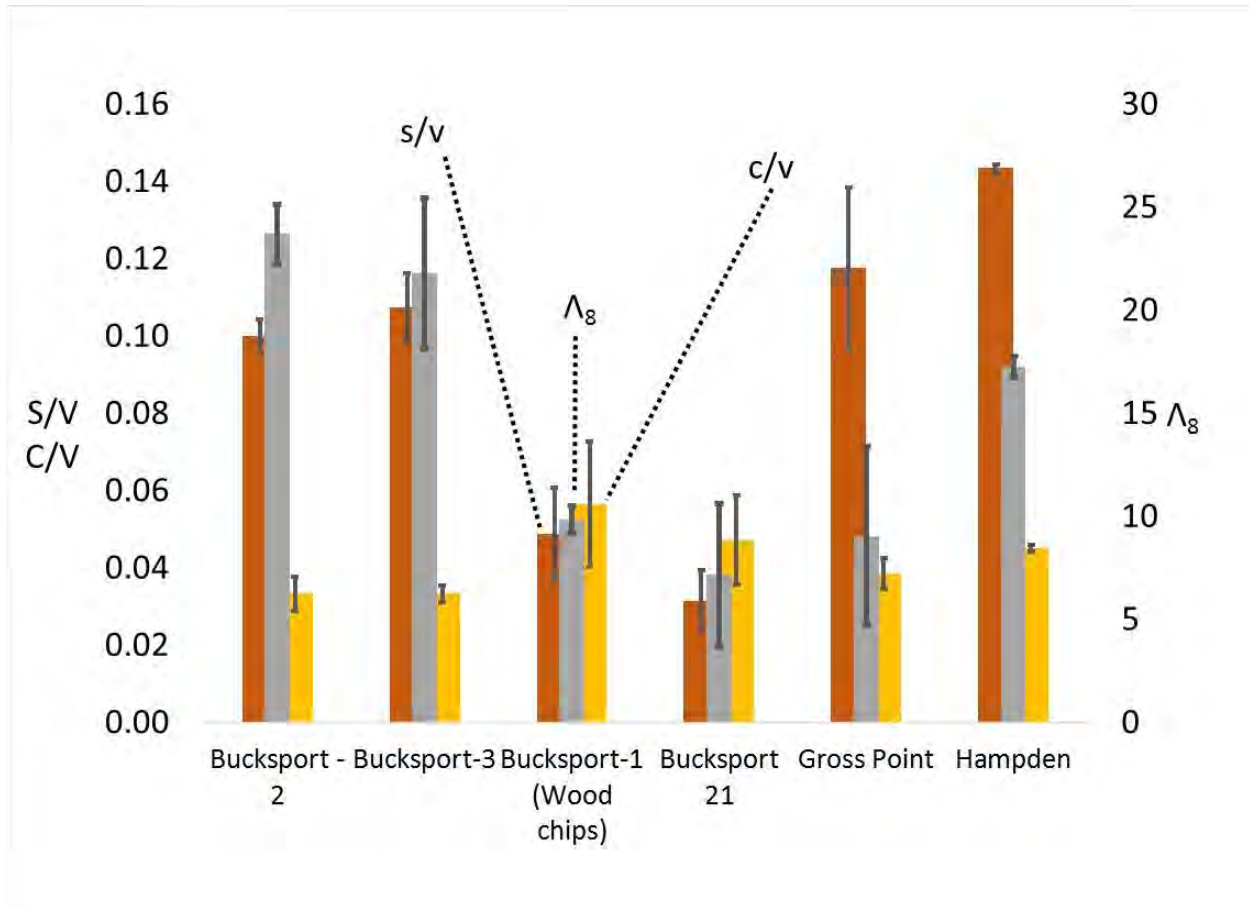


Figure 2
Ratios of S to V, C to V, and Lignin Abundance as Indicated by Λ_8

Analysis of Lignin Oxidation Products in Sediments
Penobscot River Phase III Engineering Study

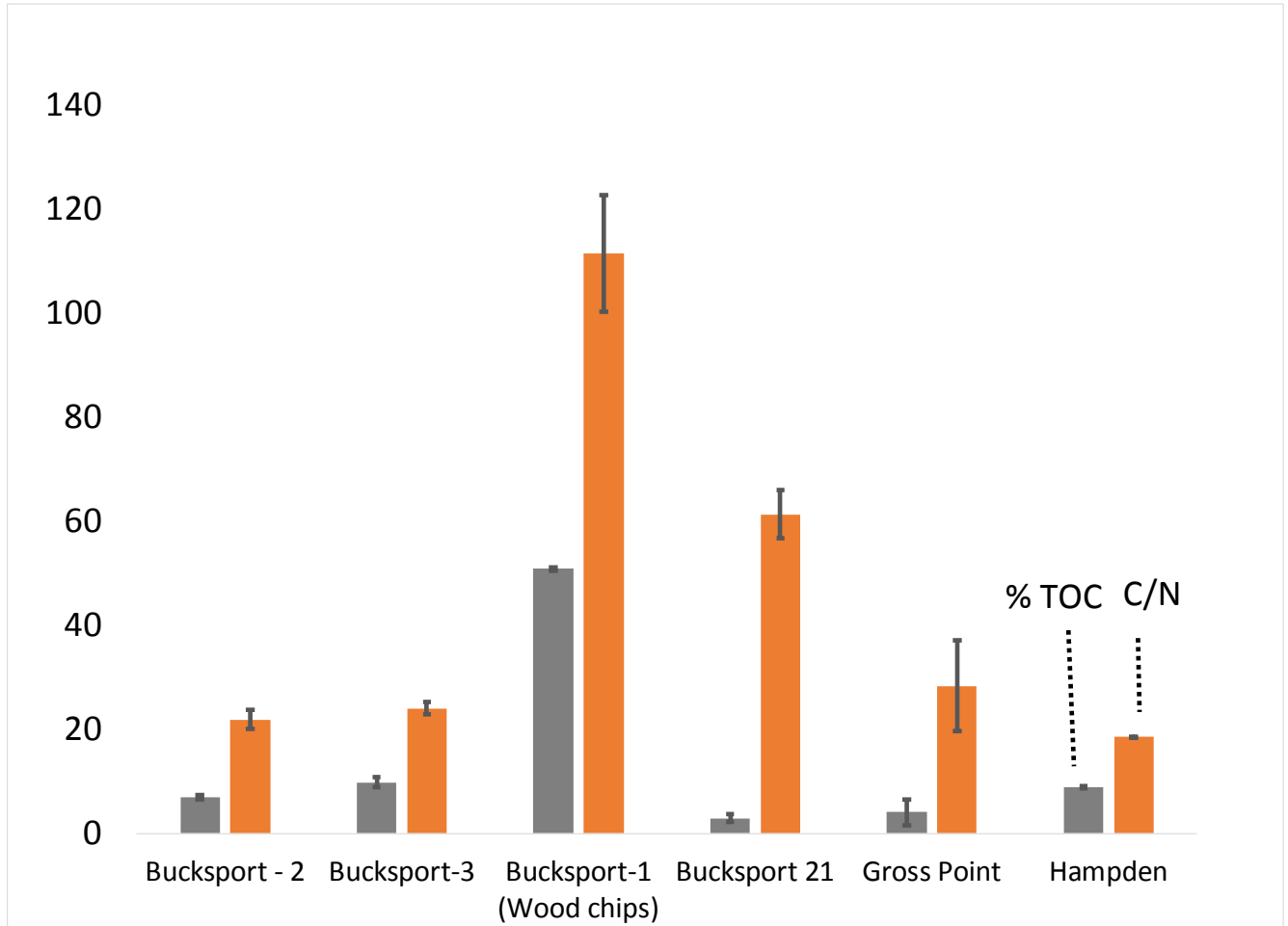


Figure 3
Total Organic Carbon Concentrations and Carbon / Nitrogen Ratios

Analysis of Lignin Oxidation Products in Sediments
Penobscot River Phase III Engineering Study

ATTACHMENT A
ANALYTICAL LABORATORY REPORT FROM GLOBAL AQUATIC RESEARCH

Attachment A
 Analytical Lab Report From Global Aquatic Research

Amec ID



Date Sampled	Amec ID
6/9/2016	T_Bu2_060916_SED_G
6/9/2016	T_Bu2_060916_SED_G
6/9/2016	T_Bu2_060916_SED_G
6/9/2016	T-Bu3_60916_SED_G
6/9/2016	T-Bu3_60916_SED_G
6/9/2016	T-Bu3_60916_SED_G
6/10/2016	T_Bu1_0610016_G_WC
6/10/2016	T_Bu1_0610016_G_WC
6/10/2016	T_Bu1_0610016_G_WC
6/10/2016	T_Bu21R_061016_SED
6/10/2016	T_Bu21R_061016_SED
6/10/2016	T_Bu21R_061016_SED
6/9/2016	T+GP33H_060916_SED_C
6/9/2016	T+GP33H_060916_SED_C
6/9/2016	T+GP33H_060916_SED_C
6/9/2016	HA1_060916_SED_G
6/9/2016	HA1_060916_SED_G
6/9/2016	HA1_060916_SED_G

EFGS LAB ID (Sample #)	Common Name
1702092-07 (#1)	Bucksport - 2
1702092-08 (#2)	Bucksport - 2
1702092-09 (#3)	Bucksport - 2
1702092-10 (#4)	Bucksport-3
1702092-11 (#5)	Bucksport-3
1702092-12 (#6)	Bucksport-3
1702092-13 (#7)	Bucksport-1 (Wood chips)
1702092-14 (#8)	Bucksport-1 (Wood chips)
1702092-15 (#9)	Bucksport-1 (Wood chips)
1702092-16 (#10)	Bucksport 21
1702092-17 (#11)	Bucksport 21
1702092-18 (#12)	Bucksport 21
1702092-19 (#13)	Gross Point
1702092-20 (#14)	Gross Point
1702092-21 (#15)	Gross Point
1702092-22 (#16)	Hampden
1702092-23 (#17)	Hampden
1702092-24 (#18)	Hampden

EA-IRMS				Lignin - CuO Method																													
Elemental Analysis			Isotopes	Lignin Abundance				Lignin Source Proxies				Lignin Breakdown Proxies				Benzoic Acids (B)			Vanillyl Lignin Phenols (V)				Syringyl Lignin Phenols (S)				Cinnamyl Lignin Phenols (C)			P-hydroxy Phenols (P)			
%OC	%TN*	C/N*	δ ¹³ C	Λ ₈	Σ ₈	S/V	C/V	P/V	PON/P	[Ad/Al] _v	[Ad/Al] _s	3,5:V	p/(v+s)	ΔB	Bd	3,5-Bd	ΔV	VAL	VAD	VON	ΔS	SAL	SAD	SON	ΔC	CAD	FAD	ΔP	PAL	PAD	PON		
7.23	0.34	21.2	-26.4	23.4	16.9	0.10	0.03	0.04	0.10	0.23	0.30	0.009	0.032	0.29	0.11	0.17	19.3	13.5	3.12	2.77	2.00	1.23	0.37	0.40	0.61	0.15	0.46	0.68	0.44	0.18	0.06		
7.06	0.30	23.8	-26.4	22.5	15.9	0.10	0.04	0.04	0.10	0.22	0.31	0.010	0.036	0.29	0.11	0.18	18.5	13.0	2.91	2.61	1.87	1.14	0.35	0.37	0.70	0.22	0.48	0.73	0.46	0.20	0.07		
6.48	0.31	20.7	-26.5	25.1	16.2	0.10	0.03	0.03	0.10	0.22	0.31	0.009	0.030	0.32	0.12	0.20	20.8	14.6	3.24	3.04	2.00	1.22	0.38	0.40	0.63	0.16	0.47	0.69	0.44	0.18	0.07		
10.9	0.43	25.2	-26.3	18.2	19.8	0.12	0.03	0.03	0.08	0.24	0.33	0.010	0.030	0.24	0.09	0.15	14.8	10.3	2.47	2.11	1.73	1.03	0.34	0.35	0.49	0.12	0.37	0.50	0.31	0.15	0.04		
9.42	0.40	23.6	-27.0	22.5	21.2	0.10	0.03	0.03	0.09	0.23	0.31	0.009	0.029	0.27	0.11	0.16	18.6	13.0	2.97	2.64	1.90	1.15	0.36	0.39	0.58	0.15	0.43	0.60	0.37	0.17	0.06		
9.23	0.40	23.2	-26.2	24.6	22.7	0.10	0.04	0.03	0.09	0.23	0.31	0.008	0.028	0.28	0.12	0.16	20.2	14.1	3.31	2.84	2.09	1.27	0.40	0.42	0.71	0.15	0.56	0.62	0.39	0.17	0.05		
51.1	0.51	99.9	-26.5	10.2	52.1	0.04	0.05	0.10	0.11	0.33	0.50	0.013	0.100	0.15	0.03	0.11	8.78	5.73	1.86	1.18	0.34	0.18	0.09	0.07	0.43	0.02	0.41	0.91	0.60	0.22	0.10		
50.8	0.43	117	-26.6	10.1	51.4	0.06	0.07	0.11	0.10	0.34	0.50	0.014	0.106	0.16	0.04	0.12	8.36	5.38	1.84	1.13	0.50	0.27	0.13	0.10	0.61	0.02	0.59	0.94	0.55	0.29	0.09		
50.5	0.43	117	-26.7	9.17	46.3	0.05	0.05	0.10	0.10	0.34	0.50	0.015	0.093	0.16	0.04	0.12	7.84	5.07	1.73	1.05	0.37	0.20	0.10	0.07	0.37	0.02	0.36	0.77	0.48	0.22	0.07		
2.65	0.04	60.9	-26.2	9.83	2.61	0.02	0.04	0.11	0.11	0.20	0.39	0.017	0.109	0.20	0.06	0.14	8.70	6.29	1.24	1.16	0.20	0.12	0.05	0.04	0.31	0.02	0.29	0.97	0.72	0.15	0.10		
3.75	0.06	65.5	-26.1	3.80	1.42	0.04	0.05	0.11	0.05	0.22	0.48	0.028	0.110	0.10	0.03	0.07	2.43	1.72	0.38	0.32	0.09	0.05	0.02	0.01	0.13	0.01	0.12	0.28	0.21	0.05	0.01		
2.40	0.04	57.4	-26.4	7.81	1.88	0.03	0.05	0.13	0.11	0.20	0.33	0.021	0.127	0.14	0.04	0.11	5.02	3.61	0.71	0.69	0.17	0.10	0.03	0.04	0.26	0.01	0.24	0.66	0.49	0.09	0.07		
3.65	0.14	26.4	-25.1	7.07	2.58	0.11	0.04	0.05	0.05	0.25	0.36	0.016	0.046	0.11	0.04	0.07	4.28	2.93	0.74	0.61	0.47	0.28	0.10	0.09	0.18	0.04	0.14	0.22	0.15	0.06	0.01		
6.43	0.17	36.8	-25.1	6.61	4.25	0.14	0.03	0.06	0.06	0.26	0.39	0.012	0.053	0.07	0.03	0.05	3.93	2.67	0.70	0.56	0.54	0.32	0.12	0.10	0.14	0.02	0.11	0.24	0.17	0.05	0.01		
2.20	0.10	21.9	-26.0	13.5	2.96	0.10	0.04	0.06	0.10	0.22	0.30	0.012	0.056	0.18	0.07	0.10	8.22	5.75	1.25	1.22	0.85	0.53	0.16	0.16	0.32	0.07	0.26	0.50	0.34	0.11	0.05		
8.70	0.47	18.4	-26.5	17.7	15.4	0.14	0.04	0.04	0.11	0.24	0.30	0.013	0.036	0.21	0.08	0.13	10.4	7.18	1.71	1.55	1.48	0.92	0.28	0.29	0.46	0.15	0.31	0.43	0.25	0.13	0.05		
8.86	0.48	18.6	-26.6	17.1	15.2	0.14	0.05	0.04	0.08	0.24	0.31	0.013	0.036	0.21	0.08	0.13	10.1	6.92	1.64	1.50	1.44	0.88	0.27	0.28	0.46	0.15	0.31	0.42	0.25	0.13	0.03		
9.09	0.49	18.4	-26.6	16.9	15.3	0.14	0.05	0.04	0.11	0.24	0.31	0.013	0.038	0.20	0.08	0.12	9.88	6.79	1.61	1.49	1.43	0.88	0.27	0.27	0.45	0.14	0.31	0.43	0.25	0.12	0.05		

Notes:
 *N data (EA) lower than linear range of standards due to high C/N ratios

Syringyl 3 compounds
 Vanillyl 3 compounds
 Cinnamyl 2 Compounds

S/V low = gymnosperms

High C/V indicates soft plants

P hydroxyphenols are sources other than vascular plants

ATTACHMENT B
GLOBAL AQUATIC RESEARCH LLC PEER REVIEW



Global Aquatic Research LLC
Sodus, NY

A peer-review of “Analysis of Lignin Oxidation Products in Sediments,” a Penobscot River phase III engineering study in Bangor, Maine, by Amec Foster Wheeler.

Prepared by Richard W. Smith, Ph.D
December 11, 2017
President, Organic Geochemical Consultant
Global Aquatic Research LLC
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1) We assert that the dominant form of organic carbon in the samples analyzed is lignin-derived, based on the lambda-8 values.

a. Do the data support this conclusion?

Not for all of the samples. The units of Λ_8 (mg/100 mg OC) means it can be interpreted as %lignin-phenols of the organic carbon pool (w/w) in a sample. If oxidation efficiency is taken into account (the fraction of released phenols upon oxidation relative to the total mass of lignin present), we can convert this to total lignin as a percentage of organic carbon mass in a sample. Assuming a 30% oxidation efficiency for V phenols, a 90% oxidation efficiency for S phenols, and a 100% oxidation efficiency for C phenols (Benner et al. 1990), we have calculated the percent of the organic carbon pool in each sample, by mass, that is lignin. These numbers should be considered a rough estimate, as oxidation efficiency is typically poorly constrained

%total lignin contribution to organic carbon pool

Bucksport - 2	68 ± 4.0 %
Bucksport-3	62 ± 9.5 %
Bucksport-1 (Wood chips)	29 ± 1.6 %
Bucksport 21	18 ± 11 %
Gross Point	19 ± 8.3 %
Hampden	36 ± 1.0 %

The data show that only Bucksport-2 and Bucksport-3 have their organic carbon pool dominated by lignin. However, using the same conversion method, pure gymnosperm wood measured by Hedges and Mann (1979) contains on average 27 % lignin. Since the lignin/OC percentages of all samples analyzed here are greater than or equal to (within one standard deviation) that of gymnosperm wood, wood is therefore likely the dominant component of the OC pool. This supports the conclusion that organic carbon in the mobile pool is predominantly derived from the breakdown of wood waste. To definitively prove this, we would ideally constrain the range of end-member values in the region (i.e. wood waste, new sediments, marine production) and calculate contributions to the mobile pool based on mixing models.

b. Have we appropriately used literature citations to support the ranges and thresholds summarized in Table 1?

Onstad et al. (2000) was a good choice for Λ_8 values, particularly for riverine particulate organic matter. If you would like to extend the Λ_8 ranges to the gymnosperm, angiosperm, and soft tissue categories in the table, this data can be obtained from Table 1 in Hedges and Mann (1979) by summing the V, S, and C columns for each sample.

Meyers et al. (1995) is a great resource for gymnosperm C/N values and a reference you can include in the table. They don't have Eastern White Pine, but the data should still be applicable. They look at both modern and aged wood, and their values support the current C/N > 100 range you have for both gymnosperm and angiosperm wood, including aged material. For gymnosperm needles they have C/N in the range of about 30 to 60.

2) We assert that the dominant lignin source appears to be wood waste, based on S/V and C/V ratios.

a. Do the data support this conclusion?

It's more accurate to say that the S/V and C/V ratios along with the high Λ_8 values suggest that the dominant lignin source is wood waste. The S/V and C/V data, strictly speaking, show that the dominant lignin source is gymnosperm wood. Because lignin coming down the river could also have a gymnosperm woody signature, it is necessary to also rely on the Λ_8 ranges given for riverine particulate matter vs. wood in Table 1 to support wood waste as the lignin source. It is important to note that we would need to characterize suspended particulate matter in the river to say this for sure, as the regional signature may be different from the range in Onstad et al. (2000). Examining the breakdown proxies further may aid in associating the lignin pool to wood waste. I discuss this in the response to 4a.

b. Have we appropriately used literature citations to support the ranges and thresholds summarized in Table 1?

Hedges and Mann (1979) is a classic go-to reference S/V and C/V values, but for S/V ranges I prefer to use Thevenot et al. (2010) since they compile several studies, including Hedges and Mann (although Thevenot et al. is not a good reference for C/V ranges since their plot doesn't distinguish between hard vs. soft tissues). Their compilation suggests 0.3 is a more accurate cutoff for S/V values, with gymnosperm lignin < 0.3 and angiosperm lignin > 0.3. Even with this lower bar, all samples from Penobscot River sediments in this study have S/V ratios less than 0.3, providing concrete evidence for gymnosperm-derived material dominating the lignin pool.

The C/V ranges in Table 1 should be given separately for hard and soft-tissue, similarly to how S/V ranges were reported for both gymnosperm and angiosperm material. Using data from Jex et al. (2014) (which incorporates Hedges and Mann 1979 with Goni et al 1998), the C/V of wood is < 0.05 and the C/V of soft tissues is > 0.2. Based on these C/V ranges, the lignin in river sediment samples here are nearly indistinguishable from wood lignin.

3) We make some suggestions about potential future applications.

a. Your thoughts and comments on this would be appreciated

The application to the Mendall Marsh is a good one, and within the scope of this method. New (riverine derived) sediments will have a distinct lignin signature from wood waste. River sediments, which will presumably be a mix of gymnosperm wood, needles, soils, and to a lesser extent autochthonous production, will have lower Λ_8 values (dilution of lignin rich by lignin poor material) and higher C/V ratios (from the contribution of needles) than wood waste. If the lignin signature of both wood waste and riverine sediment end-members are characterized, their relative contributions to the mobile pool and also to the Mendall Marsh can be quantified with mixing models. This type of organic carbon source attribution could be applied to either sediment traps in the marsh or in marsh sediment cores.

One of the described mechanisms in this section is a bit confusing. Specifically, the implication of the sentence "If, in reality, new watershed sediments mostly bypass the mobile pool, then the marsh may be capping in place by natural deposition of uncontaminated sediments" is unclear. If new sediments bypass the mobile pool, this could either mean that they are delivered directly to the wetland (and

hence the capping with uncontaminated sediments you mention), or instead that they are delivered elsewhere (i.e. exported) and the wetland instead receives contributions from a more contaminated mobile pool that is not diluted by new sediments. An extra sentence or two here detailing the proposed mechanism would help clarify.

4) Are there any other important features of the data worth discussing?

The relationship between degradation proxies and lignin abundance is very interesting. This is discussed below in the second paragraph of the response to 4a.

a. We don't have enough experience with the p-hydroxy breakdown products to speculate on what they might mean.

p-hydroxy (P) phenols are simpler in structure than S and V phenols, containing no methoxy groups (S phenols have two and V phenols have one). P phenols are produced to some degree from the oxidation of fresh lignin, but their concentration increases when lignin becomes demethylated by fungi in terrestrial environments (Dittmar and Lara 2001, Bianchi et al. 2016, Jex et al. 2014). As such, the P/(S+V) ratio can be used as an indicator of lignin breakdown in subaerial environments. This can be useful as Ad/Al ratios increase with all oxidative lignin alteration, including UV exposure and subaqueous bacterial oxidation as well as fungal breakdown. However, P phenols are also produced by aquatic algae (Hedges and Parker 1976), further complicating their interpretation.

A preliminary workup of the data shows a significant inverse linear relationship between P/(V+S) ratios and Λ_8 values ($R^2 = 0.60$), suggesting the samples with the highest relative lignin contributions to their OC pool also contained the freshest lignin. This is also supported by similar relationships with other lignin breakdown proxies, i.e. Λ_8 vs Ad/Als ($R^2 = 0.46$) and Λ_8 vs. 3,5:V ($R^2 = 0.63$), with the exception of Ad/Alv ratios which show no correlation with lignin abundance. Interpreting these relationships without characterization of soils in the watershed and riverine particulate organic matter is speculative, mainly because we don't know how altered these pools of lignin are compared to wood waste. However, the strongest relationships observed here are between Λ_8 and specifically the terrestrial breakdown proxies; P/(V+S), which increases with fungal degradation, and 3,5:V, which increases with humification during soil formation. What we are probably seeing here is the dilution of lignin-rich wood waste by relatively lignin-poorer new sediments, the latter which have a significant soil component. This supports your initial interpretation that elevated Λ_8 values in the mobile pool are an indication of the dominance of wood waste lignin, as opposed to just generally being lignin from gymnosperm wood.

b. We don't necessarily want or need to say more than what we have about how breakdown products can be used to identify degradation mechanisms

I think this is a good approach. Based on the above analysis my recommendation would be to instead briefly state the relationship between terrestrial lignin breakdown proxies and lignin abundance, to further support that we can qualitatively (and quantitatively through end-member characterization) separate new sediment from wood waste contributions to the mobile pool

c. But we probably have room for improvement in the way we briefly describe that potential application, and are open to any additional pertinent citations

While above I describe the application of breakdown proxies to source identification (confirming wood waste as the dominant contributor of lignin or organic material to the mobile pool), as you mention in the report there is the potential future application of using lignin breakdown proxies to examine the diagenetic fate of wood waste. To add to what you have, starting with the 2nd sentence of page 4 I suggest stating that Ad/Al ratios are indicative of all types of lignin oxidative breakdown (Benner et al. 1986, Hedges et al. 1988, Opsahl and Benner 1995), primarily fungal in terrestrial systems and bacterial and photochemical in marine systems, and that by comparing these to fungal specific indicators such as the P/(S+V) it may be possible to examine specific degradation pathways (Bianchi et al. 2016)

Additional Comments:

Section 1.0, 2nd paragraph – Louchouart et al. 2010 is a great methods paper and it's what I use to calibrate my NIST standards. However, for the statement '...lignin in aquatic systems is an unambiguous indicator of terrigenous organic matter,' I would substitute it with or also include Hedges and Parker (1976), and Prahl et al. (1994)

Section 1.0 5th paragraph – It may be a good idea to mention that C/N ratios are also influenced by signatures from marine production (C/N values ≈6.7). That's why lignin is a particularly important as a tracer of plant types compared to bulk elemental proxies.

Section 2.0 2nd paragraph – typo in the word "under."

Section 2.0 3rd paragraph – The EA-IRMS method should mention that the samples were decarbonated with acid fumigation, and therefore the isotopes were measured specifically on the organic carbon fraction. Suggested change – "Analysis of organic carbon and nitrogen stable isotopes was performed by elemental analysis isotope ratio mass spectrometry (EA-IRMS) after decarbonation via acid fumigation according to the method of Hedges and Ertel (1982) as modified...."

Section 4.0 4th paragraph – Change to "this type of study would likely take years..."

Section 4.0 4th paragraph – In estuarine and marine systems, bacteria can also act as substantial degraders of lignin (Benner et al. 1986).

Section 4.0, 5th paragraph – In the 2nd to last sentence, should this read "...because the mobile pool is not a sedimentary environment that was isolated from modern carbon-14"? It seems as though the second 'not' should be removed

Additional References

Benner, R., Moran, M. A., Hodson, R. E. 1986. Biogeochemical cycling of lignocellulosic carbon in marine and freshwater ecosystems: relative contributions of procaryotes and eucaryotes. *Limnology and Oceanography* 31, 89-100.

Benner, R., Weliky, K., Hedges, J. I. 1990. Early diagenesis of mangrove leaves in a tropical estuary: Molecular-level analyses of neutral sugars and lignin-derived phenols. *Geochimica et Cosmochimica Acta* 54, 1991-2001.

Bianchi, T. S., Schreiner, K. M., Smith, R. W., Burdige, D. J., Woodard, S., Conley, D. J. 2016. Redox effects on organic matter storage in coastal sediments during the Holocene: A biomarker/proxy perspective. *Annual Review of Earth and Planetary Sciences* 44, 295-319.

Dittmar, T., Lara, R. J. 2001. Molecular evidence for lignin degradation in sulfate-reducing mangrove sediments (Amazonia, Brazil). *Geochimica et Cosmochimica Acta* 65, 1417-1428.

Hedges, J. I., Parker, P. L. 1976. Land-derived organic matter in surface sediments from the Gulf of Mexico. *Geochimica et Cosmochimica Acta* 40, 1019-1029.

Jex, C. N., Pate, G. H., Blyth, A. J., Spencer, R. G. M., Hernes, P. J., Khan, S. J., Baker, A. 2014. Lignin biogeochemistry: from modern processes to Quaternary archives. *Quaternary Science Reviews* 87, 46-59.

Meyers, P. A., Leenheer, M. J., Bourbonniere, R. A. 1995. Diagenesis of vascular plant organic matter components during burial in lake sediments. *Aquatic Geochemistry* 1, 35—52.

Prahl, F. G., Ertel, J. R., Goni, M. A., Sparrow, M. A., Eversmeyer, B. 1994. Terrestrial organic carbon contributions to sediments on the Washington margin. *Geochimica et Cosmochimica Acta* 58, 3035-3048.

APPENDIX H

Mendall Marsh Elevation Assessment

DATE: 9 March 2018

TO: Eugene Shephard, PE, LEP- Portland, ME [207.775.5401]
Corry Platt, CEP – Durham, NC [919.381.9900]

FROM: Matt Martin – Durham, NC [919.765.9979]

SUBJECT: Mendall Marsh Elevation Zonation

Amec Foster Wheeler Project No. 3616166052.04A.4A085

Problem Formation:

Chapter eleven of the Phase II Study investigated total mercury trends in vegetative communities. This data is displayed in Figure 11-2-25 (shown below as **Figure 1**) and correlates vegetative communities with elevations in the marsh. This data shows indications of a potential trend in elevation and concentrations of total mercury.

Figure 1

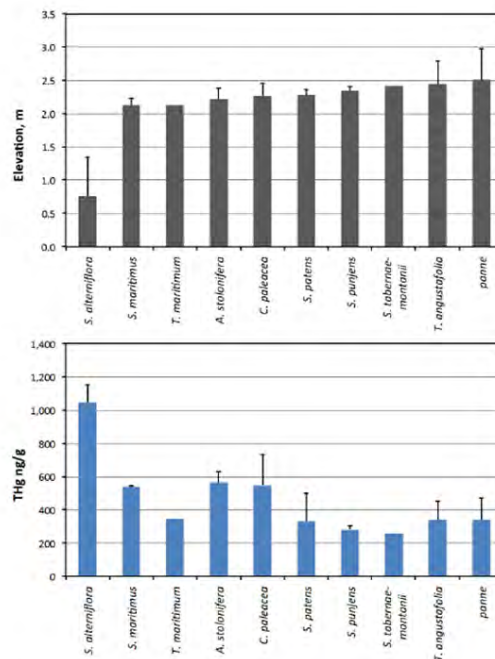


Figure 11-2-25. Average elevation (top) by dominant plant species in Mendall Marsh, and average total Hg concentration in surface (0-3 cm) soils. Elevations taken from LIDAR.

Hypothesis:

In the absence of a large-scale wetland vegetation study the following hypothesis was developed to further investigate concentrations of total mercury in Mendall Marsh.

-If vegetative communities are related to elevation then trends in total mercury can be seen in by elevation.

Geospatial Methods:

Methods for Extracting elevations from 2011 USGS Lidar: Northeast (NY to ME) DEM:

- Performing a **CON** on the USGS DEM for the specific groupings
- Performing a **Raster to Polygon** on each CON grouping

Discussion:

Data was subdivided by bioactive zone (0.0-0.5ft) and elevation, scatter plots and box & whisker plots were made to see if trends were present which are presented in **Figures 2-7**. When reviewing the graphs, it was apparent that several outliers were present that did not represent the general marsh. The outliers are listed below and shown on **Figures 8-10**. The first outlier population excluded from the data presentation was samples located south (upstream) of Fort Knox Road (ME 174). A second outlier population excluded is the 2016 marsh data, this data has a very low number of data points of the marsh platforms and was not collected in a similar method to the 2017 data and pre- 2016 data. The final outlier population removed is pre-2016 samples located in upland areas, these points were excluded as they are not representative of the marsh platforms. Two outlier populations were retained but are noted because they behave differently than cores at similar locations, these locations are located near slopes and are potentially artificially recorded at this elevation. With the presence of dense marsh tall grasses potentially interfering with LiDAR collection combined with data resolution of 0.5-foot vertical accuracy, artificial elevations are possible along slopping areas. Additional consideration was taken to include applicable tidal values into this analysis, listed below. Proof of concept trend analysis was completed on the marsh, this was done with average concentrations per whole number contour **Figure 11**.

Outlier populations:

- South (Upstream) of Fort Knox Road (ME 174) -Removed
- 2016 Marsh Data (9 data points) – Removed
- Pre-2016 upland samples- Removed
- MM-T4 (7.5' elevation) – Retained
- MM-T5 (7.5' elevation)- Retained

Calculated Tidal Elevations (Winterport, ME)

- Highest Annual Tide (HAT) – 8.80ft NAVD88
- Mean Higher High Water (MHHW)- 6.67ft NAVD88
- Mean High Water (MHW)- 6.22ft NAVD88

Uncertainties:

- Accuracy of the LiDAR data is the greatest uncertainty of this analysis, the data was collected in 2-meter grids and verified to a horizontal accuracy of 0.5-feet by USGS.

Marshes contain micro-morphologies and rapid bank changes in areas that are possibly missed at this data resolution.

- A second uncertainty is the horizontal accuracies of the data collection points, data was collected to 1-meter horizontal post 2016. Data before 2016 was collected by a variety of methods with varying horizontal accuracies.

Outcomes:

Three distinct total mercury populations were observed. Each of these populations have different periods of tidal inundation and are described below. The elevations are shown on **Figure 12**.

- 2.5-5.8ft NAVD88: Intends to generally characterize the approximate area of daily tidal inundation; located below the MHW line.
- 5.8- 7.5ft NAVD88: Intends to generally characterize the upper extent of the MHW line; includes the MHHW line with the entire zone located below the HAT.
- Greater than 7.5ft NAVD88: Intends to generally characterize the zone above the MHHW line but located below the HAT.

Attachments:

Figure 1- Figure 11-2-25 (Phase II, Chapter 11)

Figure 2- Total Mercury at core depth less than 6-inch, in 2017 and pre-2016, excluding samples south of Fort Knox Rd. in Prospect, ME

Figure 3- Total Mercury at core depth less than 6-inch, in pre-2016 samples, excluding samples south of Fort Knox Rd. in Prospect, ME

Figure 4- Total Mercury at core depth less than 6-inch, in 2017 samples, excluding samples south of Fort Knox Rd. in Prospect, ME

Figure 5- 2017 Total Mercury at core depths greater and less than 6-inch

Figure 6- 2017 Total Mercury at core depths less than 6-inch (Scatter Plot)

Figure 7- 2017 Total Mercury at core depths less than 6-inch (Box and Whisker)

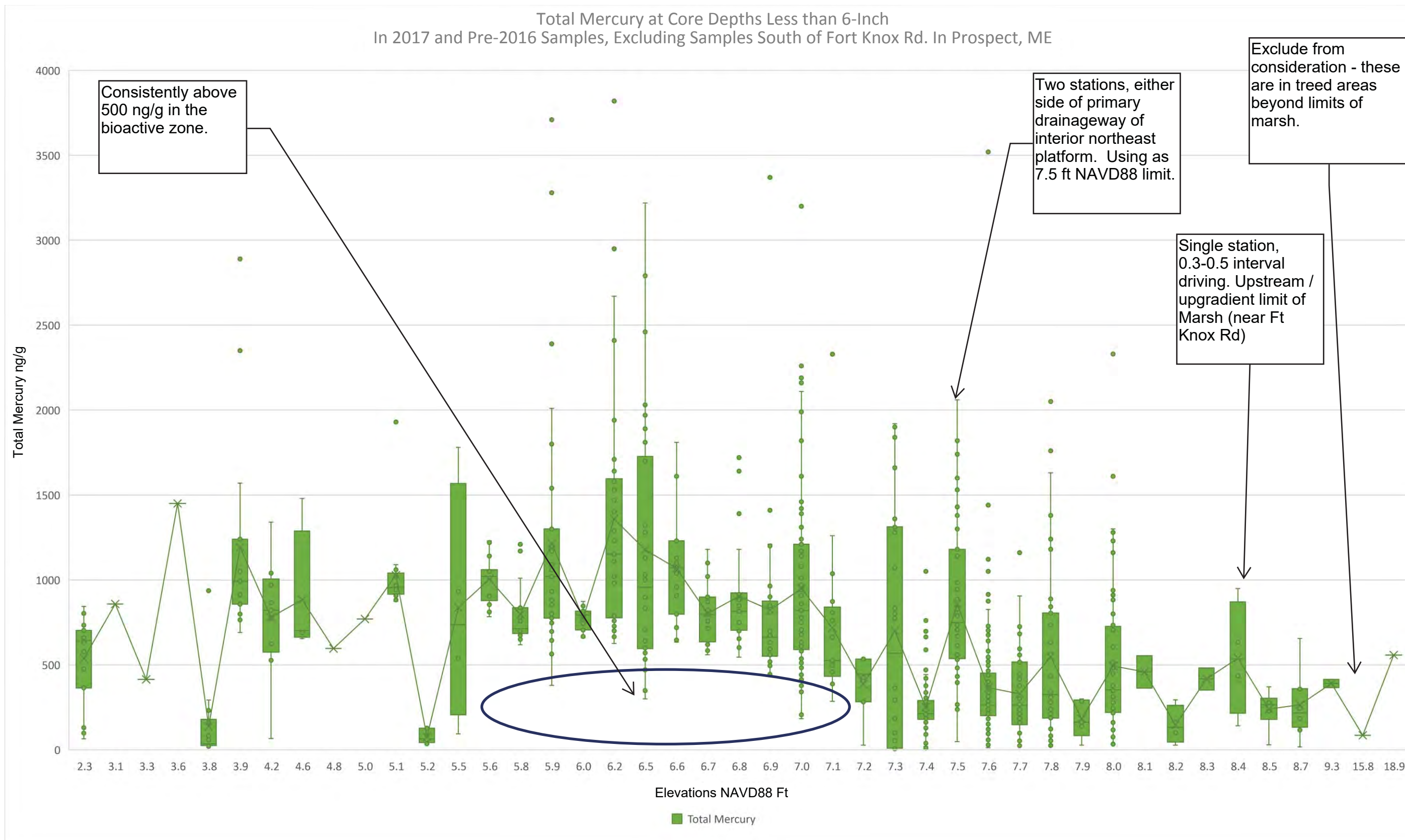
Figure 8- Total Mercury at core depth less than 6-inch, in 2017 and pre-2016 samples, including excluded cores

Figure 9- Total Mercury at core depth less than 6-inch, in pre-2016 samples, including excluded cores

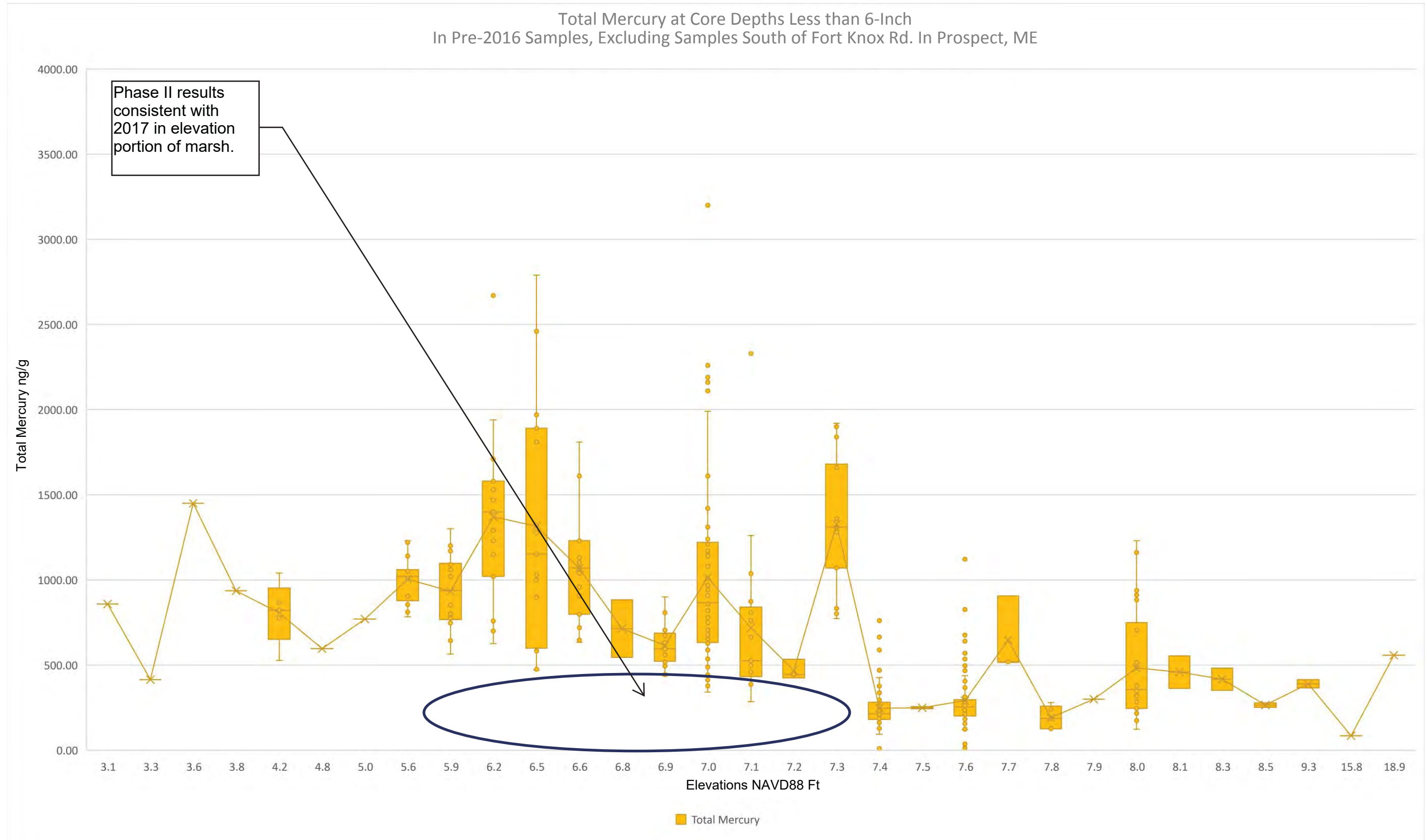
Figure 10- Total Mercury at core depths less than 6-inch, in 2016 samples only

Figure 11- Average Concentration Trends, whole number elevations

Figure 12- Mendall Marsh Elevations Map

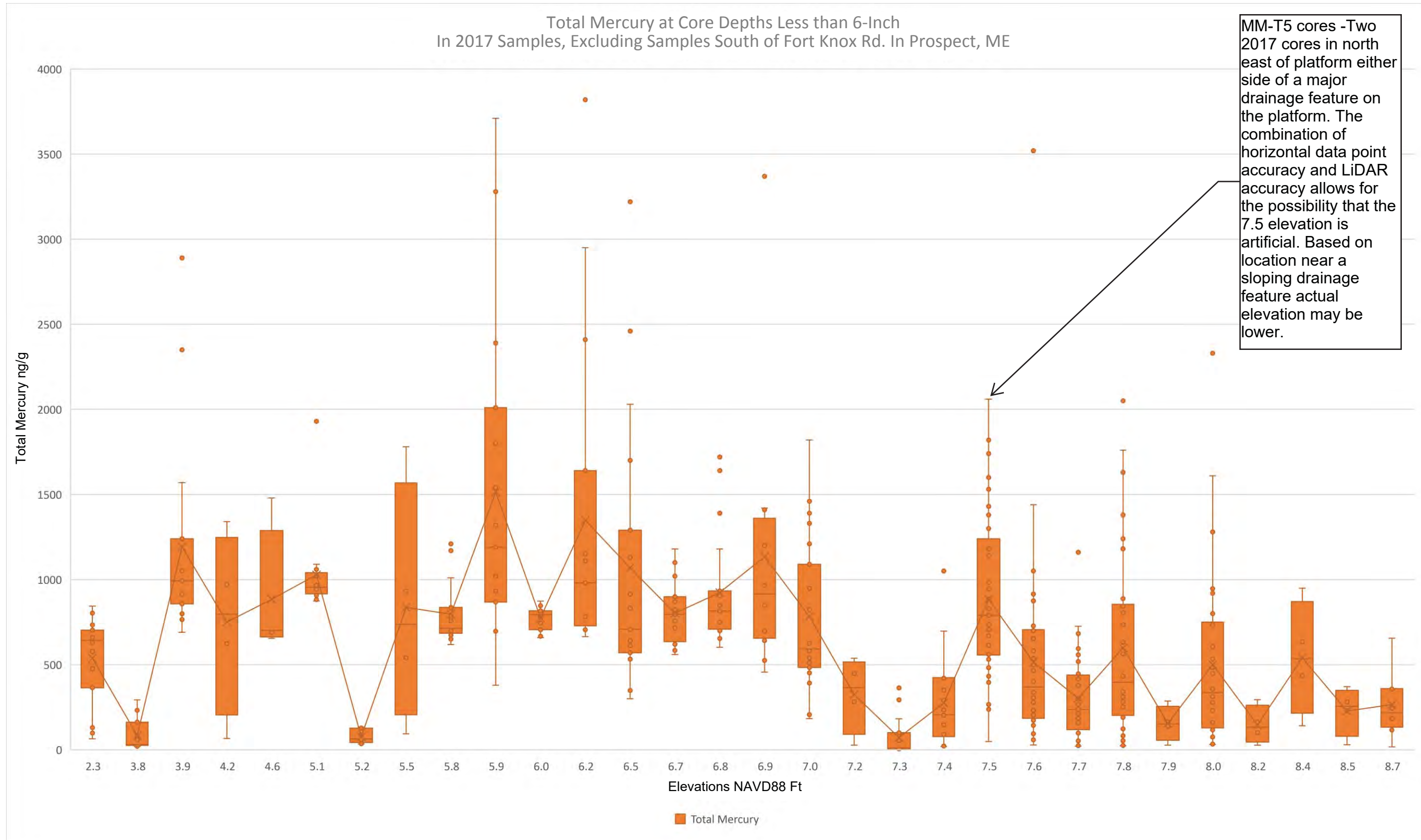


Prepared By: MKM
Checked By: KC



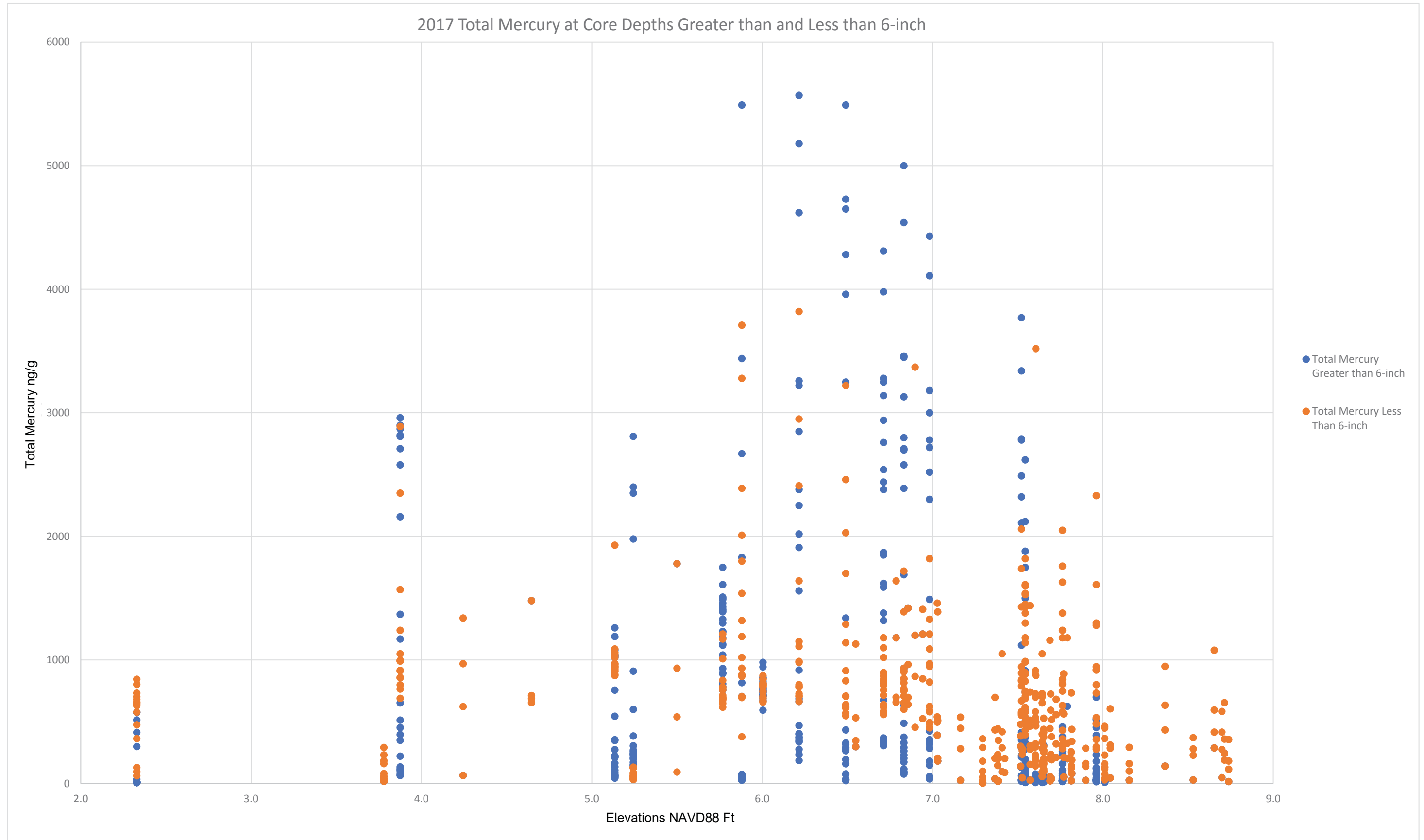
Prepared By: MKM
Checked By: KC

Figure 4



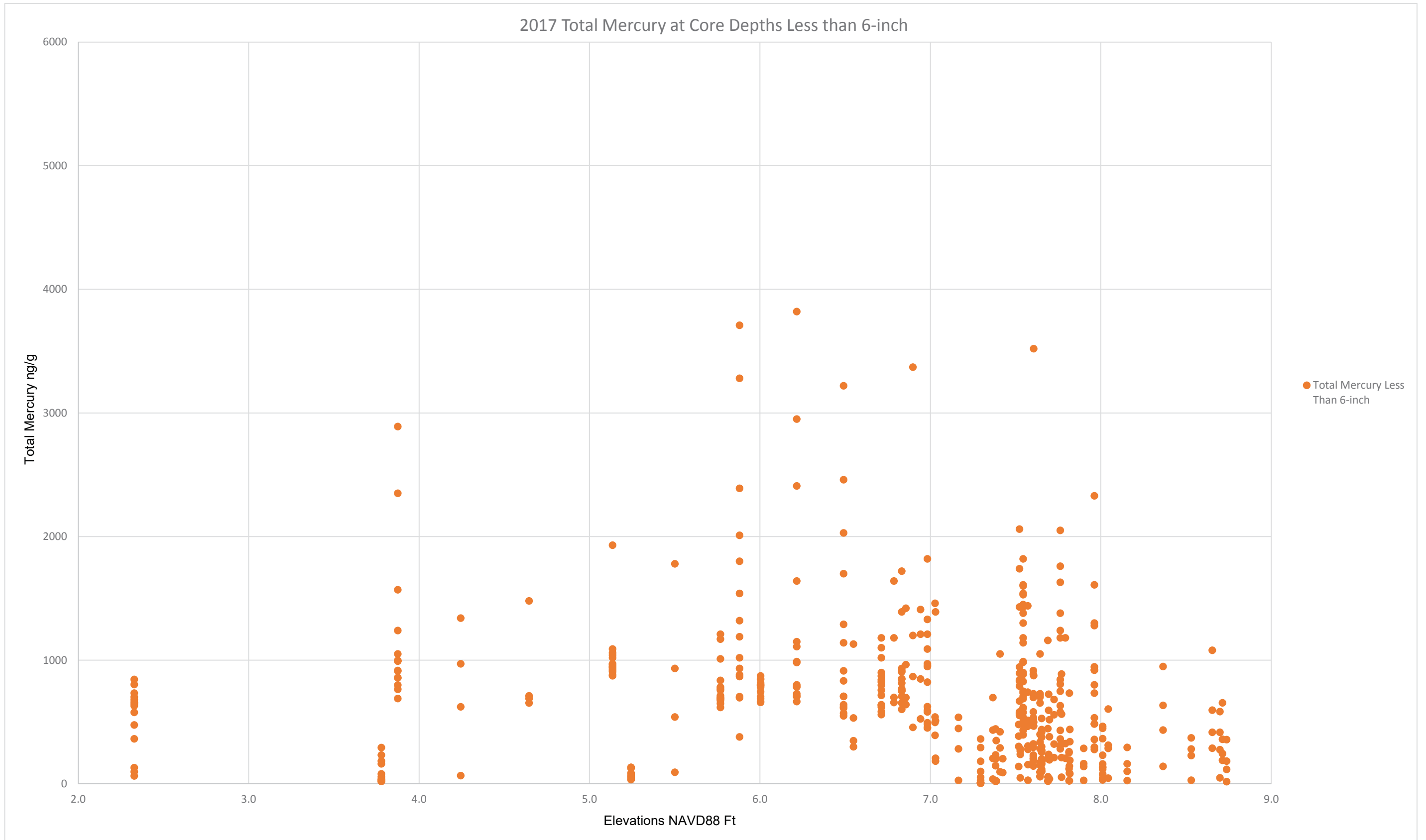
Prepared By: MKM
Checked By: KC

Figure 5



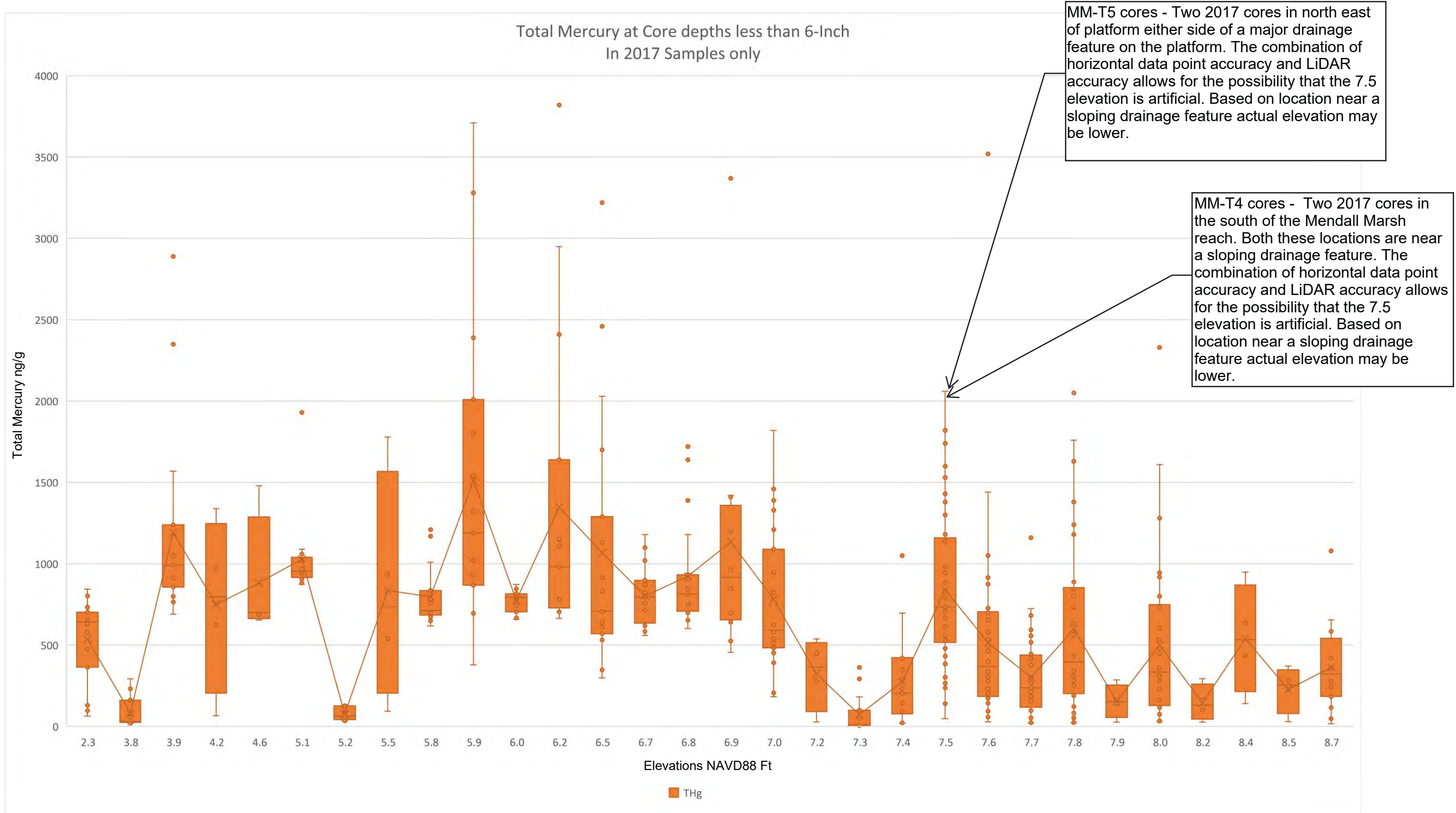
Prepared By: MKM
Checked By: KC

Figure 6



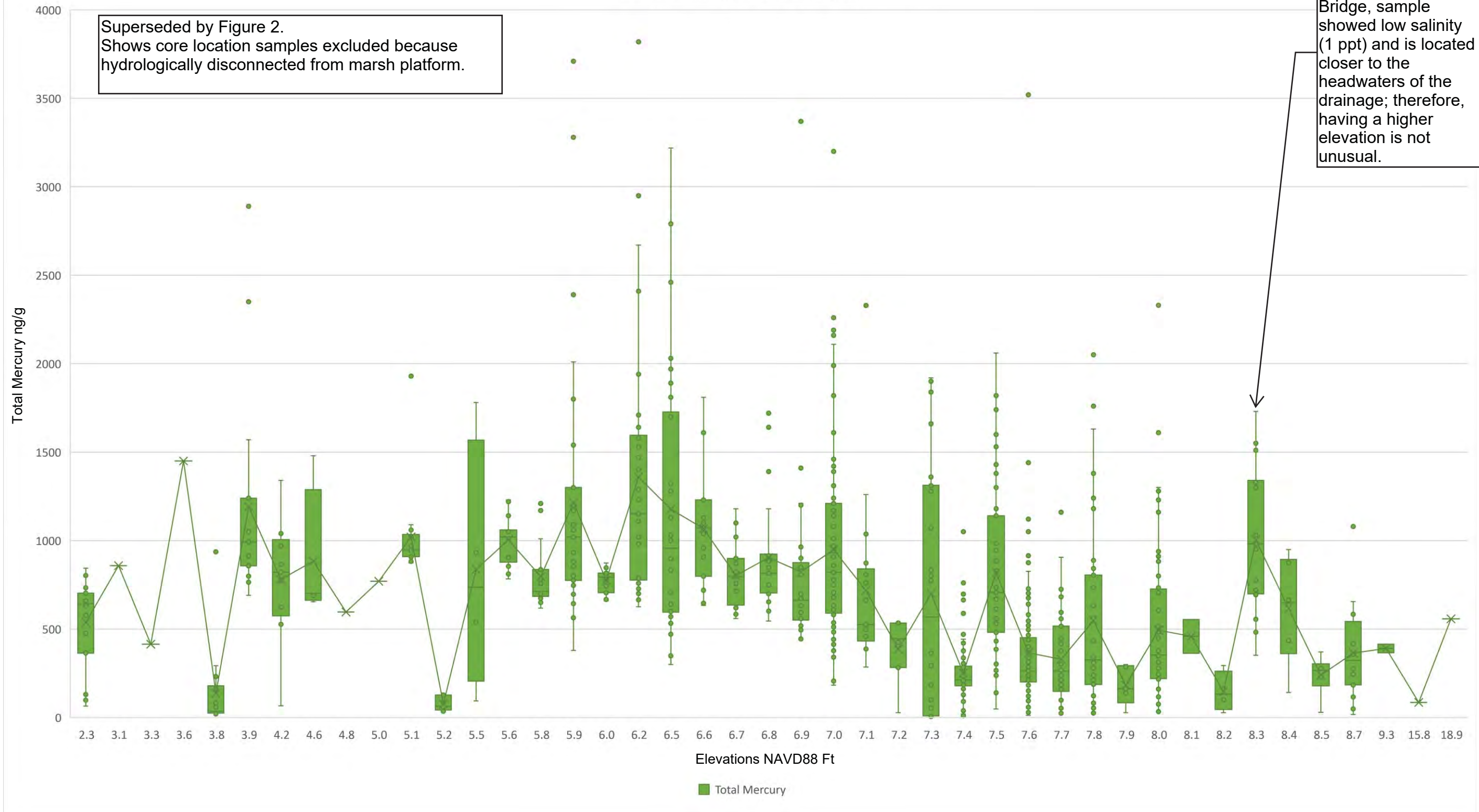
Prepared By: MKM
Checked By: KC

Figure 7



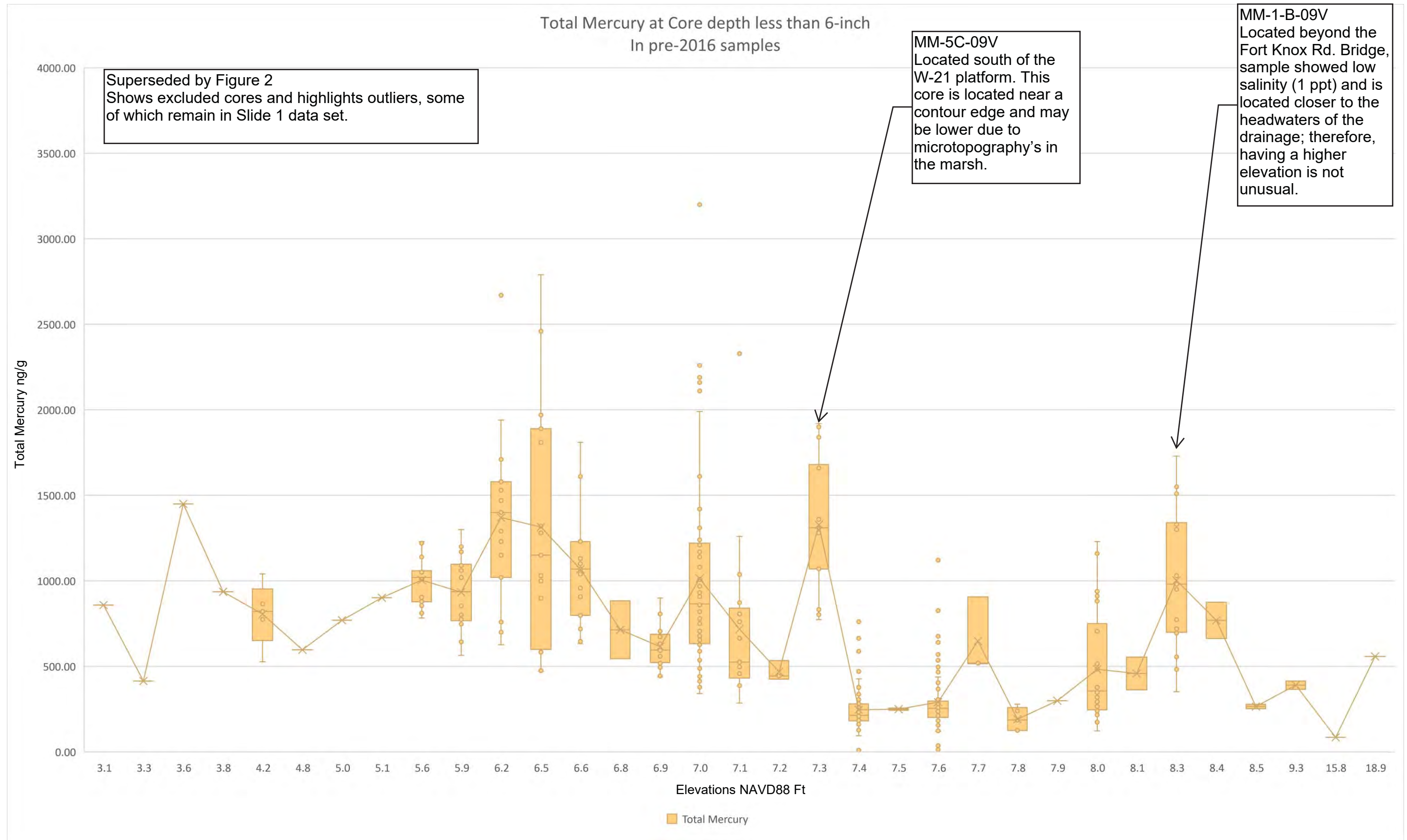
Prepared By: MKM
Checked By: KC

Total Mercury at Core depths less than 6-Inch
In 2017 and pre-2016 samples

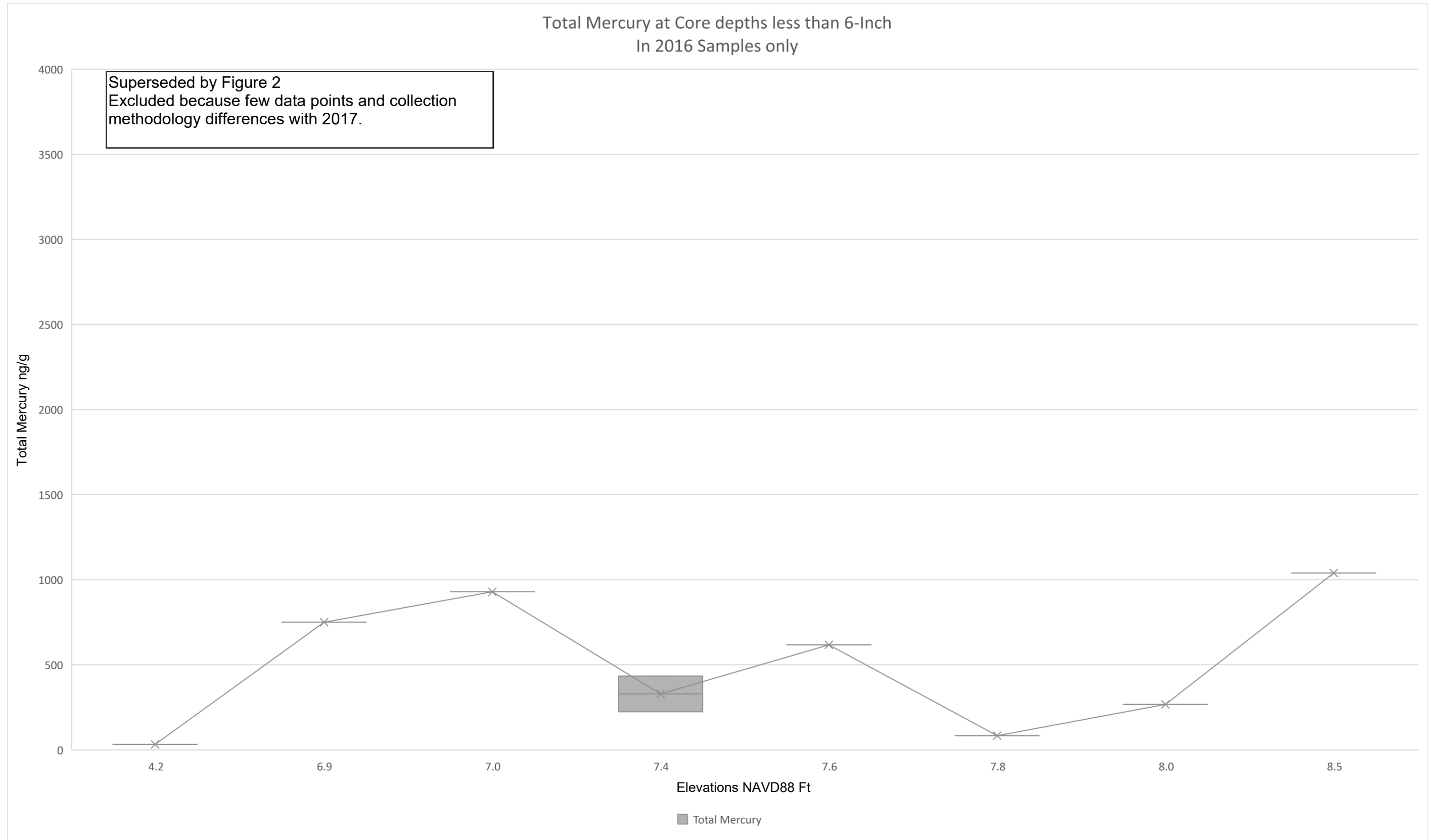


Prepared By: MKM
Checked By: KC

Figure 9

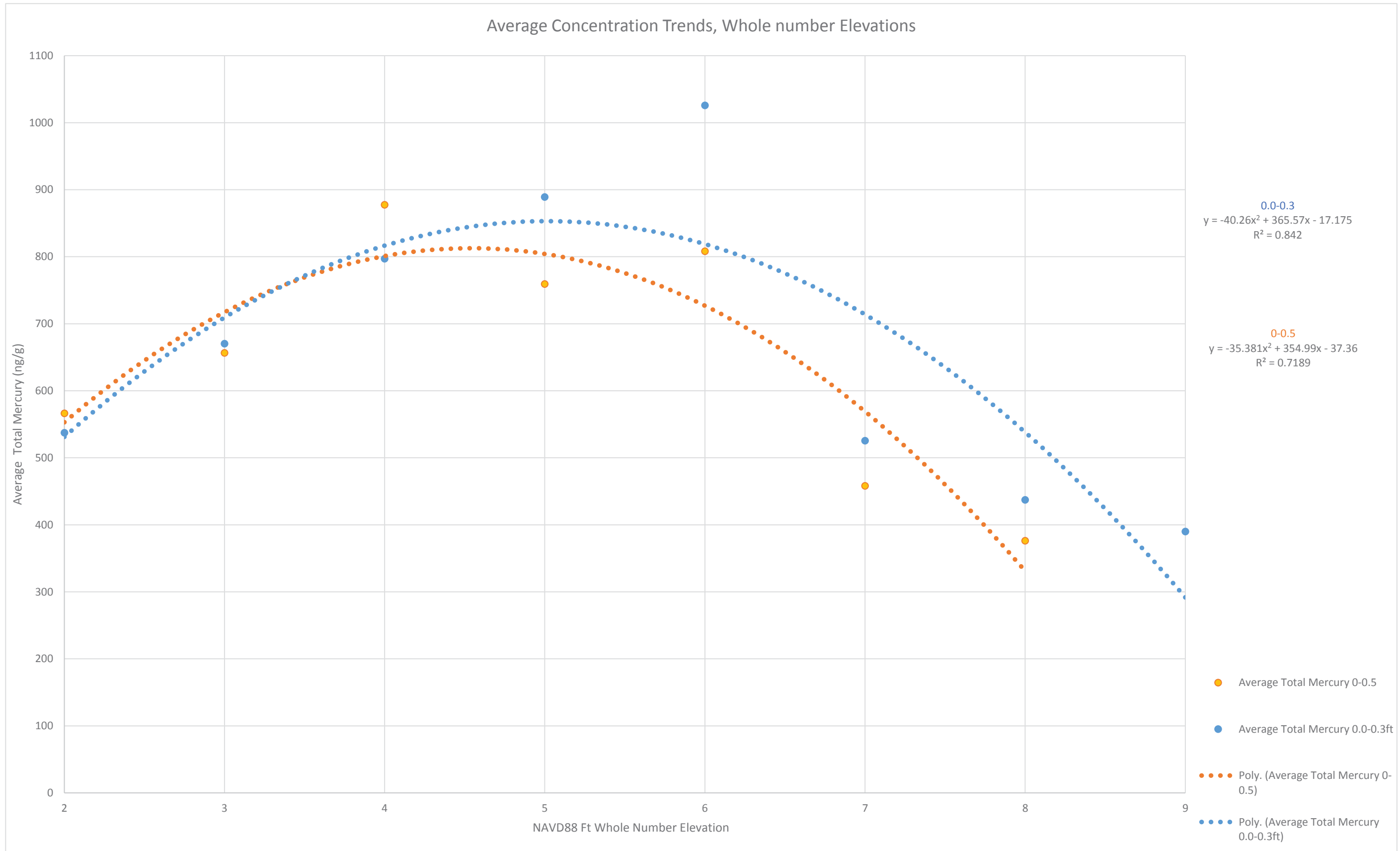


Prepared By: MKM
Checked By: KC

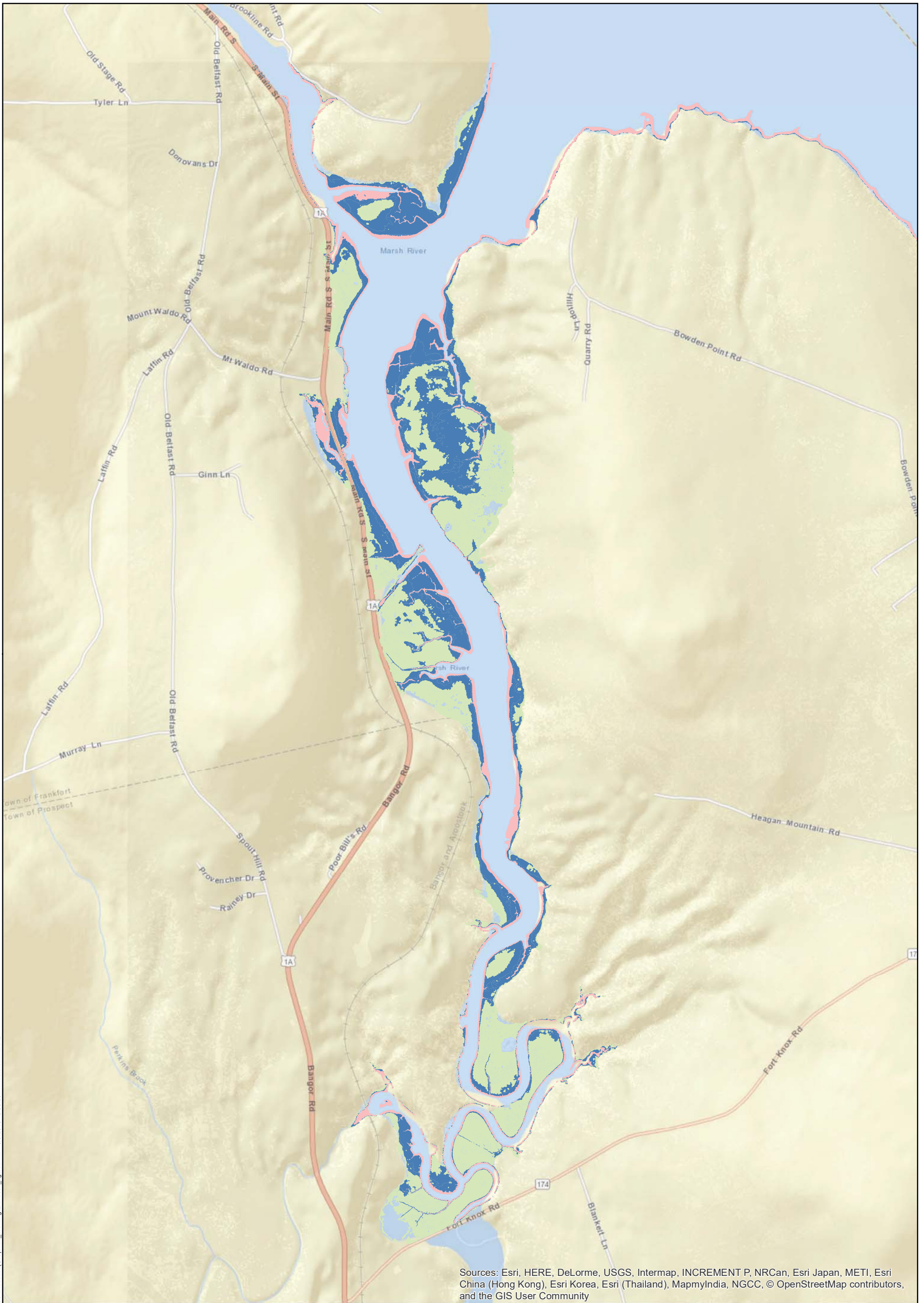


Prepared By: MKM
Checked By: KC

Figure 11



Prepared By: MKM
 Checked By: KC



Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Symbol Key
Elevations NAVD88 Ft Groupings

- 2-5.8
- 5.8-7.5
- 7.5-9

Figure 12
Mendall Marsh
Elevation Analysis

Penobscot River
Phase III Engineering Study



Document Path: C:\Comm-Ind\Projects\Clients M to S\Penobscot\GIS\Map\Working\Elevation_Figure.mxd 3/9/2018 12:33:36 PM matthew.marini2

APPENDIX I

Data Visualization Technical Memorandum



amec
foster
wheeler

Technical Memorandum

To: Nelson Walter

From: Carla Landrum, PhD
David Miller, EIT

Tel: 916-717-6552 Project: 3616166052

Date: March 1, 2018

**Subject: 2017 SPATIAL VISUALIZATION AND DATA UNCERTAINTY ANALYSES
Penobscot River Phase III Engineering Study
Penobscot River Estuary**

This informal Technical Memorandum (Memo) is in support of the Penobscot River Phase III Engineering Study for the Penobscot River Estuary. The Engineering Study is in place to conduct spatial analysis of sediment and mercury data in the Penobscot River and Estuary (the Penobscot River Estuary; the Study Area) under Work Order 2A-100 (WO 2A-100).

This Memo has a more limited scope than Work Order 2A-100, but the scope is related. The purpose of this Memo is to provide estimates for the mean mercury concentration in sediment, for pre-selected Management Units (MU) and ecological zones (Eco-zone). While this information may be useful for evaluations for the historical rate of mercury and sediment flux within the Study Area, this Memo does not address rates or flux estimates. This Memo summarizes the subject analyses, including technical objectives, data inputs, methods, and preliminary results.

TECHNICAL OBJECTIVES

Four technical objectives were set forth in mid-2017 to complete the subject analyses:

1. Perform depth contouring to allow visual presentation of sediment total mercury for multiple depth increments;
2. Contour sediment chemistry data for total mercury by MU and by Eco-zone;
3. Calculate Surface Area Weighted Average Concentrations (SWAC) for total mercury by MU and by Eco-zone according to pre-defined depth increments; and

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4. Using the SWACs for total mercury by MU and Eco-Zone, calculate the volumes of sediment that would require removal to achieve Preliminary Remediation Goals (PRGs).

The Technical Objectives are iterative based on an evolving understanding of where there are limitations to potential in-water work, what remedy may be applied in what MU or Eco-zone, and availability of 2017 data.

The following sections describe the data inputs, method selection and results, and overall data adequacy for completing the above technical objectives.

DATA INPUTS

Total and methyl mercury concentrations were measured at 1,038 different sampling locations spanning 17 years from 2000-2017. Approximately a sixth of the data points come from sampling events before 2008, a third from between 2008 and 2012, and the remaining half since 2016. These samples were also divided by depth. More than 50% of the total mercury data came from samples with 1 inch or less in thickness, leading to nearly 14,000 different measurements of total mercury concentrations. Four different analysis methods were used by seven different laboratories. In order to simplify the data for statistical comparison, the following assumptions were used:

- Historic and current data were used with equal consideration to sample date or analysis method.
- Field duplicates were removed from consideration for this analysis.
- Because woodchips and sediments were analyzed separately, samples specifically identified as 'woodchips' were not considered for this analysis.
- Because some samples were tested both before and after mechanical sieving, only results performed on pre-sieved samples were considered.
- Some samples were assigned the same coordinates and depth intervals. These samples were averaged together.

These assumptions were applied to the statistical analysis of data as presented to the statistical analysis team. Additional assessments of data validity were made by the project team 'upstream' of the statistical analysis team. Discussion of the more global assessment of data suitability for inclusion in the statistical assessment presented in this Memo is presented in Section 5.0 of the Alternatives Evaluation Report.

Interval-Participated Weighted Concentrations (IPWCs) were calculated for the following standard intervals:

- 0 to 3 inches
- 3 to 6 inches
- 6 to 12 inches

- 12 to 18 inches
- 18 to 24 inches
- 24 to 36 inches

Each sample was flagged as belonging to one or more interval depending on the sample start and end depth and assigned contributing weights according to the percentage of each standard interval it encompassed. Then, for each standard interval, the total weights from all samples in the interval were summed and the weighted concentrations were calculated in proportion to each sample's contribution to the total standard interval weight. For incomplete intervals, due to either gaps in sample recovery or refusal at depth, concentrations in the missing depth increments were assumed to be equal to the calculated weighted average concentration. The total number of samples contributing to each IPWC interval is shown below in Table 1-1.

Interval	Number of contributing samples
0-3"	4810
3-6"	2927
6-12"	2743
12-18"	1563
18-24"	897
24-36"	1080
0-6"	6997

Table 1-1

After calculating IPWCs, samples were spatially assigned to different MUs and Eco-zones, represented by hydrodynamic ribbons using ArcGIS. Samples falling outside of the GIS site boundaries were discarded.

Because geostatistical methods were employed before new samples were taken, the geostatistical analysis and traditional statistical analysis used slightly different input datasets. The earlier geostatistics methods calculated IPWCs based on 8278 non-duplicate samples from 918 locations, while the later traditional statistics method calculated IPWCs based on an additional 4417 non-duplicate samples from 120 cores. The later cores were typically longer than cores in the earlier data set (average maximum depth of 2.3 compared to 0.7 feet) and were mostly located in Mendall Marsh and Orland River.

METHODS AND RESULTS

This section describes the methods and results for the geostatistical and traditional statistical analyses.

Each technical objective is unique as it relates to data needs, method selection and interpretation. Figure 1-1 generalizes the workflow followed to service each Technical Objective, including exploratory data analysis, method selection and interpretation.

Exploratory data analysis (EDA) is a data diagnostic step that generates qualitative and quantitative information necessary to select a defensible data evaluation method to best service the stated Technical Objectives. The following subsections describe the EDA, geostatistical and traditional statistical method selection and overall data adequacy for completing the technical objectives. Igor Pro (WaveMetrics), Isatis v2017 (Geovariances), and ArcGIS 10.3 (ESRI) were used for EDA, method implementation, interpretation and visualization.

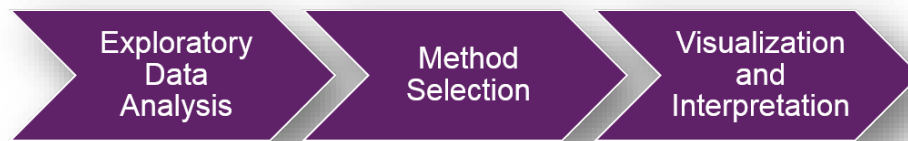


Figure 1-1

The (geo)statistical methods herein are data-driven, meaning the overall quality and uncertainty in method results are determined, in part, by the quality and uncertainty in the sample data. The historic (2000 – 2012) data comprise of an amalgamation of sampling programs. Wood Group sampling adds another dynamic to the composite database. Incongruences and inconsistencies exist between the sampling programs regarding sampling objectives, timelines and laboratory analytical methods. These incongruencies and inconsistencies are a source of overall data uncertainty.

Exploratory Data Analysis (EDA)

EDA constitutes sampling coverage maps and basic statistics.

Sampling Coverage Maps

Sampling coverage maps consist of plotting sample point concentration values in geographic space. Mapping provides qualitative insight regarding sampling coverage and the geospatial

distribution of relative high and low total mercury concentrations. Sampling coverage is important to assess the overall data adequacy for implementing geostatistical-driven SWAC estimation.

Two types of sampling coverage maps are provided. The first type is in cartesian coordinate (x,y) space (Figures 2-1 and 2-2) and the second type is provided in a conformal grid, or ij-transformed space (shown below). The i-coordinate of the grid increases with river miles seaward, and the j-coordinate of the grid is zero near the interpreted thalweg of the channel, increasing (positive) with distance from the thalweg along the right channel when facing seaward and decreasing (negative) with distance from the thalweg along the left channel when facing seaward. Because flow is generally from north to south, i-coordinates generally increase from north to south and j-coordinates from east to west. Bangor is located near i-coordinates of 0, Frankfort Flats near i-coordinates of 1000, the northern end of Verona Island near 1330, and the southern end of Verona Island near 1640. Grid transformations are described in Appendix A.

Figures 2-1 and 2-2 illustrate the spatial distribution of sampled IPWC total mercury concentrations according to IPWC depth interval and with reference to pre-defined Preliminary Remediation Goals (PRGs) equal to 350 parts per billion (ppb) total mercury, 450 ppb total mercury and 600 ppb total mercury. Due to the timeline of data processing and field sampling, the sampling coverage maps in Figures 2-1 and 2-2 do not include data sampled in 2017.

The four plots shown in Figure 2-3 below provides basic information regarding the ranges in IPWC total mercury concentrations as they relate to location (in ij space), IPWC depth interval and sample date. Samples are considered near the 'Left Bank' if their calculated j-coordinate is less than -10, 'Mid-Channel' if their j-coordinate is between -10 and 10, and 'Right Bank' if it is above 10; the data contained in this figure include data sampled in 2017. Higher-resolution figures broken down by reach are included in Figure 7-1.

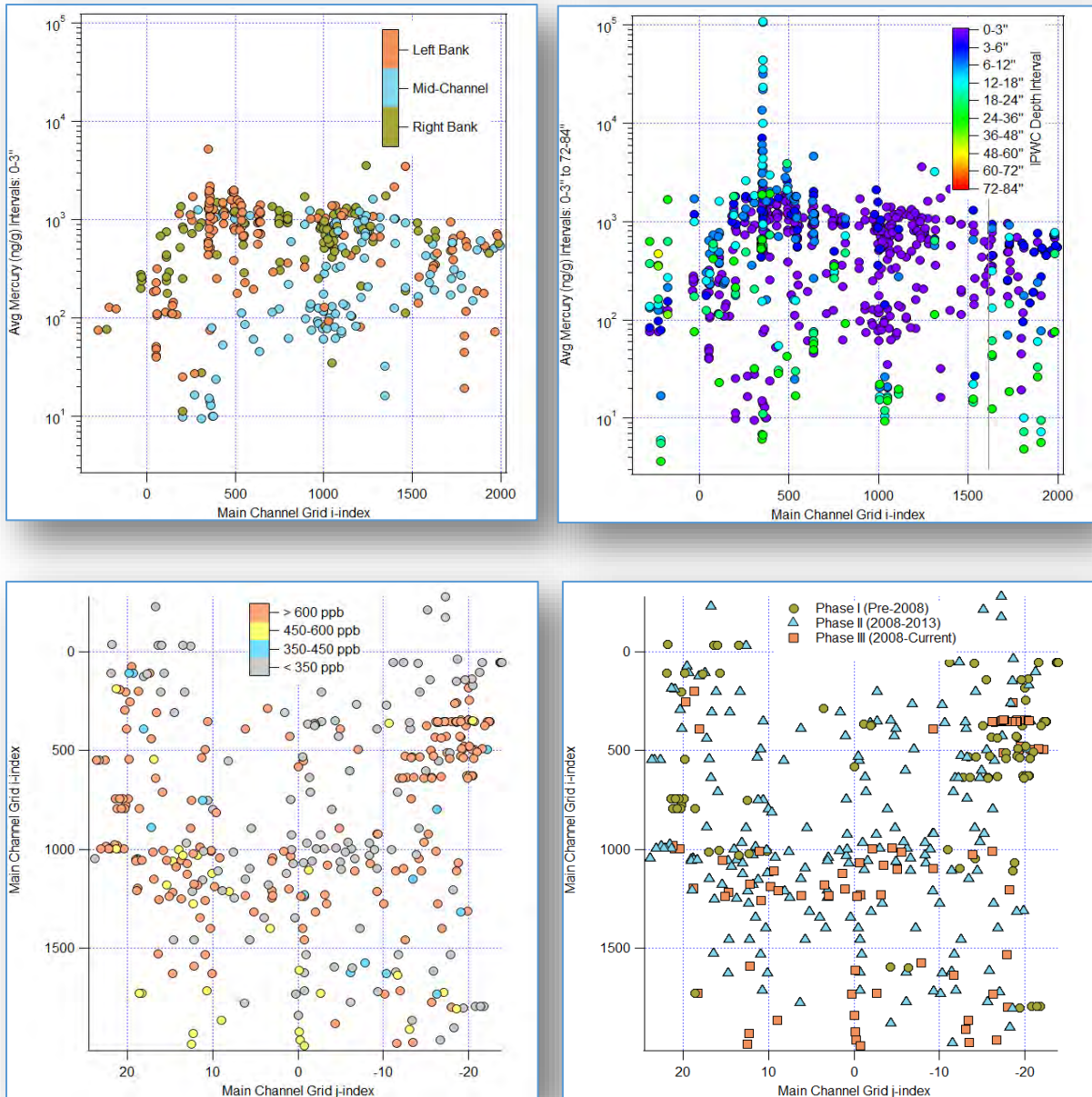


Figure 2-3

Figure 2-4 is provided to visually conceptualize and contrast samples locations in x,y cartesian space with their transformed location in ij space. See Appendix A for more details regarding grid transformations.

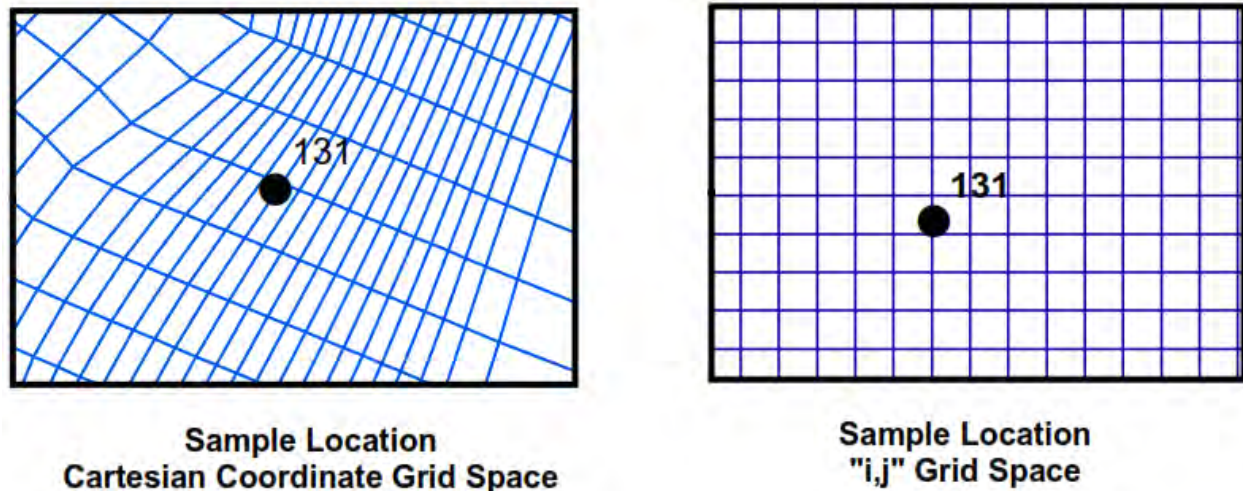


Figure 2-4

The sampling coverage maps indicate the following:

- 1) Sampling density and coverage diminishes significantly below 3 inches.
- 2) Sampling locations are irregular and clustered.
- 3) Total mercury concentrations can vary up to an order of magnitude over very short distances, indicating strong local-scale spatial heterogeneity.
- 4) Maximum concentrations are observed at intermediate depths (6 – 18 inches).
- 5) The spatial distribution of total mercury concentrations suggests time stability.

Figures 2-2 and 2-3 indicate that the sample data are generally inadequate to service Technical Objectives #1 through #4 within certain river reaches for depth increments below 3 inches. For this reason, the (geo)statistical methods below focus on the 0 - 3 inches and 0 - 6 inches depth intervals.

Basic Statistics

Basic statistics include summary statistics of the IPWC set, histograms and box and whisker plots. The evaluation of basic statistics does not provide an in-depth analysis of spatial or temporal variance (geostatistics), but provides a baseline understanding of data distributions, statistical moments (e.g. mean, variance, skewness, etc.) and outliers.

Summary statistics and histograms are shown in Figures 3-1 and 3-2 for the following IPWC depth intervals: 0 – 3 inches, 3 – 6 inches, 6 – 12 inches, 12 – 18 inches, 18 – 24 inches, 24 – 36 inches, 36 – 48 inches and 48 – 60 inches. The data are right skewed for each IPWC depth increment (fewer data at concentrations above the mean, relative to numbers of samples with concentrations

below the mean). For comparison purposes, a normal distribution will exhibit skewness values between -0.5 and 0.5. Skewness increases for intermediate depth intervals where total mercury concentrations are relatively higher. Strong skewness in the data can be difficult to manage and can lead to greater uncertainty in estimating statistical parameters using (geo)statistical methods. Appendix A discusses data transformations used to manage data skewness.

In general, summary statistics and histograms suggest the following:

1. Moderate to strong skewness is present in the IPWC total mercury concentration data, with the degree of skewness increasing for intermediate depth increments.
2. Data distributions and statistical moments appear similar between sequential pairwise IPWC depth increments (e.g. IPWC 0 – 3 inches and IPWC 3 – 6 inches), suggesting certain intervals can likely be combined without losing significant statistical information. More rigorous statistical comparisons can confirm if data groupings represent similar statistical populations, such as performing a non-parametric ANOVA test, for example.

Figures 4-1 through 4-5 illustrate box and whisker plots for each river reach for the following IPWC depth intervals: 0 – 3 inches, 3 – 6 inches, 6 – 12 inches, 12 – 18 inches, 18 – 24 inches and 24 – 36 inches. Appendix A explains the components of a box and whisker plots and how to interpret potential outliers and relative data distributions. In general, a box and whisker plot that shows “box” and “whiskers” that are symmetric about the median value is indicative of a normal distribution. Plotting multiple box and whisker plots together can provide a relative understanding of data distributions according to pre-defined data groupings (e.g. data grouped according to river reach, management unit, etc.).

The box and whisker plots indicate the following:

1. Overlapping box and whisker plots for shallower depth increments (e.g. 0 to 3 inches and 3 to 6 inches) suggest IPWC total mercury concentrations are non-distinct between river reaches.
2. The box and whisker plots become more distinct with increasing depth, which is partially driven by the discrepancies in the number of available data within each river reach in addition to the number and magnitude of potential outliers present.
3. Potential outliers for Orrington river reach exhibit some of the highest observed concentrations for intermediate depth intervals and are located in closest proximity to the HoltraChem Chlor-Alkali site.
4. All depth increments consist of a mixed dataset over time and in space; focused sampling for one time period might show different results in box-plots shapes and concentration ranges.

Outliers are defined as sample locations that likely represent a different statistical population, which is common in when sampling near source areas, for example. No outliers were removed prior to transforming the data or performing the following (geo)statistical analysis.

Geostatistical Methods

Attachment A discusses the technical and conceptual components for geostatistical modeling and performance assessment. The following paragraphs briefly introduce the geostatistical methods explored and their adequacy to service Technical Objectives #1 – #4.

Pre-2017 sample data were available to perform the following preliminary geostatistical analysis and the available data may have included dataset errors.

Geostatistical estimation methods, such as kriging, use a variogram model as a data-driven tool to determine the number of neighboring samples, and their spatial weights (i.e. the sample's importance in estimating an unknown concentration), to calculate spatially weighted estimates of mercury concentrations in un-sampled locations or areas. As a preliminary and first-go screening level assessment, multiple kriging methods were explored to service Technical Objectives #1 and #2. Of the methods explored, ordinary kriging (OK) in i,j space performed best using the current sample dataset. The following paragraphs detail preliminary results from the OK spatial estimation in ij space.

Areas of interest for this preliminary kriging effort include the main river channel, the Orland river reach and Mendall Marsh river reach for the IPWC 0 – 6 inch depth interval. Table 2-1 includes variogram fitting parameters for these areas of interest. Appendix A includes a technical description of the variogram model and parameters below.

Reach	Transform	Model	Range (ft) 0°/90° orientations	Nugget/Sill	Nugget:Sill Ratio
Main Channel	Log	Cubic	20/69	.02 / .40	0.05
Orland	None	Cubic	5/5	15,860/148,700	0.10
Mendall	None	Cubic	51/42	82,820/175,700	.47

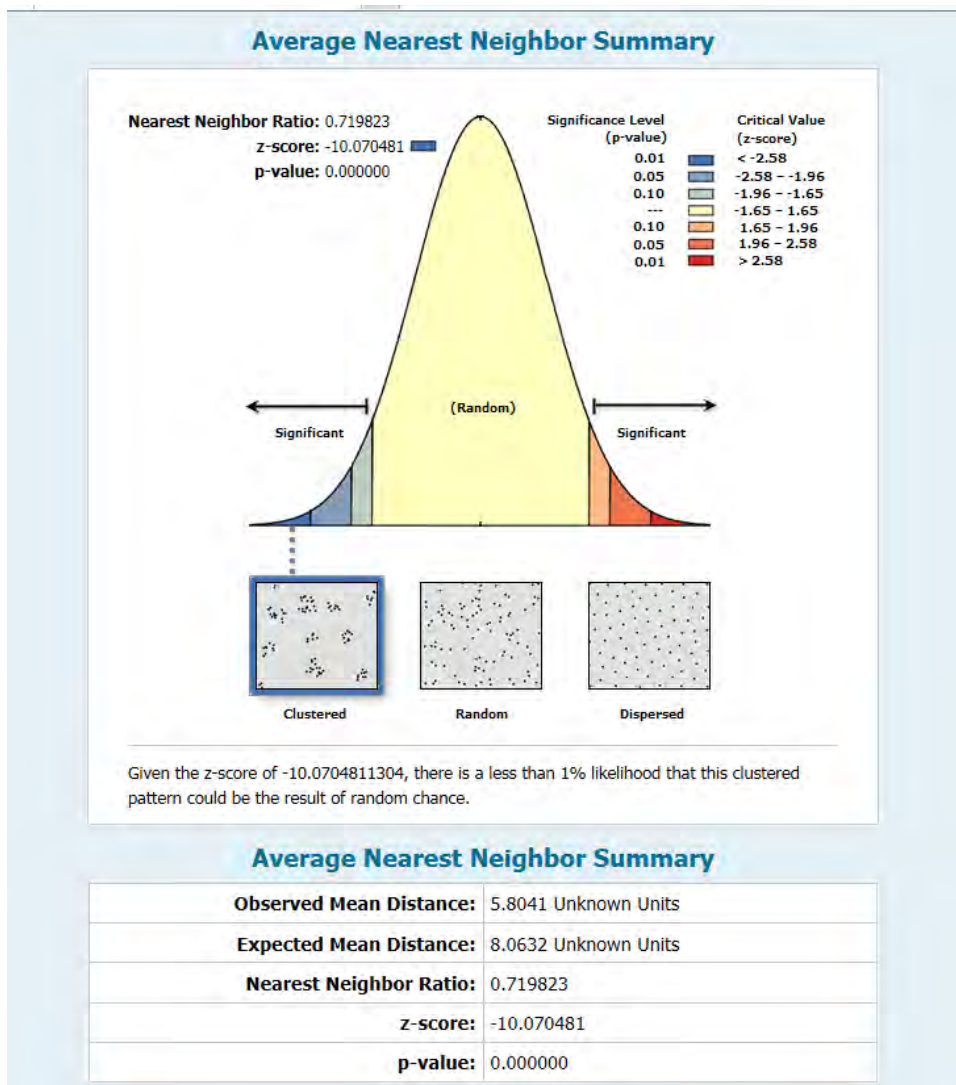
Table 2-1

The preliminary variograms for the IPWC 0 – 6 inch depth increment indicate the following:

1. Relatively higher spatial uncertainty when investigating individual river reaches, especially for Mendall Marsh, by interpretation of the nugget:sill ratio. In general, spatial uncertainty is attributed to the smaller spatial extent and fewer available data within individual reaches and the overall high nugget component, or “white noise”, in the data.
2. Relatively short variogram range values, ranging from 5 to 69 ij space units (henceforth called “units”), depending on the area of interest and orientation of the range value (also

known as anisotropy). This means the sample data are spatially correlated up to a distance of 69 units in the most optimistic case.

- In general, spatial gaps exist in the sampling design and these areas likely provide too few data to support defensible kriging estimation using the fitted variogram range values. Sampling gaps exist because the sampling design is “clustered”, which is supported by the nearest neighbor statistics provide in the figure below. The Euclidean nearest neighbor sample mean distance for the IPWC 0 – 6 inch depth within the main river channel is 5 ij units with an average Euclidean nearest neighbor ratio less than one and a z-score equal to -10.53. A ratio less than 1 means the sample design is spatially clustered and a small z-score suggests the sampling design contains bias.



Nearest neighbor statistics for the IPWC 0 – 6 inch interval.

Table 3-1 includes preliminary cross-validation statistics for the areas of interest. Cross-validation parameters are described in Appendix A. Cross-validation statistics provide insight

Reach	Rho value – fitted vs. est	Rho value of residuals	ME	MSE	VE	SVE
Main Channel	.56	.17	.01	.03	.19	1.3
Orland	.17	.52	-20	-.04	18,171	1.4
Mendall	.30	.20	-9.7	0	198,793	1.5

Table 3-1

regarding the level of uncertainty introduced by the variogram model and kriging estimation method.

In general, the IPWC 0 – 6 inch preliminary cross-validation results indicate the following:

1. The main river channel had the highest kriging estimation accuracy equal to 56%. The lowest kriging estimation accuracy, equal to 30% and 17%, was observed for the Orland and Mendall Marsh reaches, respectively.
2. The rho values generated by plotting the standardized estimation errors versus the kriging estimates indicate there is a relationship, violating the assumption of a linear estimation model. This suggests that linear model estimation might not be appropriate, the variogram parameters need further optimization and/or the sample data are inadequate to support kriging estimation.
3. The standard variance of the error (SVE) values fall above the upper tolerance (see Appendix A for more information on this calculation) equal to 1.23, indicating that the actual estimation error is, on average, is higher than error predicted by the model (e.g. the kriging standard deviation); SVE values outside the stated tolerance limit suggest the kriging method and its input parameters might not be ideal for the sample dataset and need further consideration.

Figures 5-1 and 5-2 including preliminary ordinary kriging mean estimates and standard deviation results for IPWC total mercury concentrations within the main channel for the 0 - 6 inch depth interval, respectively. Kriging estimates are not included for Orland or Mendall Marsh river reaches due to their relatively high nugget (e.g. uncertainty) variogram models and overall poor cross-validation performance.

For the IPWC 0 – 6 inch interval, preliminary ordinary kriging results for the main channel indicate the following:

1. Lower spatial estimates of total mercury were observed in the center of the river channel whereas highest concentrations are observed near the river banks.
2. Spatial gaps in the sampling design associate with higher kriging standard deviations, which provides a measure of spatial uncertainty in the kriging estimates.
3. Some areas with poor sample density may be highly erosive and non-depositional, with limited soft sediment. The sampling programs often did not include sample collection when hard bottom or rocky samples were collected.
4. The spatial distribution of estimated high and low IPWC total mercury concentrations did not necessarily align with the pre-defined management unit boundaries.

MU boundaries were generally set before completing the preliminary kriging analysis. The biggest challenge for calculating a geostatistically-driven SWACs for each MU, or other pre-defined conceptualized boundary, was the overall lack of sample data within each MU. Table 4-1 includes the number of samples for each MU and its surface area (acres). The surface areas listed in Table 4-1 do not represent regular shaped MUs, rather there is extreme anisotropy in the shape of the MUs. In general, geostatistical methods were deemed inadequate for servicing Technical Objectives #3 and #4 based on the low sample count in over half the MUs. Rather, traditional statistical methods were pursued and are discussed in the following section.

Traditional Statistical Methods

Traditional statistics assume the sample data are independent from one geographic sample location to the next. Sample independence is interpreted through the high local-scale spatial heterogeneity shown in the sample distribution maps (Figures 2-1 and 2-2) in addition to the overall weak spatial correlation structure in the variogram models. These findings suggest that traditional statistics is more appropriate than geostatistics to estimate total mercury concentrations in pre-specified areas (e.g. MUs or “ribbons”) using the current dataset. Because traditional statistical methods assume that each sample point is independent from the next, the following method does not account for relationships in the sample data as a function of sample separation distance or direction. This means local-scale variations in total mercury concentrations, such as hot spots, can be lost. Furthermore, as with any average estimator, including kriging, the average concentrations tend to underestimate higher concentrations and overestimate lower concentrations and this needs consideration when evaluating remedial alternatives.

Bootstrapping is a resampling method that estimates statistical parameters (e.g. mean, variance, confidence intervals, etc.) by continually resampling the sample population. Bootstrapping is advantageous in cases where it is hard to define the statistical parameters of a sample population and/or too few samples are available to make an adequate assessment of statistical parameters. Each sample falling within a predefined area (e.g. ribbon) underwent a procedure called “resampling with replacement”, meaning each sample has a random and equal chance for selection during each bootstrap resampling iteration. Each resample event generates a “mini-population” of the greater sample population. Each resampling event, or mini-population, produces slightly different sample statistics and the results from multiple resampling iterations converge around a general statistical parameterization that is reported for interpretation. Resampling was done in proportion to the original number of samples in each ribbon, and 1,000 resampling iterations were performed for each ribbon. Bootstrapping is a non-parametric method, meaning it makes no assumptions about the underlying distribution of the sample dataset. The primary assumption, however, is the sample dataset provides an adequate approximation of the underlying statistical or “true” population. This assumption can be challenged or violated in cases where MUs or ribbons contain too few samples, thereby, providing a valid source of uncertainty in interpreting SWAC concentrations in ribbons with too few samples.

Dividing up the site into independent geographic areas was conceptually done in two directions: longitudinally in the direction of flow, and transversely from one bank of the study area to the other. Fourteen of the original fifteen Penobscot River estuary reaches were used, with the Bucksport Harbor and Bucksport Thalweg reaches being dissolved into a single reach for the bootstrap mean statistical analysis. Upgradient and downgradient boundaries for these reaches are described in Section 5.0 of the Alternatives Evaluation Report. Each reach was further transversely subdivided into four categories of hydrologic ‘ribbons’ determined by the topography/bathymetry:

- A main-channel ribbon denoting deeper depths following the thalweg of the river;
- A subtidal zone usually adjacent to the thalweg which is inundated under most flows;
- An intertidal zone adjacent to the subtidal zone which is intermittently inundated depending on flow rates and daily tidal levels; and
- An outer ‘marsh’ ribbon extending from the intertidal zone to the site boundaries.

Not every hydrologic ribbon class was present in each reach. Most reaches also divided subtidal, intertidal, and marsh ribbons into different eastern and western ribbons if they were geometrically separated by a center thalweg. Due to its large area and unique hydrologic conditions, Mendall Marsh was divided into six custom ribbons: a subtidal zone, an intertidal zone, and four platforms from 2.0-5.8 ft, 5.8-7.0 ft, 7.0-7.5 ft, and greater than 7.5 ft above sea level.

906 of the 1038 locations with standard IPWC intervals were assigned to individual ribbons using a spatial join, with one historic sample removed from the Orrington eastern intertidal ribbon because the location had since been remediated, and the other 131 removed points consisting of historic samples falling outside of the study boundary. Of the 76 ribbons, 69 were assigned at least

one IPWC value, accounting for 98.9% of the site by area. 22 ribbons, accounting for 15% of the total site area, had five samples or fewer.

Unlike the preliminary kriging evaluations detailed above, all data sampled to date were available and included for this traditional statistical evaluation.

Bootstrapped mean total mercury concentrations and 95% confidence intervals are presented in Figure 6-1 below and in geographic space in Figures 6-2, 6-3 and 6-4. River reaches are separated with vertical lines and individual ribbons within each reach are presented from west to east. River reaches are separated with vertical lines and each are presented from west to east. Table 5-1 includes calculated bootstrap mean values and sample numbers for each MU for different IPWC depths.

Bootstrap mean total mercury concentrations indicate the following:

1. Different hydrologic ribbons within the same reach show overlapping estimates of mean total mercury concentrations, meaning there is insufficient evidence to support a statistically significant ($p < 0.05$) difference between average concentrations within these pre-defined areas.
2. Ribbons in the center-channel show concentrations that are generally lower than ribbon nearer to the site boundaries.

- The upper and lower bounds of the mean estimate represent the 95% confidence interval of the mean.¹ Within the confidence interval, there is an estimated 95% confidence (statistical probability) that the mean total mercury concentration value falls within this interval. The larger the interval the greater uncertainty in knowing the mean estimate of total mercury. Confidence intervals should be interpreted with respect to the sample number falling within each ribbon, which is provided in Table 4-1.

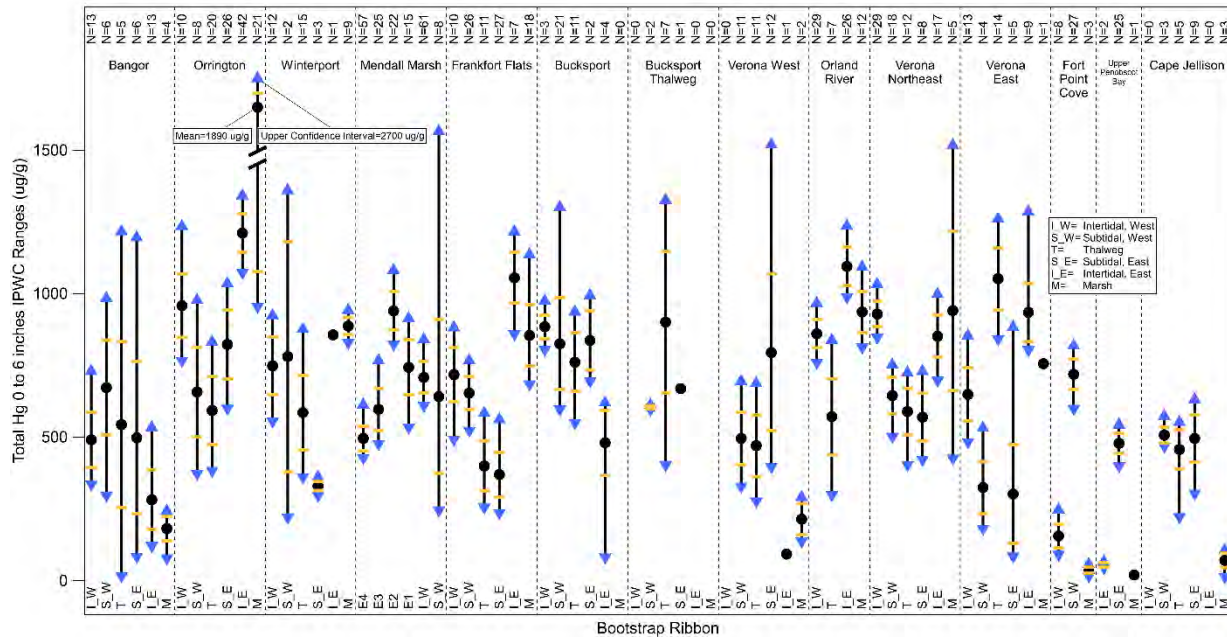


Figure 6-1. Bootstrapped mean total mercury concentrations and 95% upper and lower confidence intervals.

CONCLUSIONS AND RECOMMENDATIONS

This Memo summarizes (geo)statistical methods and preliminary findings to support the Penobscot River Phase III Engineering Study.

The results from this evaluation suggest there are three primary sources introducing uncertainty in spatial estimates and SWAC calculations that need consideration with respect to remedial design assessment:

- IPWC data, as reviewed and analyzed, both with geostatistics and traditional statistics, indicate a high level of noise and short-range variability in the data;

¹ Individual samples may have total mercury concentrations that exceed the upper 95% confidence limit for the mean. Similarly, individual samples may have total mercury concentrations that are well below the lower confidence limit.

- Conceptual boundaries (e.g. management units) are, in general, inconsistent with intrinsic spatial variations observed in sample concentrations;
- Data gaps and potential bias in the current sampling design as it relates to: poor sample coverage within conceptualized units to support adequate SWAC estimation; poor sampling coverage with increasing sampling depth; and localized areas of higher spatial uncertainty in estimating total mercury concentrations using geostatistical methods.

The following are recommendations:

- The usage of estimates of mean concentrations in MUs and “ribbons” should not extend as an accurate indicator of the presence or absence of individual sample locations with mercury concentrations being above or below a threshold. Confidence bands indicate confidence on the mean, not on the range of the individual data;
- The usage of mean concentrations in MUs and “ribbons” has not been tested as a reliable spatial estimate. However, the estimate for the mean in the applied MUs and “ribbons”, especially those with more data points, comes from an accepted statistical procedure and estimates for the mean may be considered to be reasonable;
- Conceptual boundaries, as they relate depth intervals, “ribbons” and management units, can be further refined to better honor spatial variation in available mercury data; and
- Boundaries for MUs and “ribbons” that do not exhibit statistically significantly ($p < 0.05$) differences in SWAC estimates in can likely be “dissolved” or merged without losing significant information; this will also increase the sample numbers within conceptualized units to generate more representative SWAC estimates and ideally reduce SWAC uncertainty.

ATTACHMENTS

Attachment A: Geostatistical Methodology for Estimating IPWC Total Mercury Sediment Concentrations

REFERENCES

Amec Foster Wheeler (Amec) 2018. Alternatives Evaluation Report. Draft. Penobscot River Phase III Engineering Study, Penobscot River, Maine.

U.S. Environmental Protection Agency (U.S. EPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance. EPA 530/R-09-007. Environmental Protection Agency Office of Resource Conservation and Recovery.



FIGURES

Document: C:\Lundrum\Penobscot\GIS\MapDocs\Memo\Figures\Figure2_1_SpatialCoverage\Figure2_1_SpatialCoverage_Map_01202018.mxd PDF: C:\PenobscotRiver\mxd\Report_Figures\Figures2017\Figure_2-2_2016 Blata Reference Sampling Locations.pdf 3/4/2018 3:42:27 PM rachel.demand

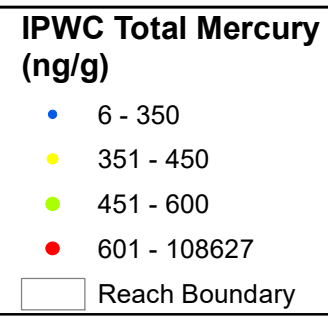
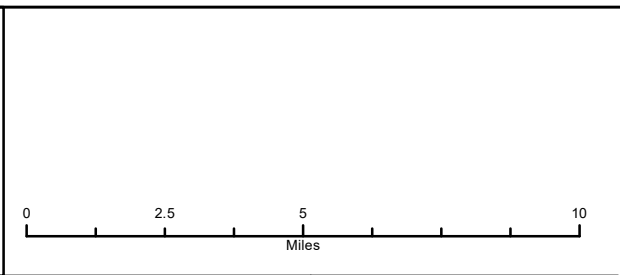
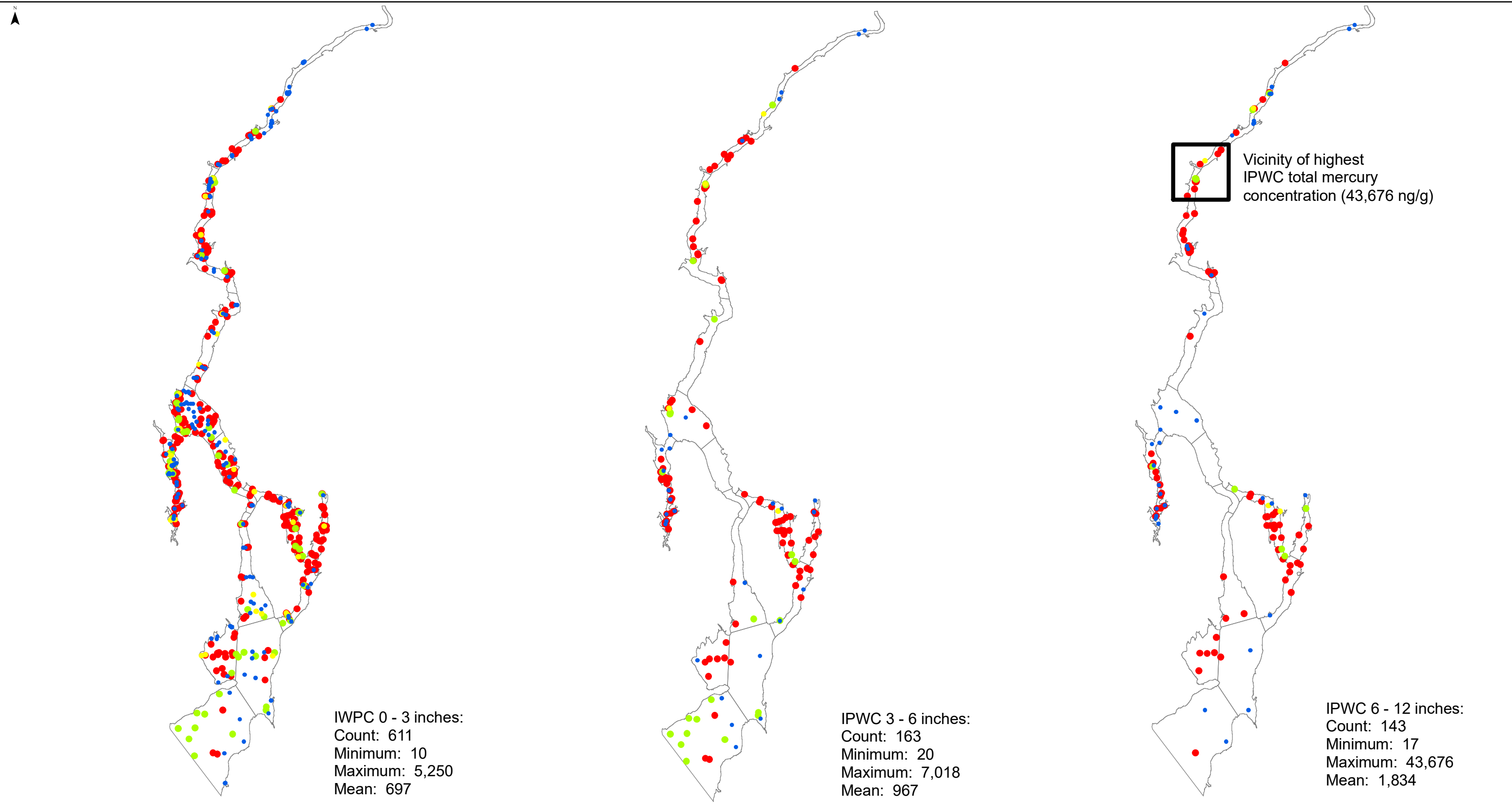
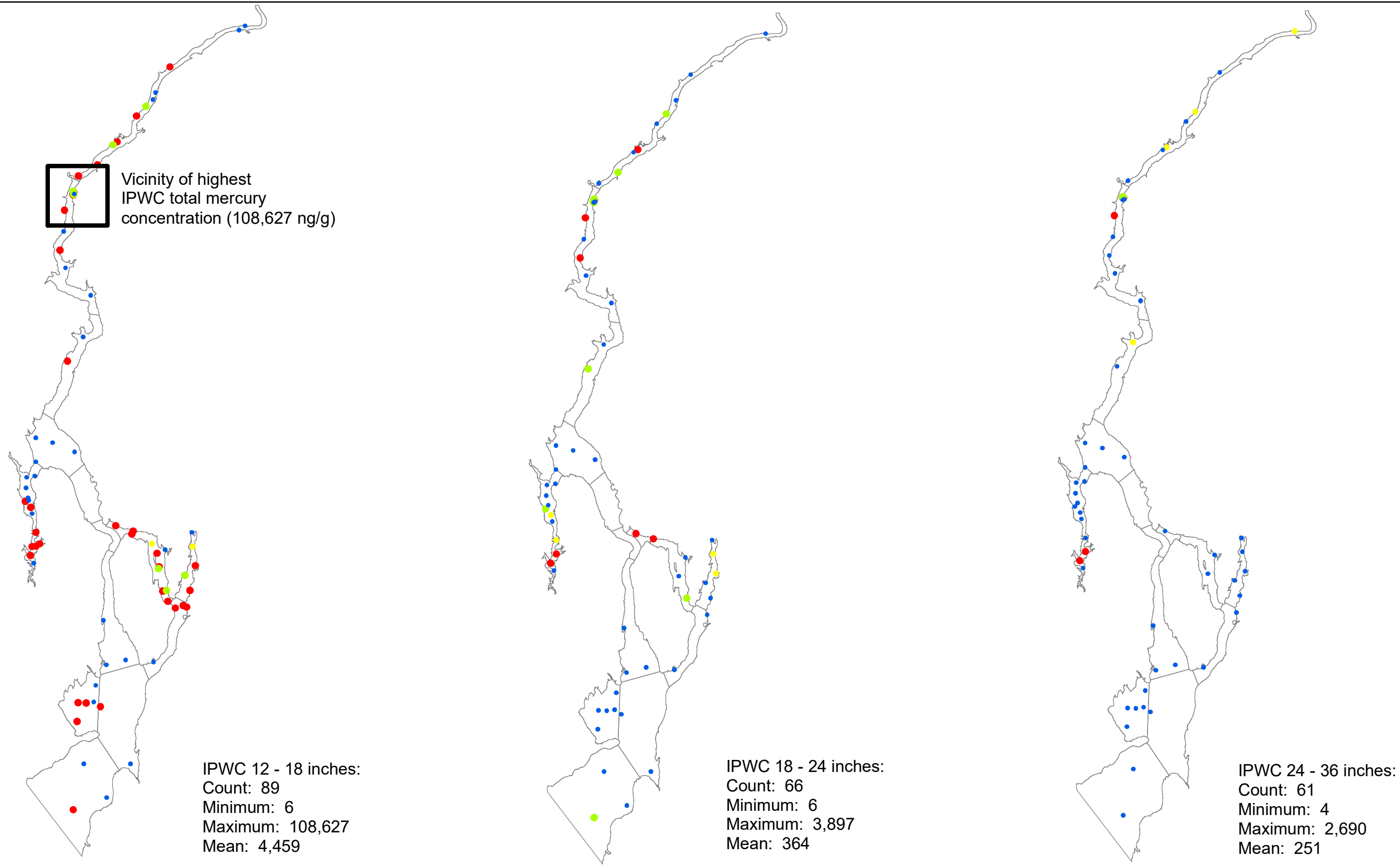


Figure 2-1
 Spatial Coverage Map

2017 SPATIAL VISUALIZATION AND
 DATA UNCERTAINTY ANALYSES
 Penobscot River
 Phase III Engineering Study

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IPWC Total Mercury (ng/g)

- 6 - 350
- 351 - 450
- 451 - 600
- 601 - 108627
- Reach Boundary

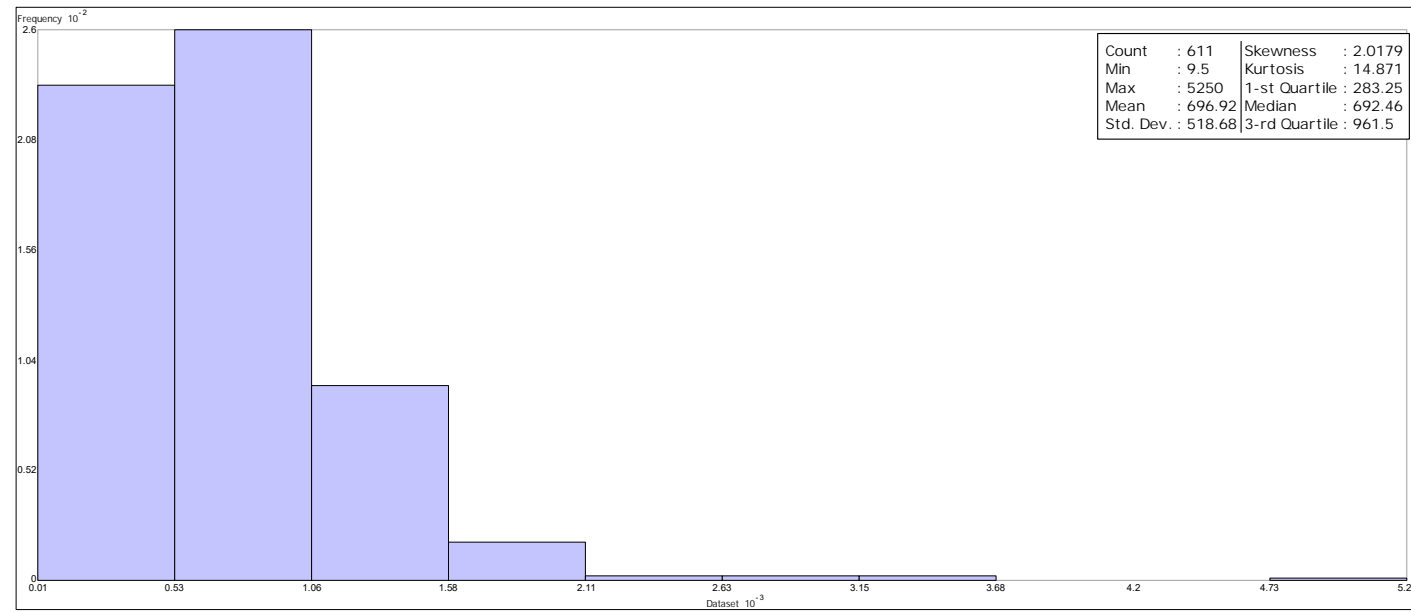
Figure 2-2
Spatial Coverage Map

2017 SPATIAL VISUALIZATION AND
DATA UNCERTAINTY ANALYSES
Penobscot River
Phase III Engineering Study



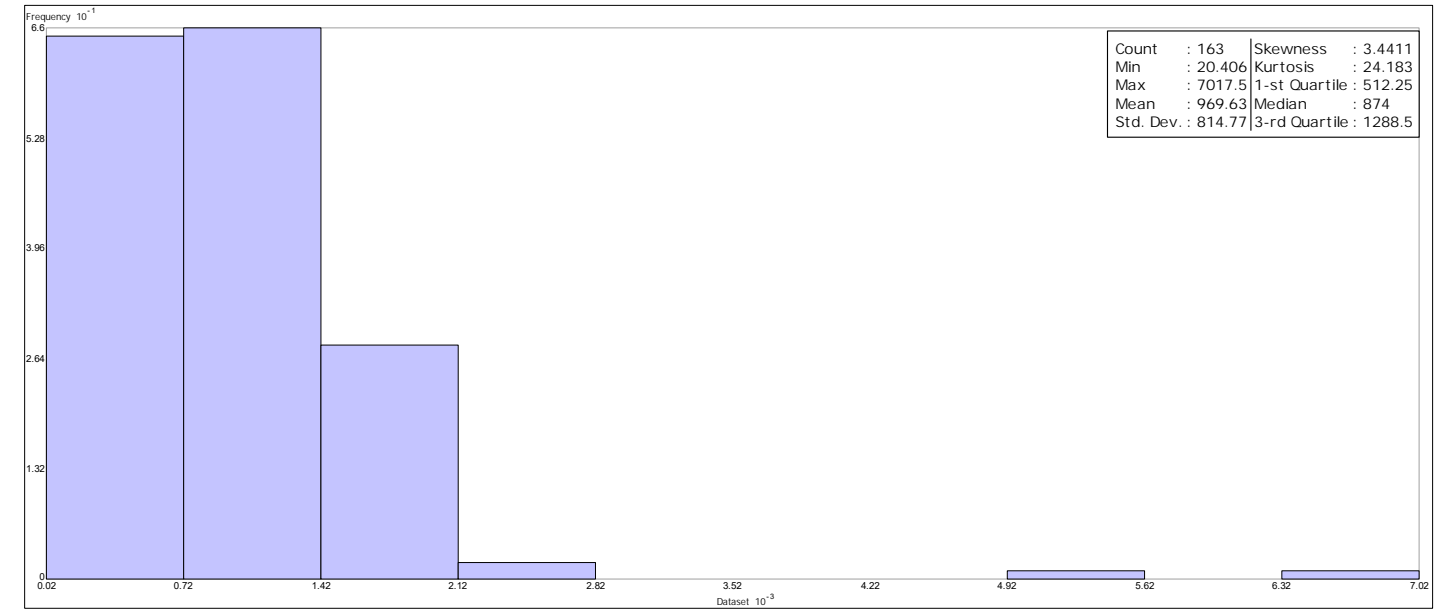
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Histogram
Transformation: None



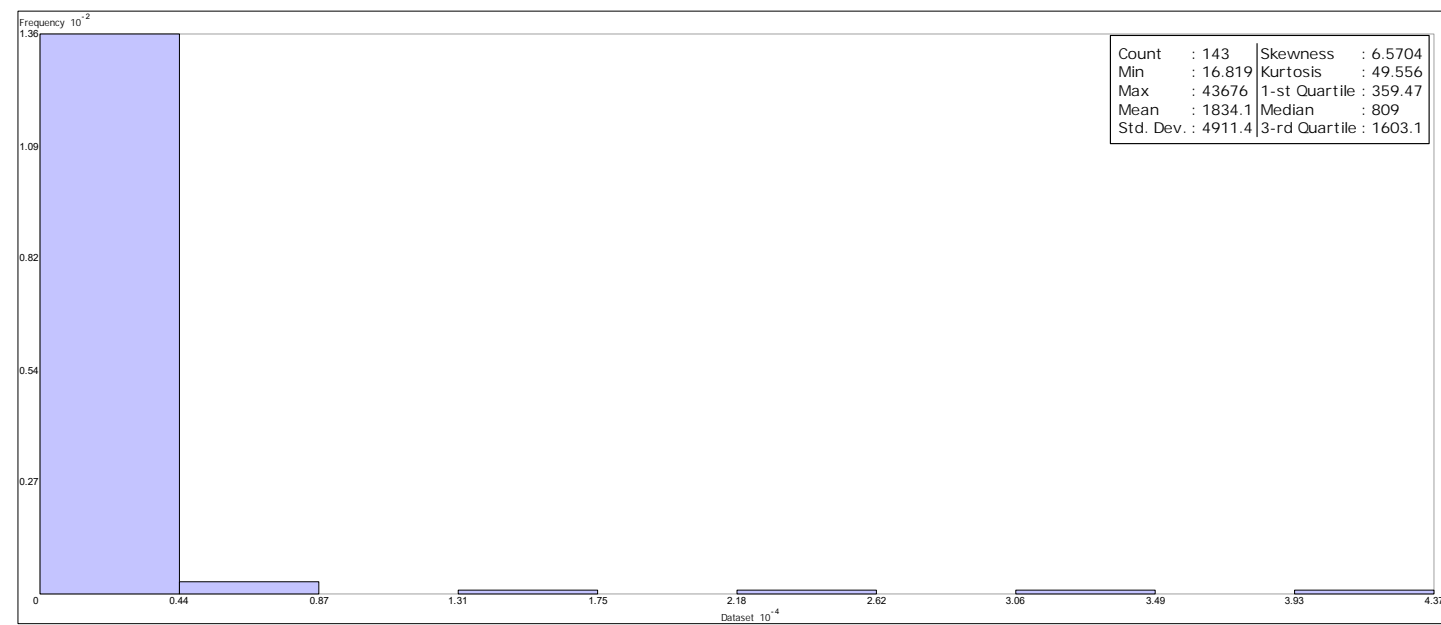
Dataset : IPWC 0 - 3 inches

Histogram
Transformation: None



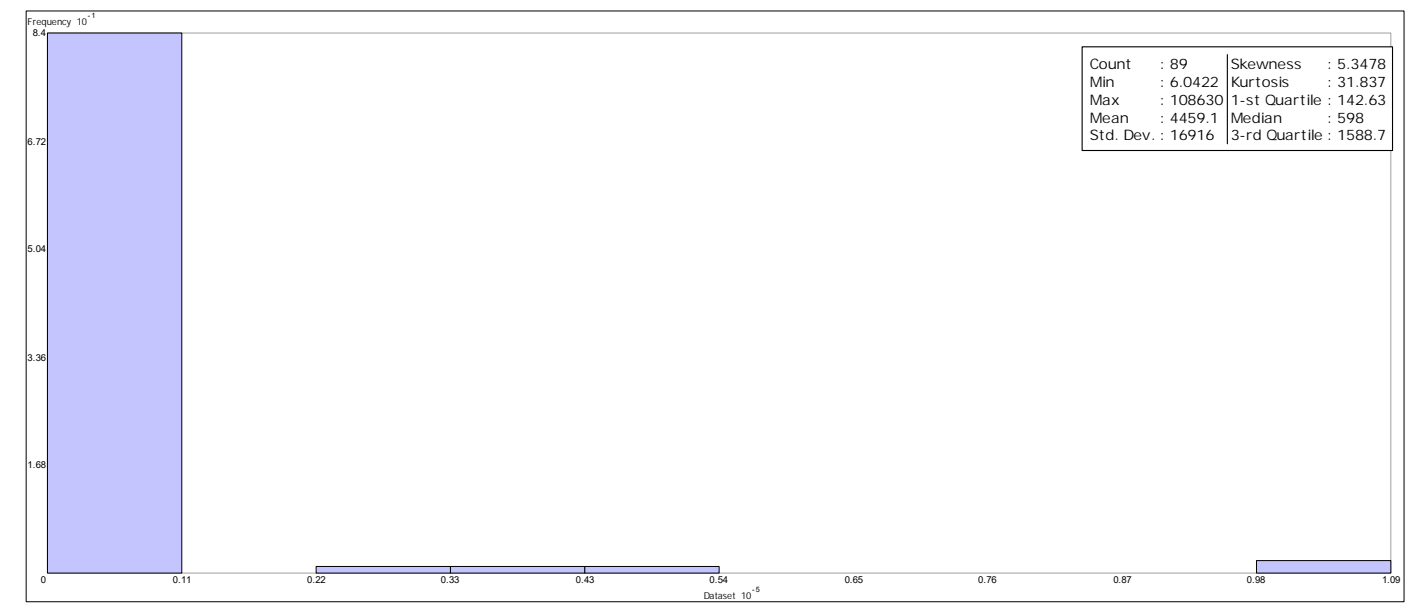
Dataset : IPWC 3 - 6 inches

Histogram
Transformation: None



Dataset : IPWC 6 - 12 inches

Histogram
Transformation: None



Dataset : IPWC 12 - 18 inches

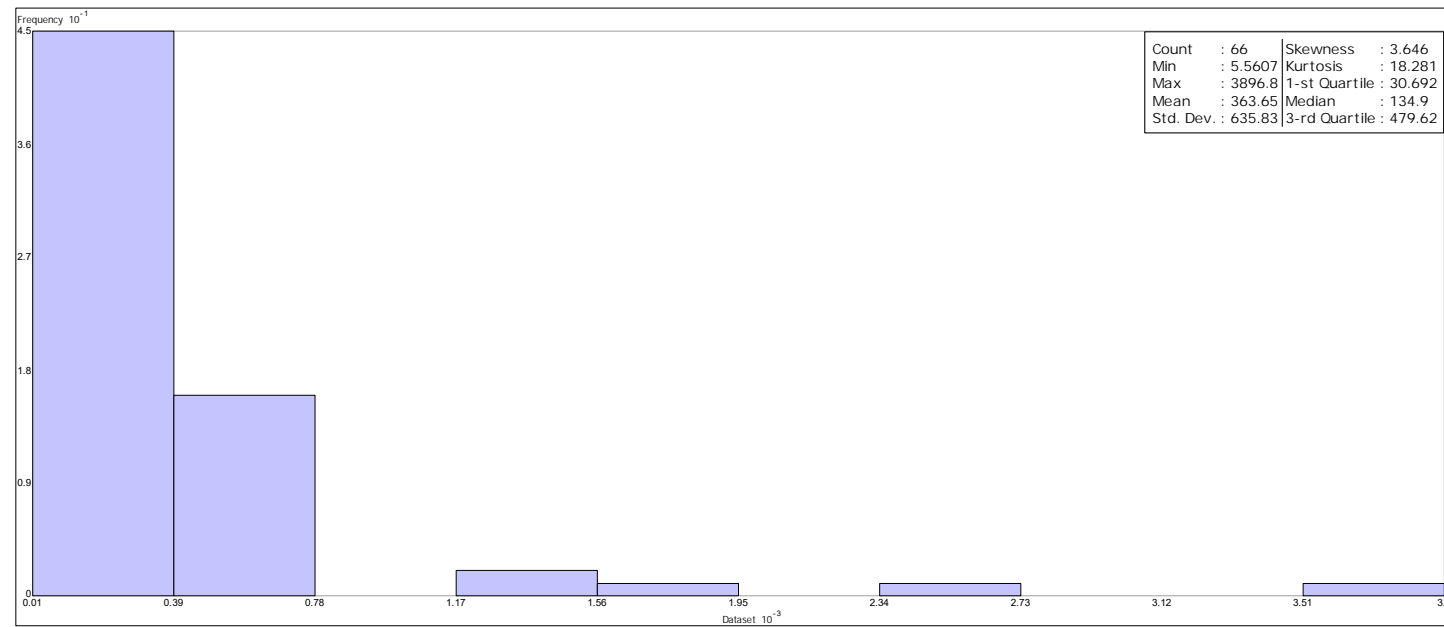


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Figure 3-1
Summary Statistics
and Histograms

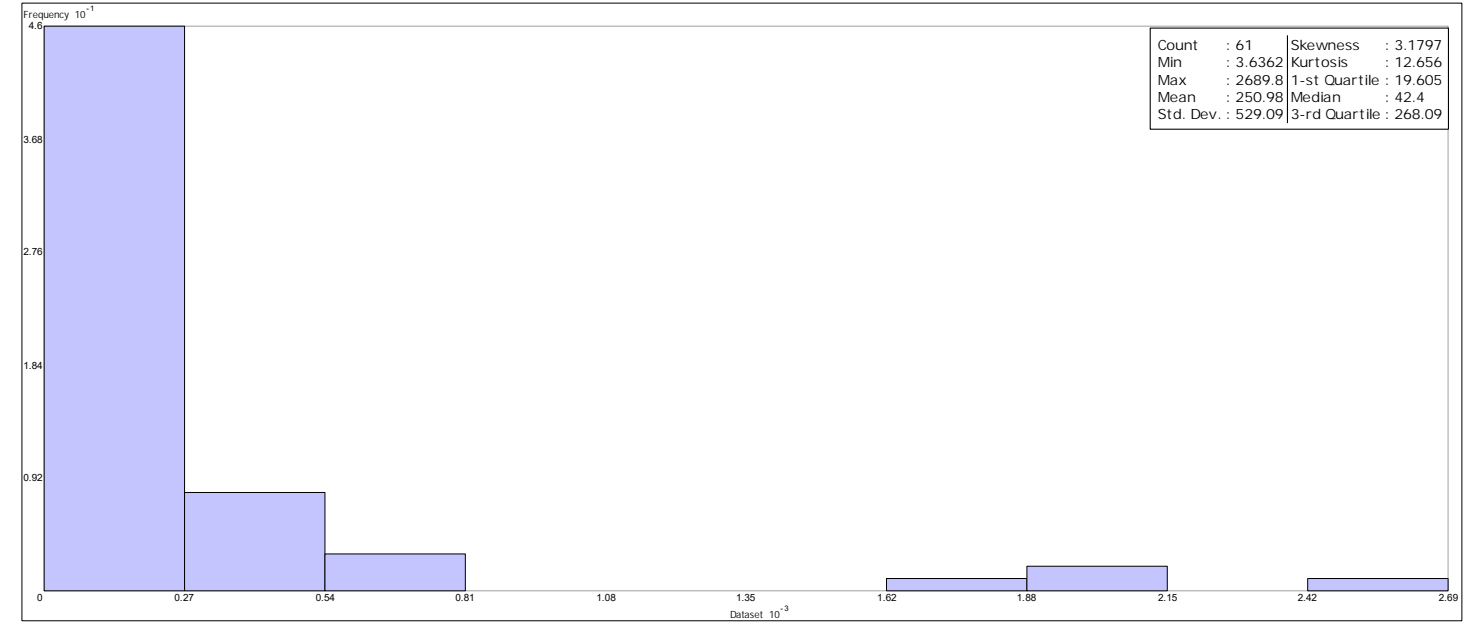
2017 SPATIAL VISUALIZATION AND
DATA UNCERTAINTY ANALYSES
Penobscot River
Phase III Engineering Study

Histogram
Transformation: None



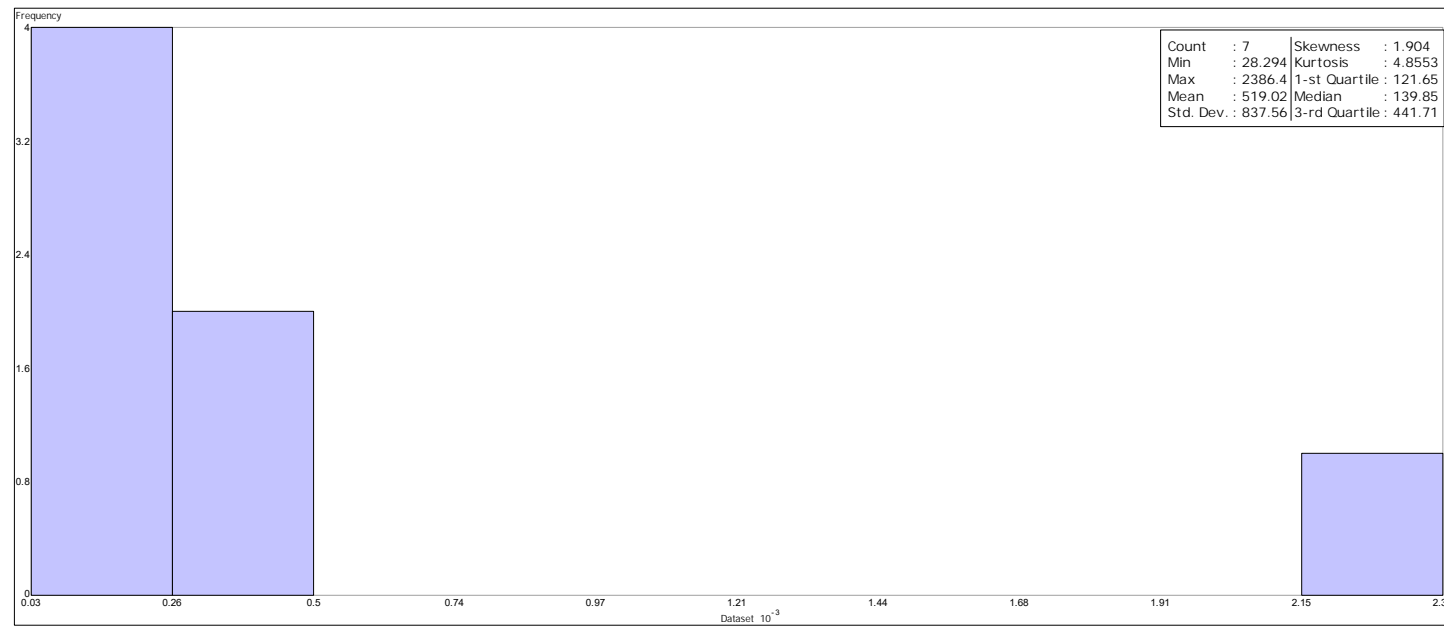
Dataset : IPWC 18 - 24 inches

Histogram
Transformation: None



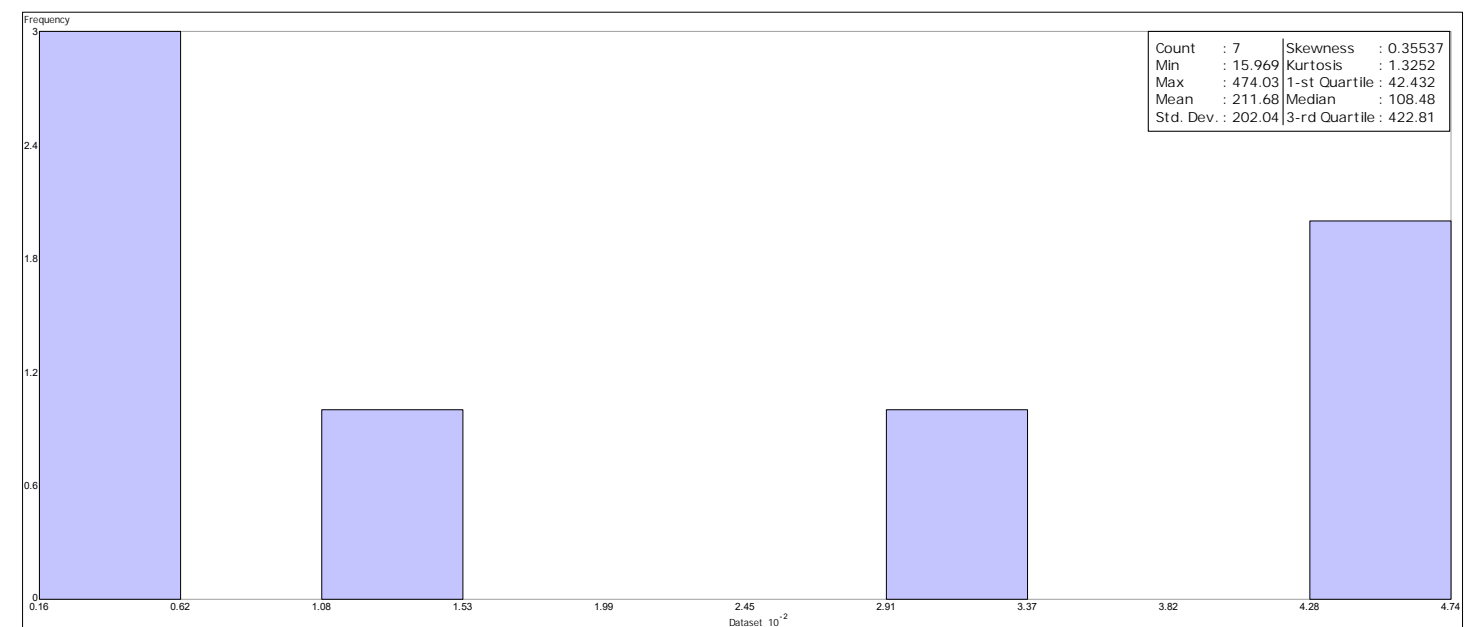
Dataset : IPWC 24 - 36 inches

Histogram
Transformation: None



Dataset : IPWC 36 - 48 inches

Histogram
Transformation: None



Dataset : IPWC 48 - 60 inches



amec
foster
wheeler

Figure 3-2
Summary Statistics
and Histograms

2017 SPATIAL VISUALIZATION AND
DATA UNCERTAINTY ANALYSES
Penobscot River
Phase III Engineering Study

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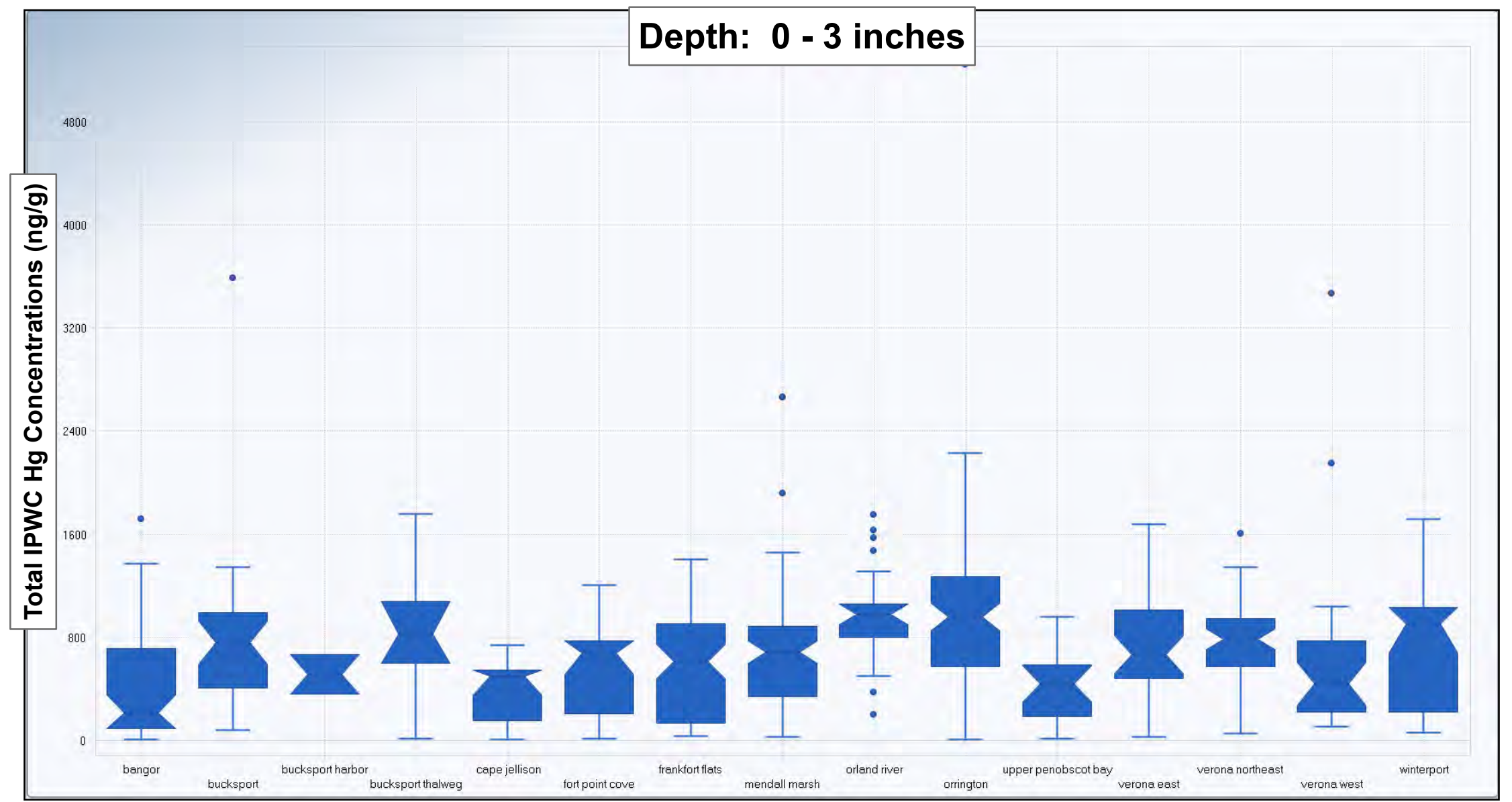
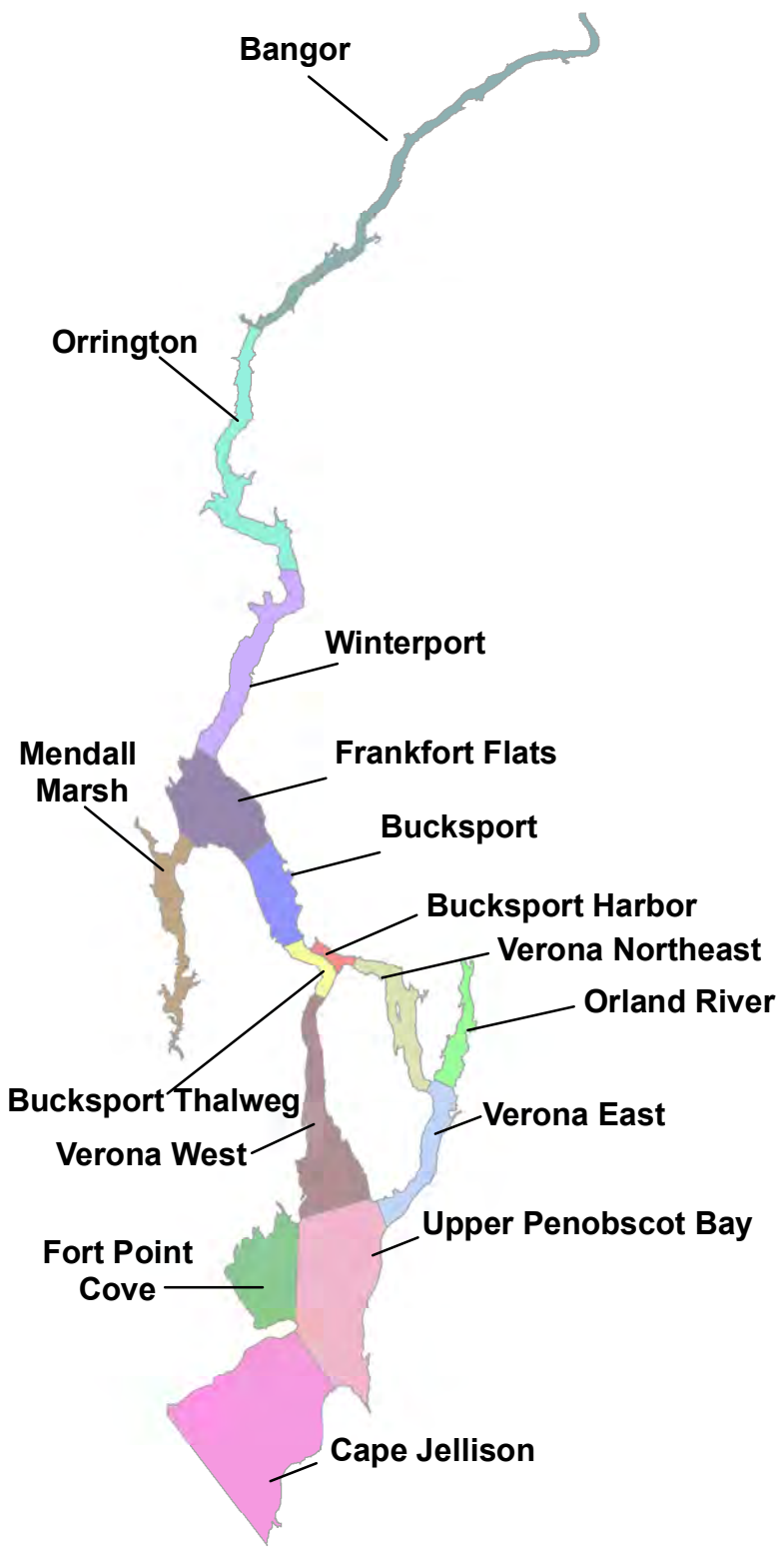


Figure 4-1
Box and Whisker Plots
IPWC 0 - 3 inches
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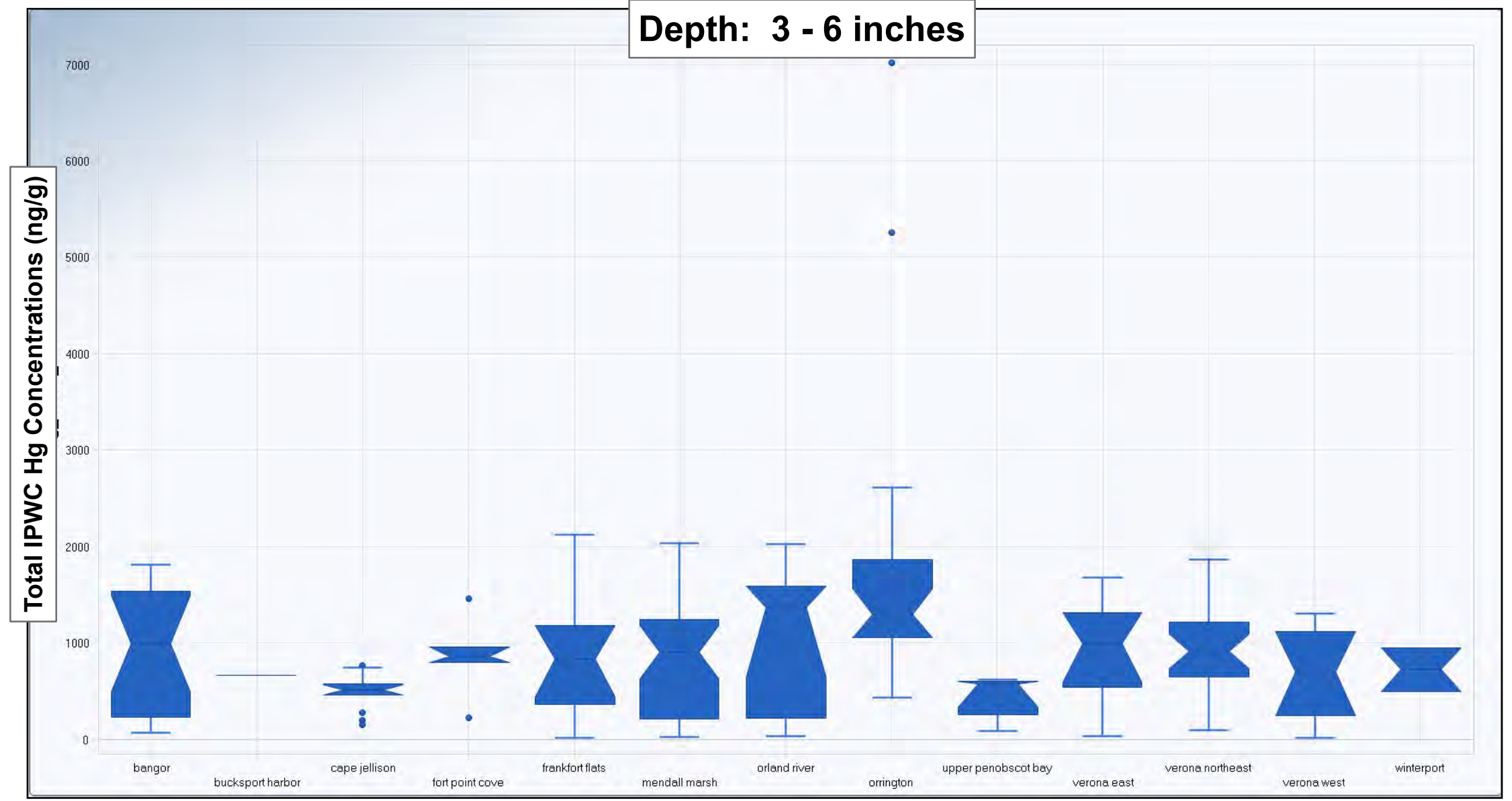
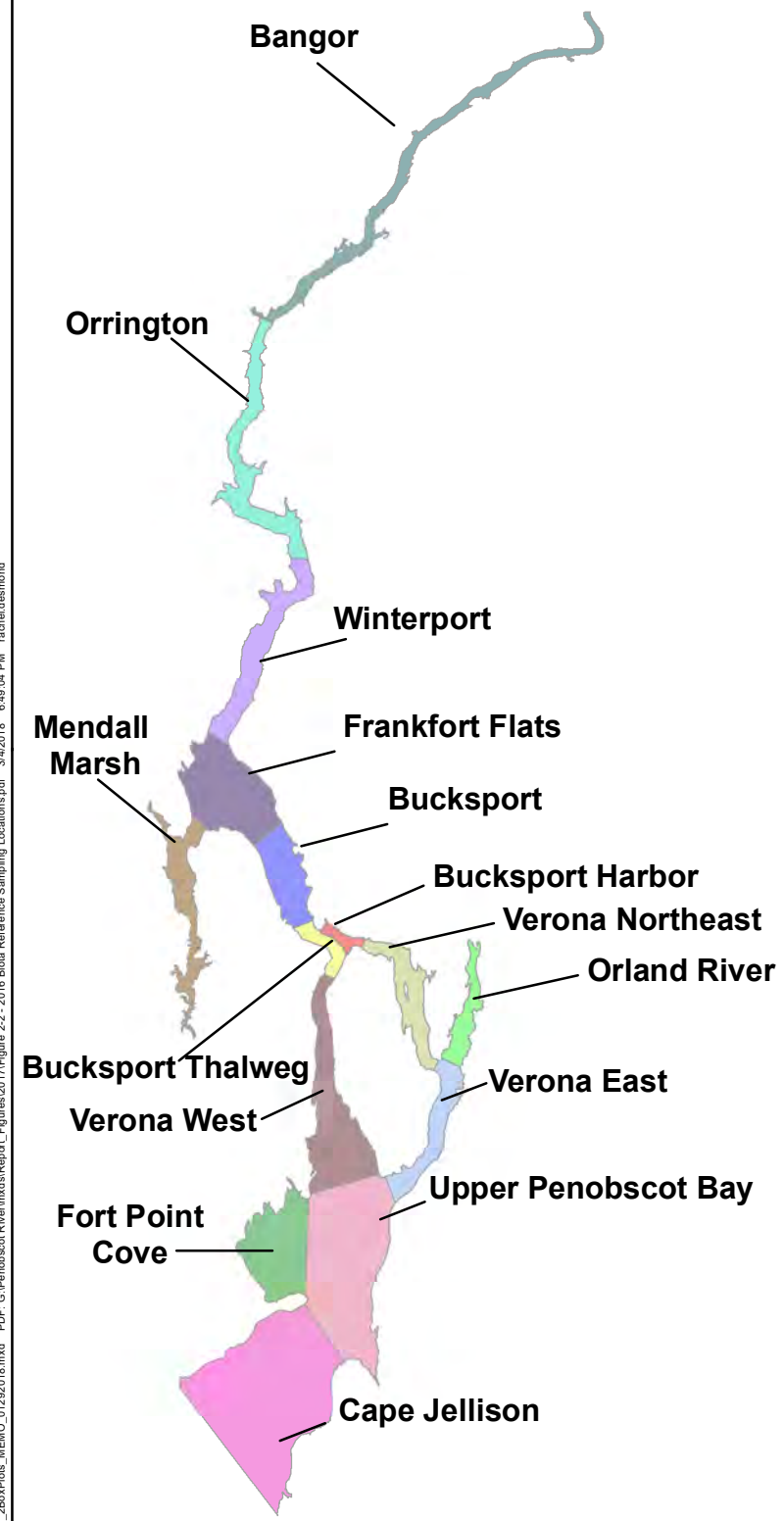


Figure 4-2
Box and Whisker Plots
IPWC 3 - 6 inches

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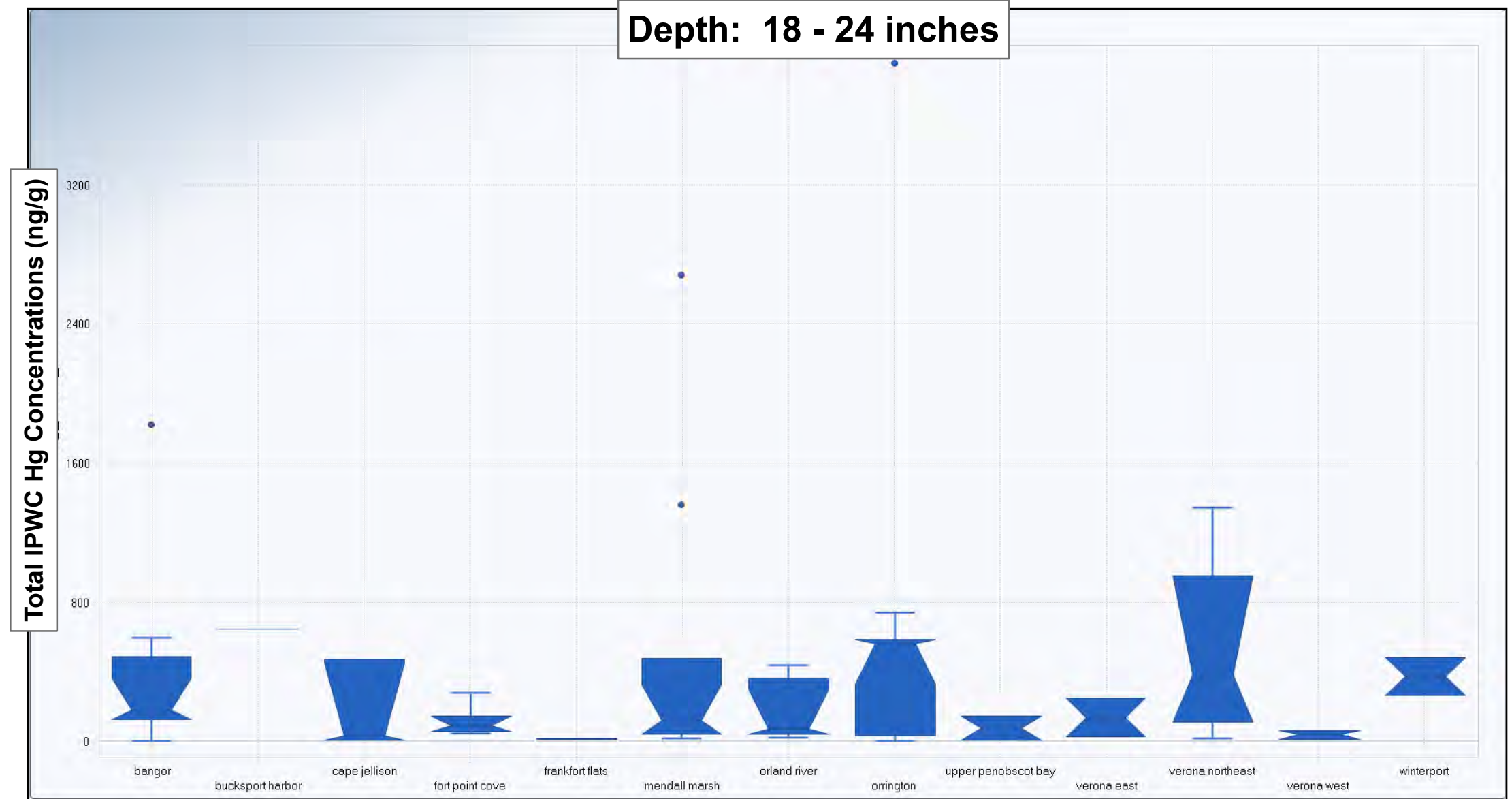
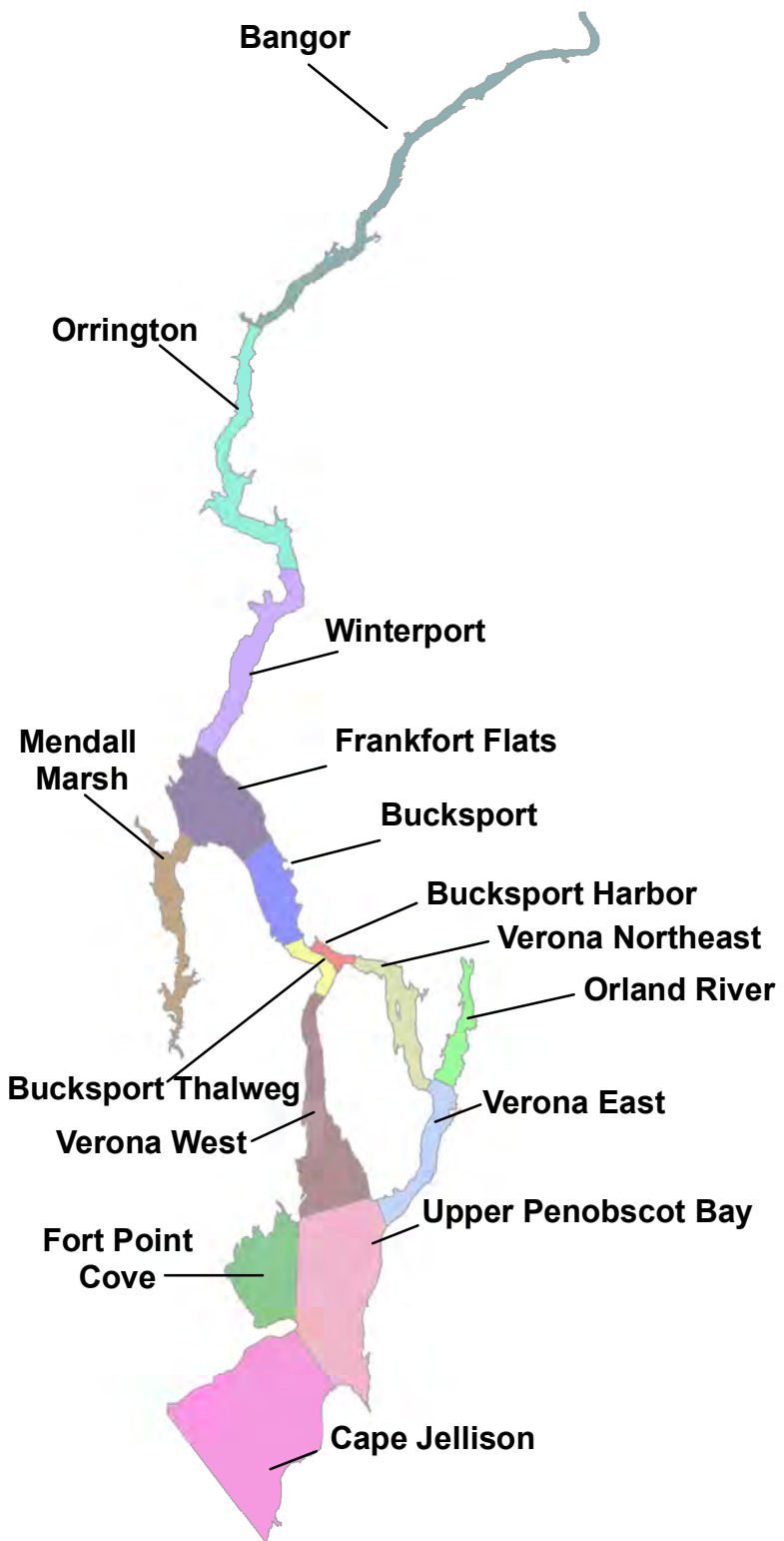


Figure 4-5
Box and Whisker Plots
IPWC 18 - 24 inches
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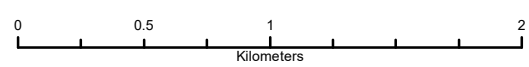
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IPWC 0 to 6 inches	450.01 - 600.00
	600.01 - 2029.65
	10.86 - 350.00

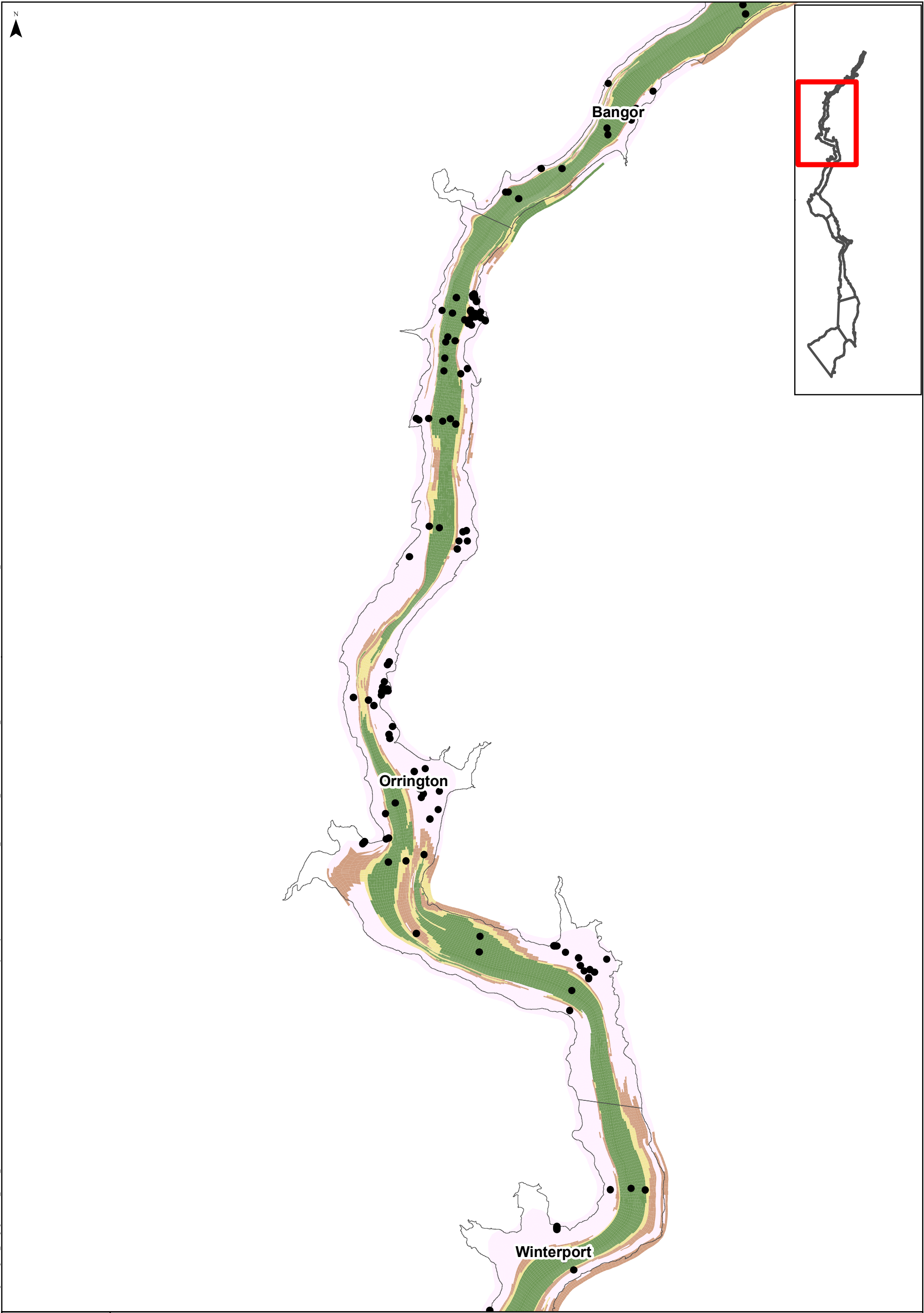
● Sample Locations

□ Reach Boundary

Bangor

Figure 5-1
Kriging Estimates
Page 1 of 10
2017 SPATIAL VISUALIZATION AND
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Penobscot River
Phase III Engineering Study





Symbol Key	
Kriging Estimates (ng/g)	350.01 - 450.00
IPWC 0 to 6 inches	450.01 - 600.00
	600.01 - 2029.65
	10.86 - 350.00

● Sample Locations

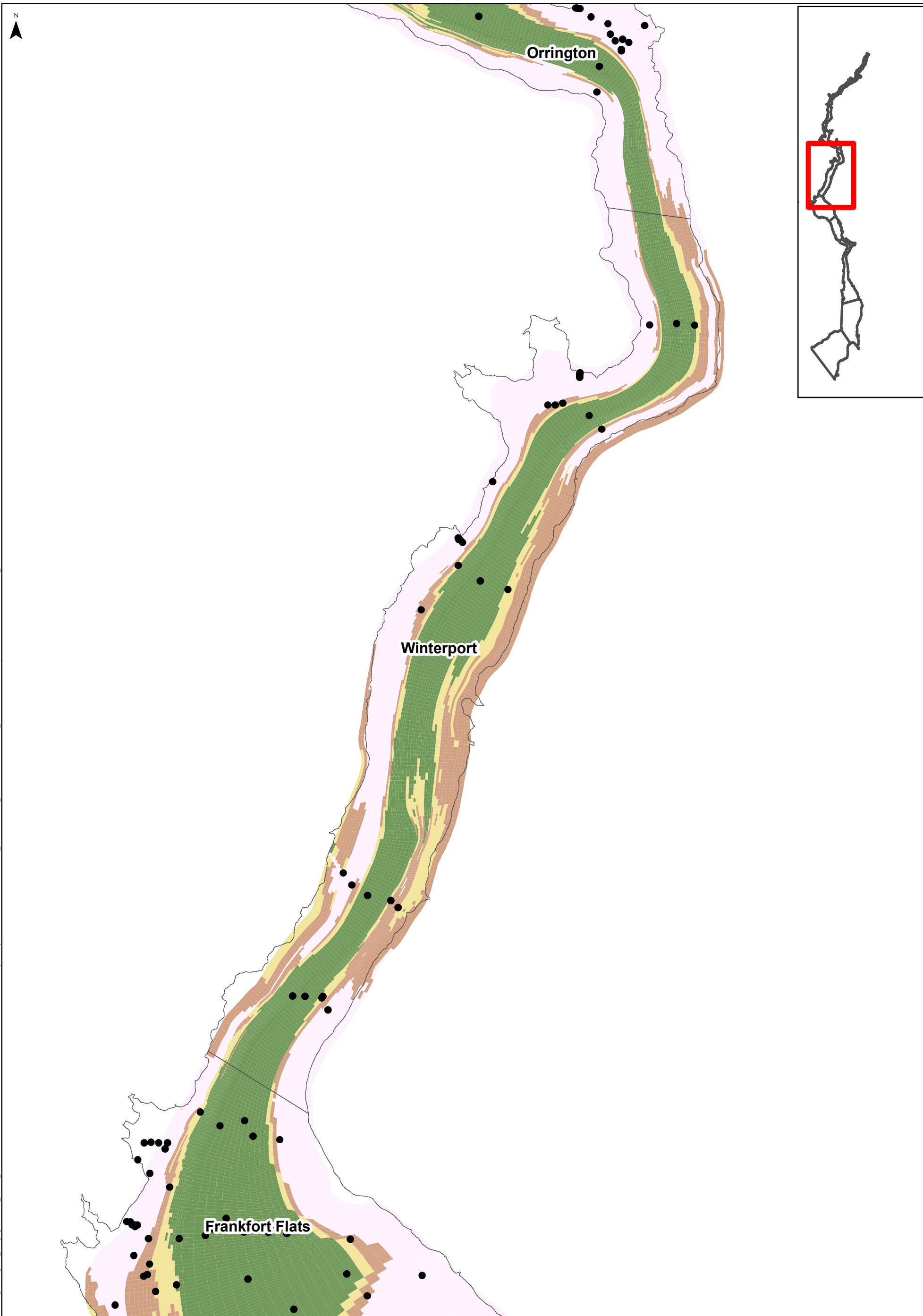
□ Reach Boundary

Orrington

0 0.5 1 2
Kilometers

Figure 5-1
Kriging Estimates
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Symbol Key

Kriging Estimates (ng/g)	350.01 - 450.00
IPWC 0 to 6 inches	450.01 - 600.00
	600.01 - 2029.65
	10.86 - 350.00

- Sample Locations
- Reach Boundary

Winterport

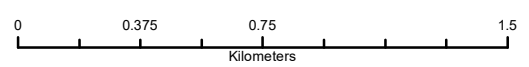


Figure 5-1
Kriging Estimates
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Symbol Key

- Kriging Estimates (ng/g) 350.01 - 450.00
- IPWC 0 to 6 inches 450.01 - 600.00
- 10.86 - 350.00 600.01 - 2029.65

- Sample Locations
- Reach Boundary

Frankfort Flats

Figure 5-1
Kriging Estimates
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Symbol Key	
Kriging Estimates (ng/g)	350.01 - 450.00
IPWC 0 to 6 inches	450.01 - 600.00
	600.01 - 2029.65
	10.86 - 350.00

● Sample Locations

□ Reach Boundary

Bucksport

Figure 5-1
Kriging Estimates
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2017 SPATIAL VISUALIZATION AND
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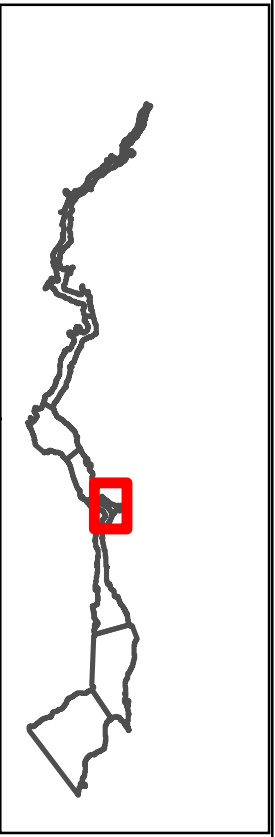
Ecksport

Bucksport

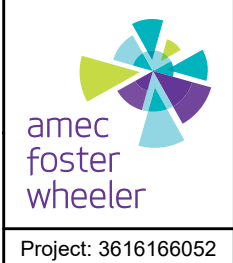
Bucksport Harbor

Bucksport Thalweg

Verona West

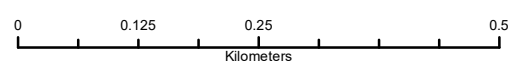


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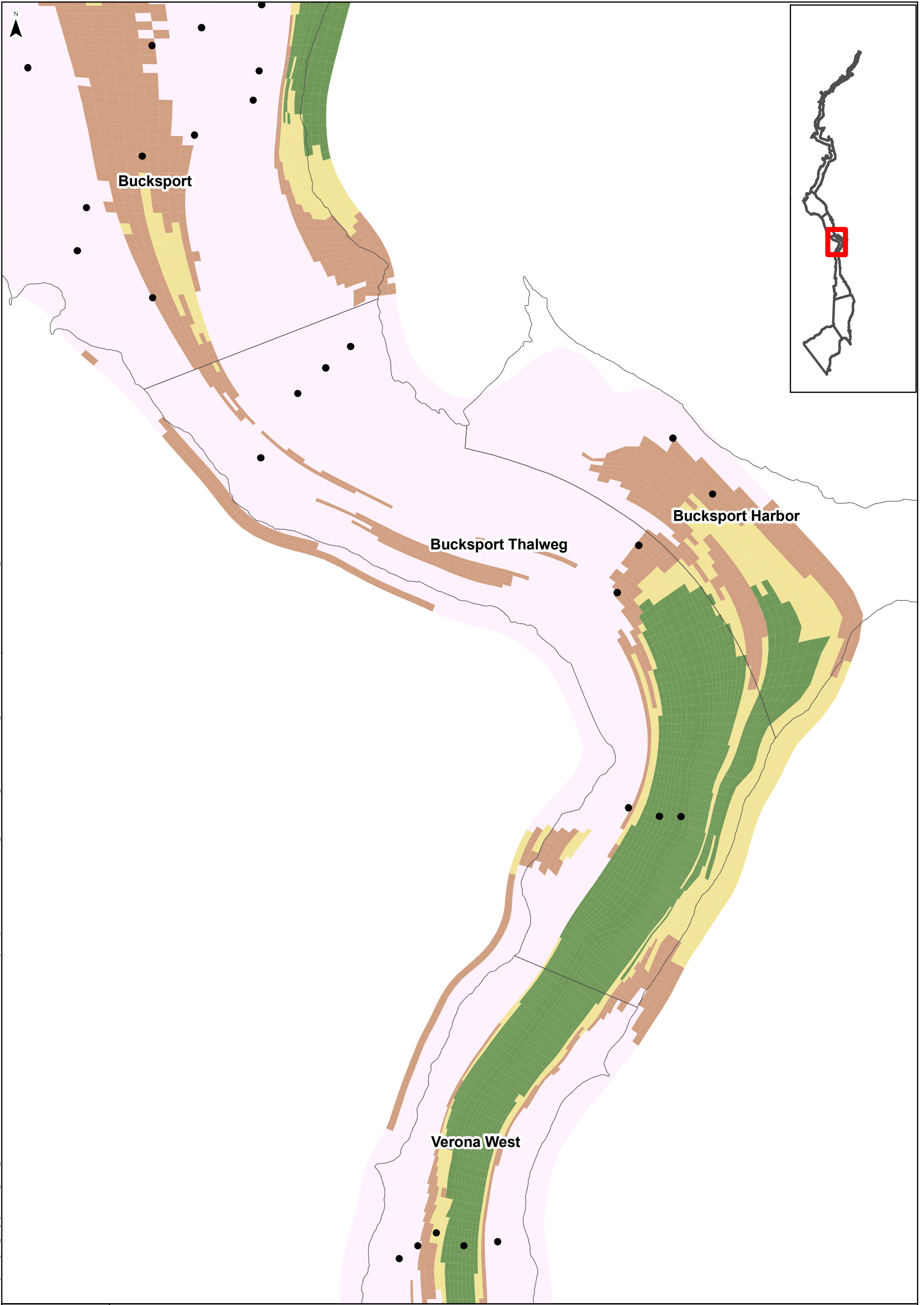
Symbol Key	
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IPWC 0 to 6 inches	450.01 - 600.00
	600.01 - 2029.65
	10.86 - 350.00

- Sample Locations
- Reach Boundary



Bucksport Harbor

Figure 5-1
Kriging Estimates
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Symbol Key	
Kriging Estimates (ng/g)	350.01 - 450.00
IPWC 0 to 6 inches	450.01 - 600.00
	600.01 - 2029.65
	10.86 - 350.00

● Sample Locations

□ Reach Boundary

Bucksport Thalweg

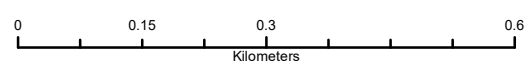
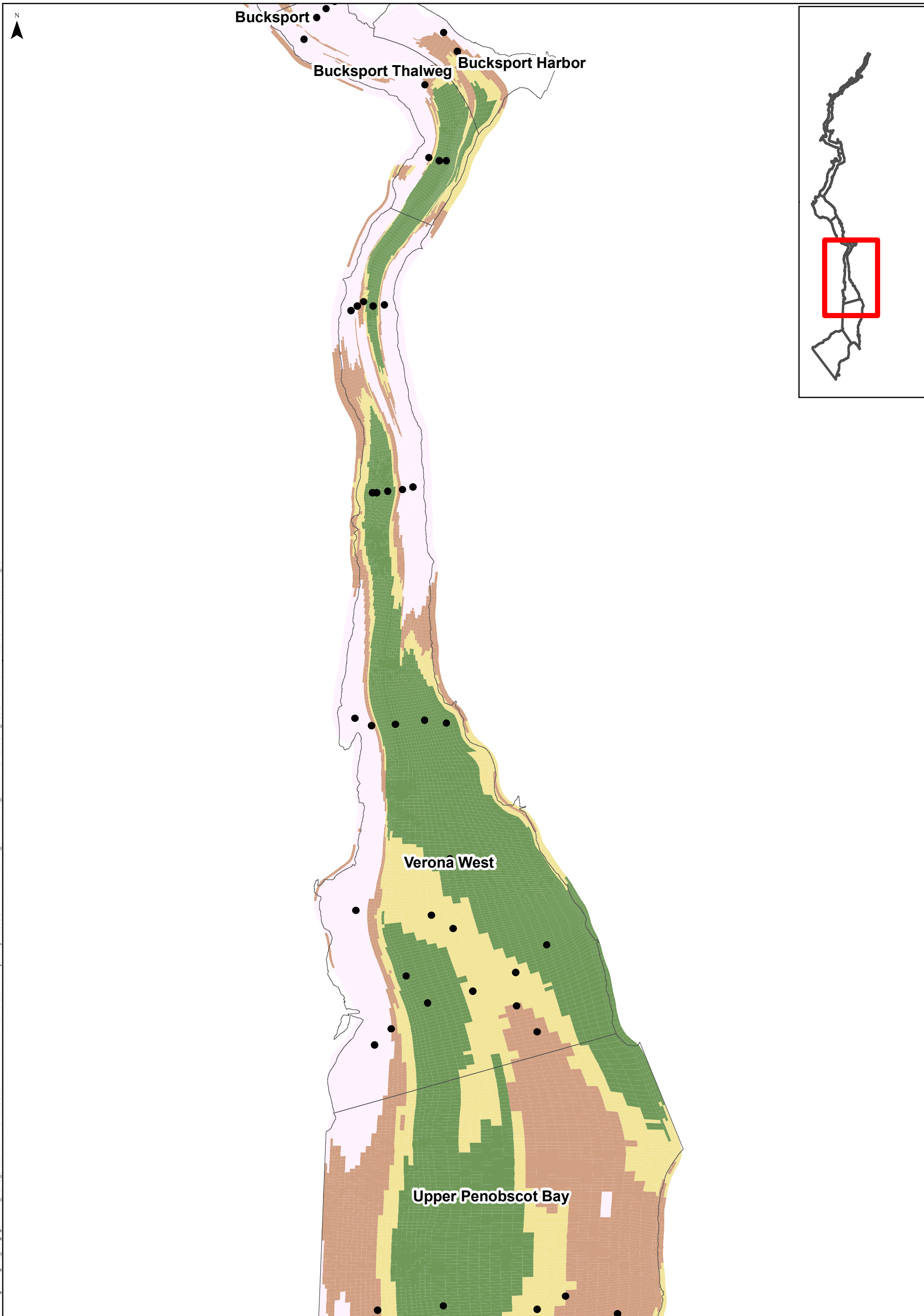


Figure 5-1
Kriging Estimates
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Symbol Key

Kriging Estimates (ng/g)	350.01 - 450.00
IPWC 0 to 6 inches	450.01 - 600.00
	600.01 - 2029.65

- Sample Locations
- Reach Boundary

Verona West

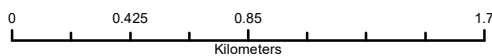
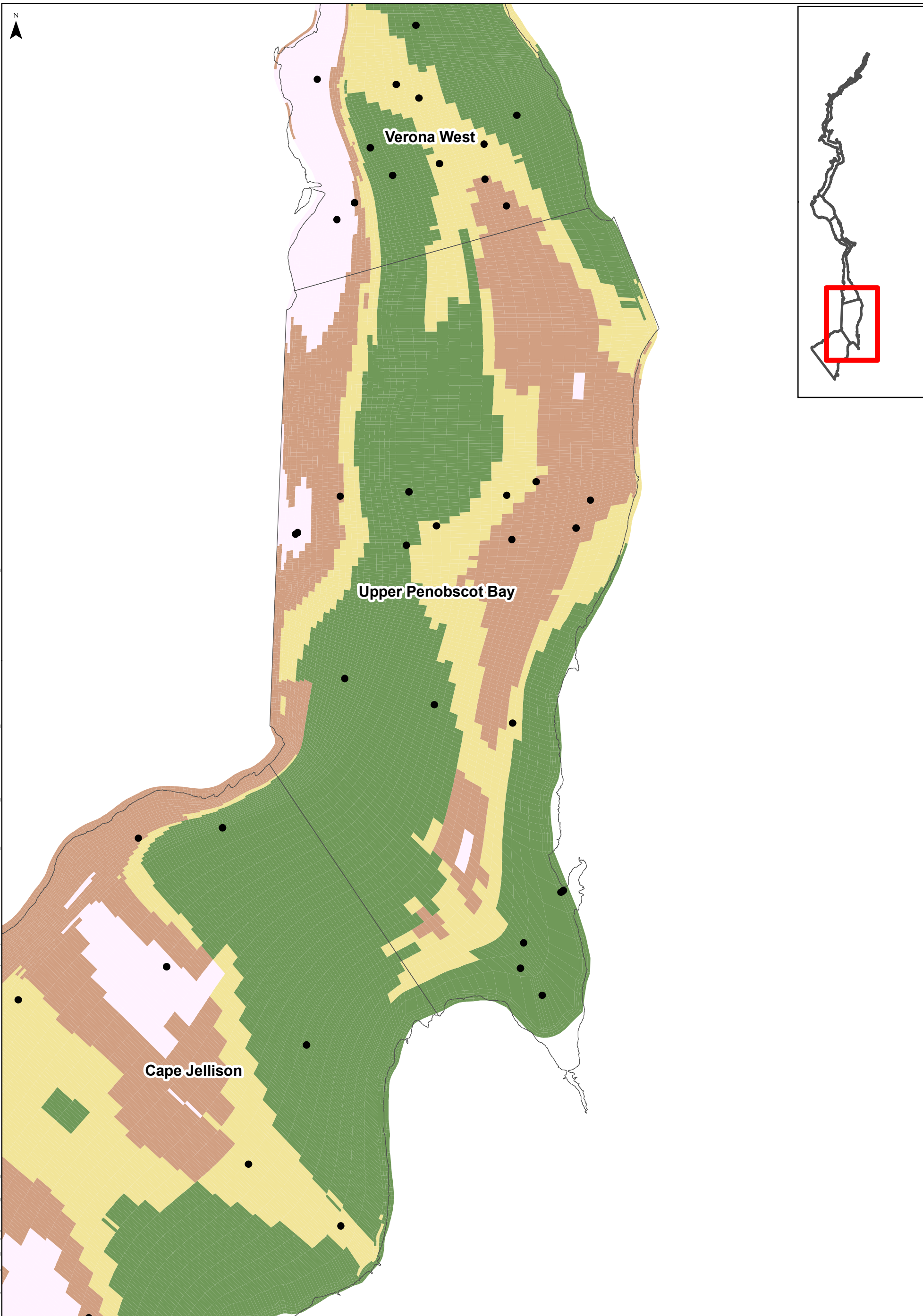


Figure 5-1
Kriging Estimates
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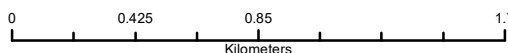
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	10.86 - 350.00

- Sample Locations
- Reach Boundary

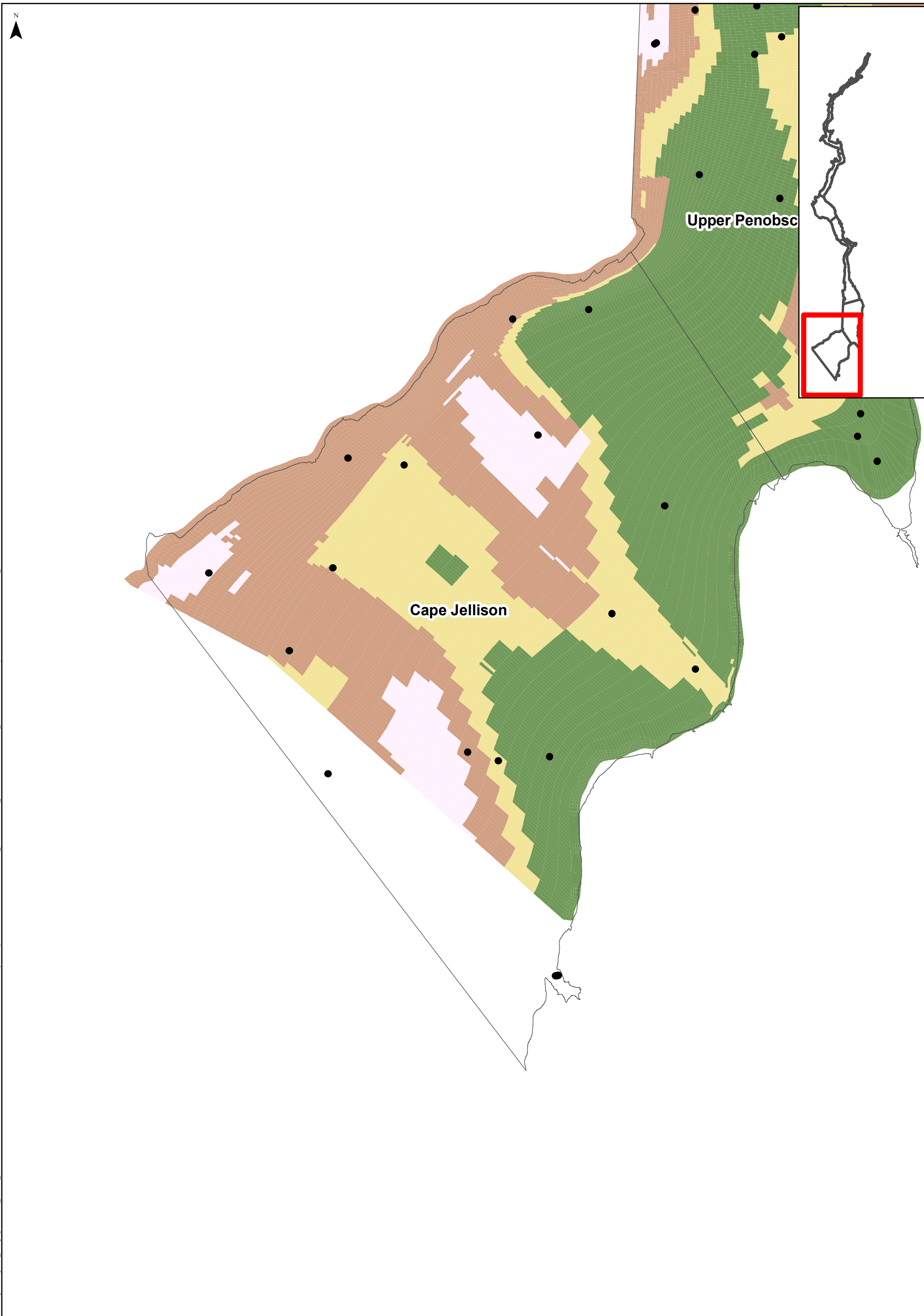
Upper Penobscot Bay

Figure 5-1
Kriging Estimates
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2017 SPATIAL VISUALIZATION AND
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Penobscot River
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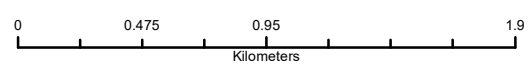


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Symbol Key	
Kriging Estimates (ng/g)	350.01 - 450.00
IPWC 0 to 6 inches	450.01 - 600.00
	600.01 - 2029.65
	10.86 - 350.00

- Sample Locations
- Reach Boundary

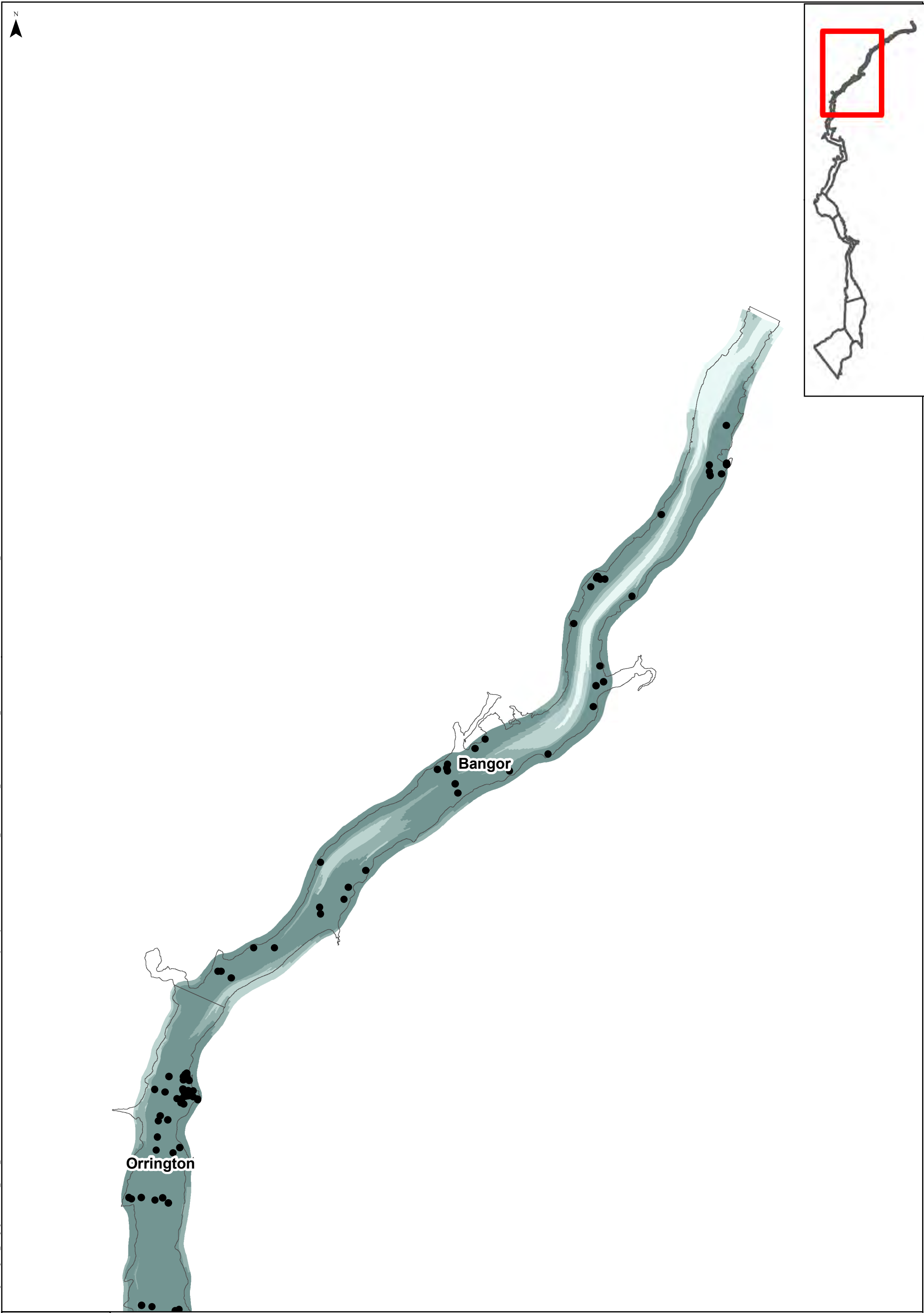


Cape Jellison

Figure 5-1
Kriging Estimates
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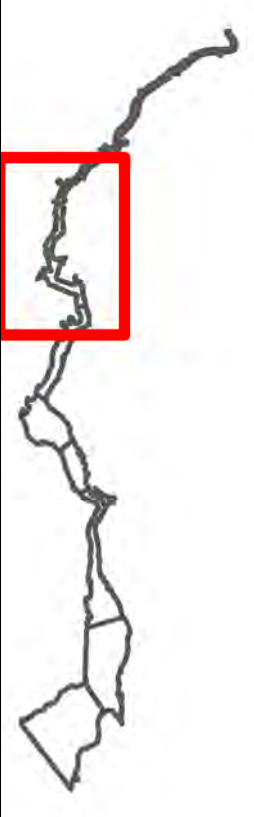
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IPWC 0 to 6 inches	3.01 - 3.50
	3.51 - 4.00
	1.17 - 2.50

Bangor

- Sample Locations
- Reach Boundary

0 0.5 1 2
Kilometers

Figure 5-2
Kriging Standard Deviation
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Symbol Key	
Kriging Standard Deviation (ng/g)	2.51 - 3.00
IPWC 0 to 6 inches	3.01 - 3.50
	3.51 - 4.00
	1.17 - 2.50

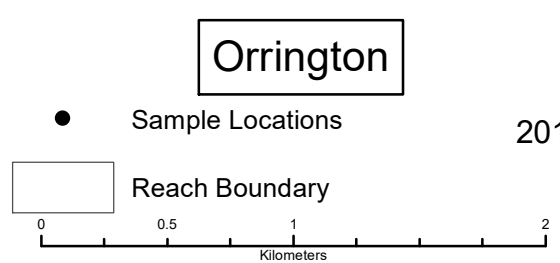


Figure 5-2
 Kriging Standard Deviation
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Symbol Key

Kriging Standard Deviation (ng/g)	2.51 - 3.00
IPWC 0 to 6 inches	3.01 - 3.50
	3.51 - 4.00
	1.17 - 2.50

Winterport

- Sample Locations
- Reach Boundary

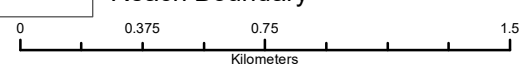
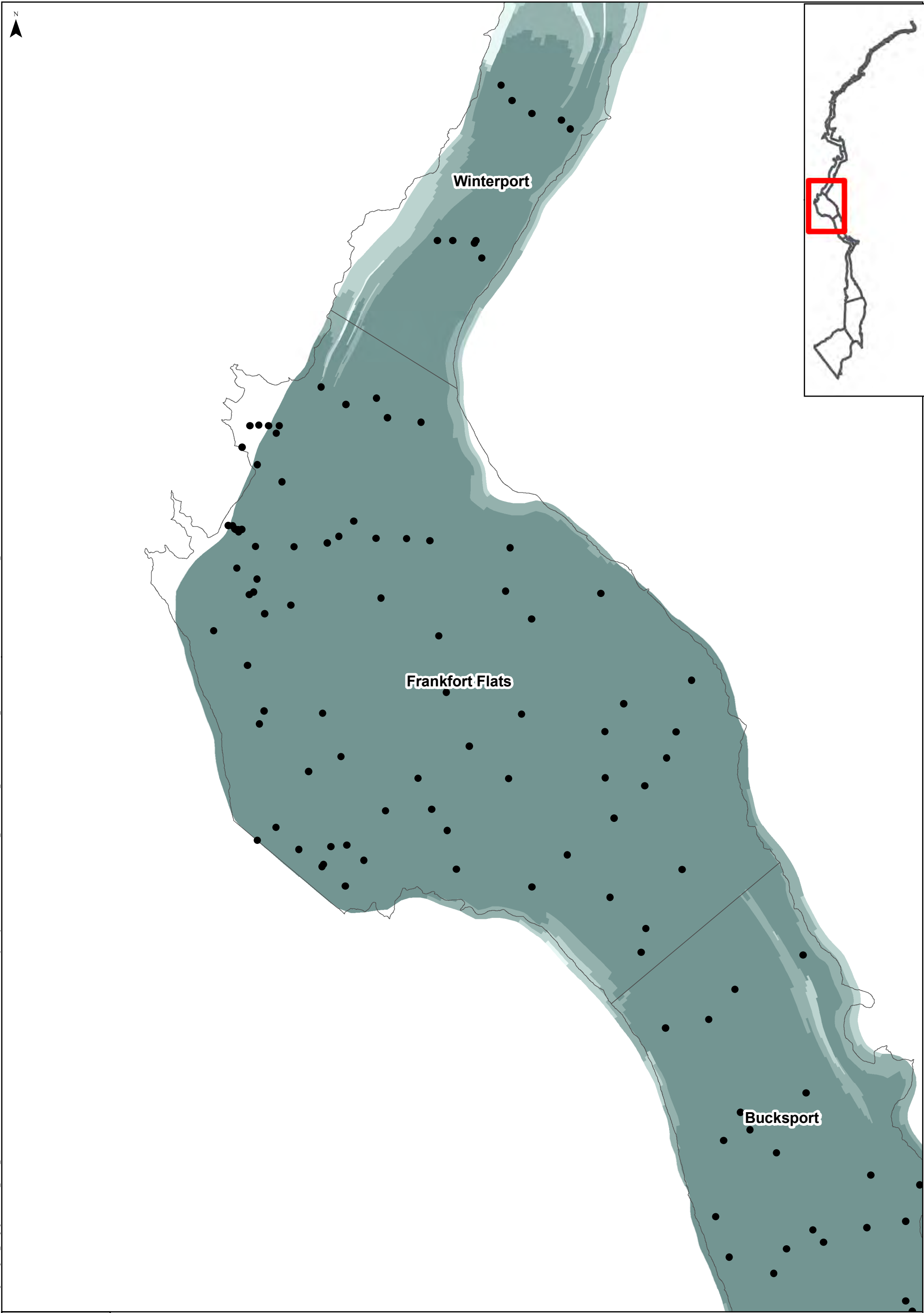


Figure 5-2
Kriging Standard Deviation
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Symbol Key

Kriging Standard Deviation (ng/g)	2.51 - 3.00
IPWC 0 to 6 inches	3.01 - 3.50
	3.51 - 4.00
	1.17 - 2.50

Frankfort Flats

- Sample Locations
- Reach Boundary

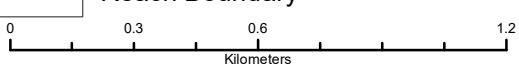
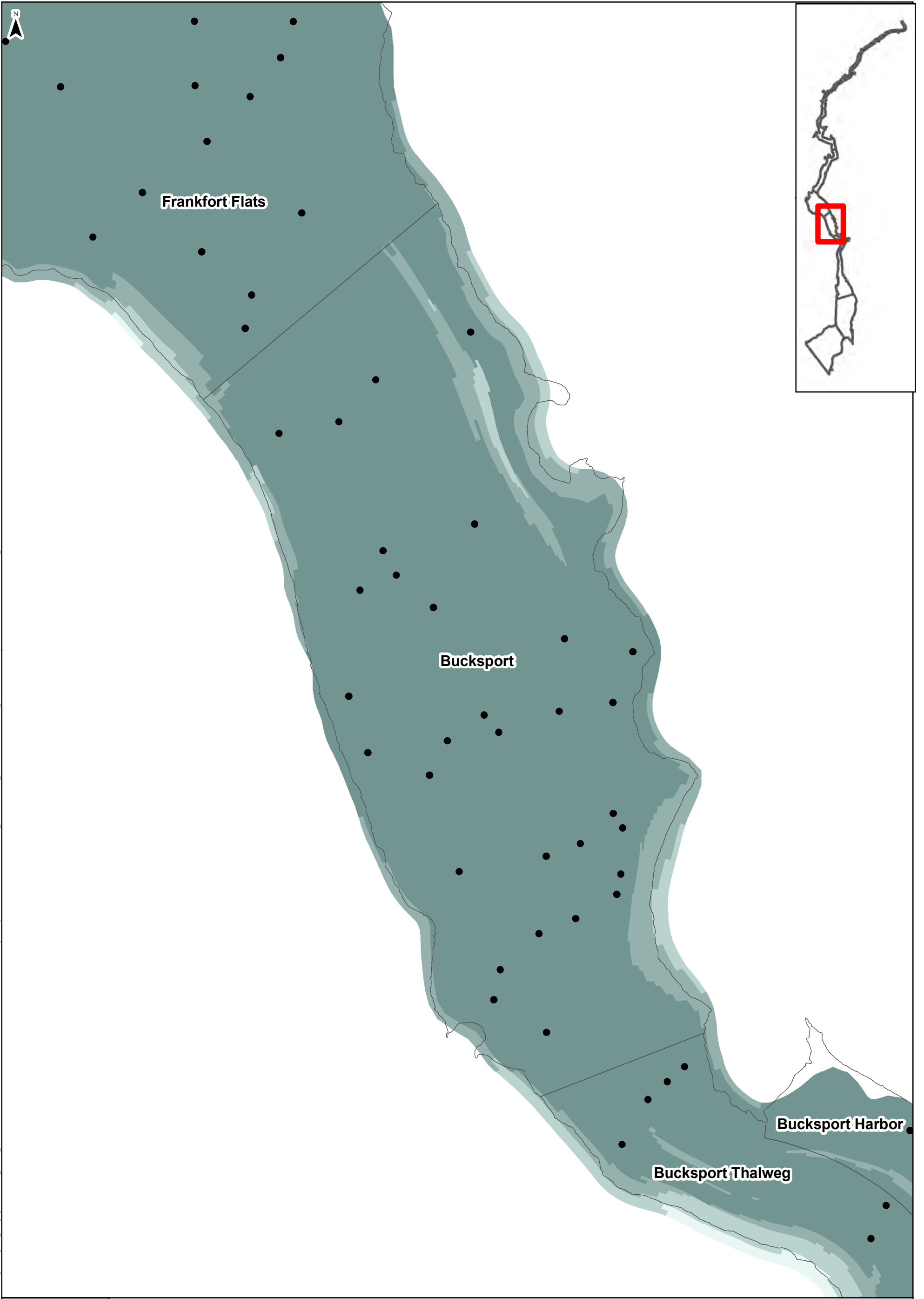


Figure 5-2
Kriging Standard Deviation
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Symbol Key	
Kriging Standard Deviation (ng/g)	2.51 - 3.00
IPWC 0 to 6 inches	3.01 - 3.50
	3.51 - 4.00
	1.17 - 2.50

Bucksport

- Sample Locations
- Reach Boundary

Figure 5-2
 Kriging Standard Deviation
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 2017 SPATIAL VISUALIZATION AND
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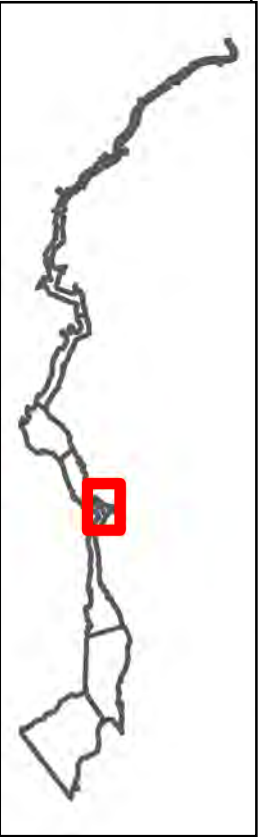
E Bucksport

Bucksport

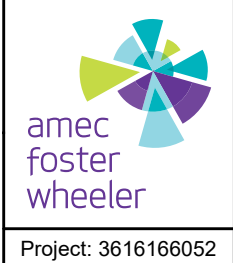
Bucksport Harbor

Bucksport Thalweg

Verona West



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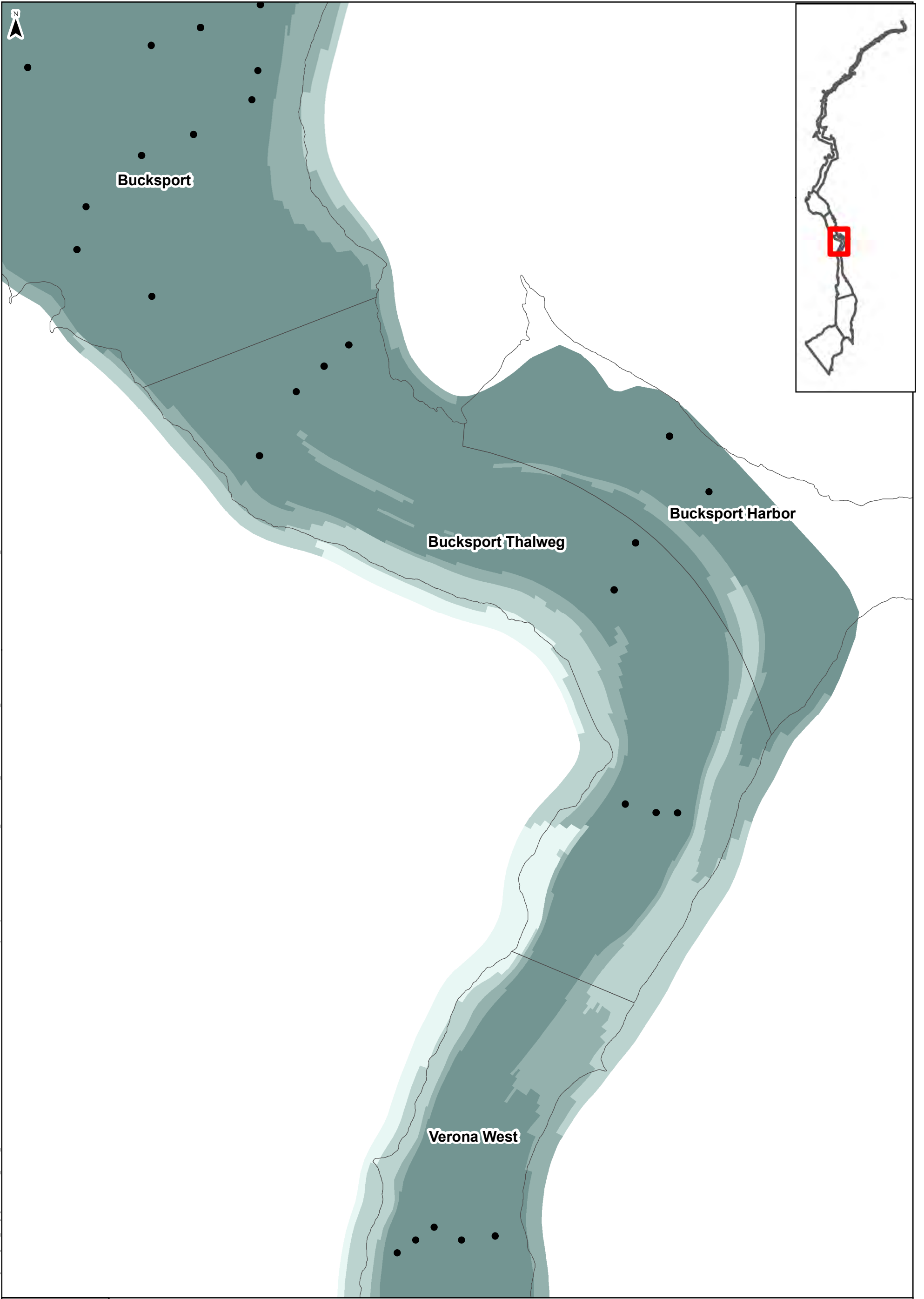
Symbol Key	
Kriging Standard Deviation (ng/g)	2.51 - 3.00
IPWC 0 to 6 inches	3.01 - 3.50
	3.51 - 4.00
	1.17 - 2.50

Bucksport Harbor

- Sample Locations
- Reach Boundary

0 0.125 0.25 0.5
Kilometers

Figure 5-2
 Kriging Standard Deviation
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Symbol Key	
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	3.51 - 4.00
	1.17 - 2.50

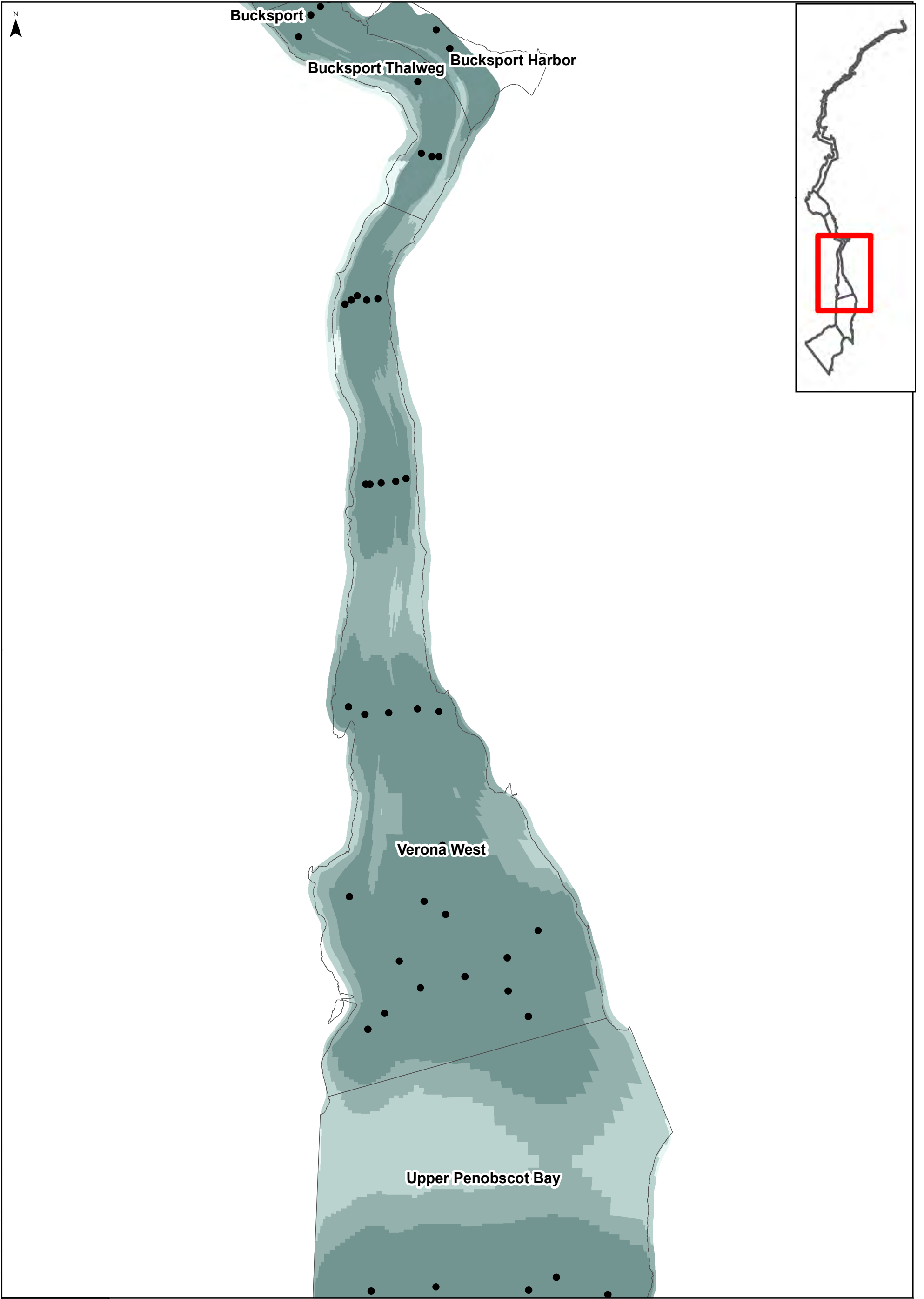
Bucksport Thalweg

- Sample Locations
- Reach Boundary

0 0.15 0.3 0.6
Kilometers

Figure 5-2
 Kriging Standard Deviation
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 2017 SPATIAL VISUALIZATION AND
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Symbol Key

Kriging Standard Deviation (ng/g)	2.51 - 3.00
IPWC 0 to 6 inches	3.01 - 3.50
	3.51 - 4.00
	1.17 - 2.50

Verona West

- Sample Locations
- Reach Boundary

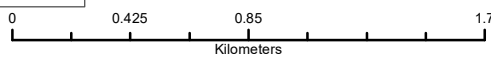
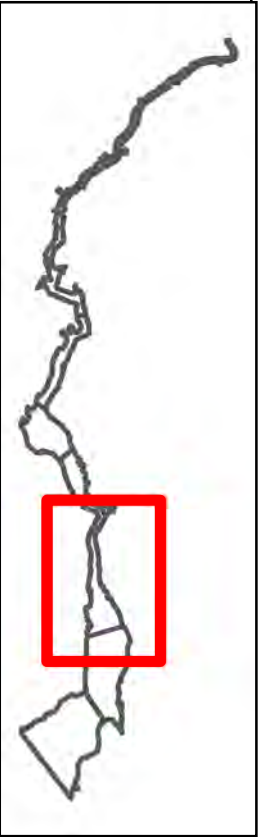
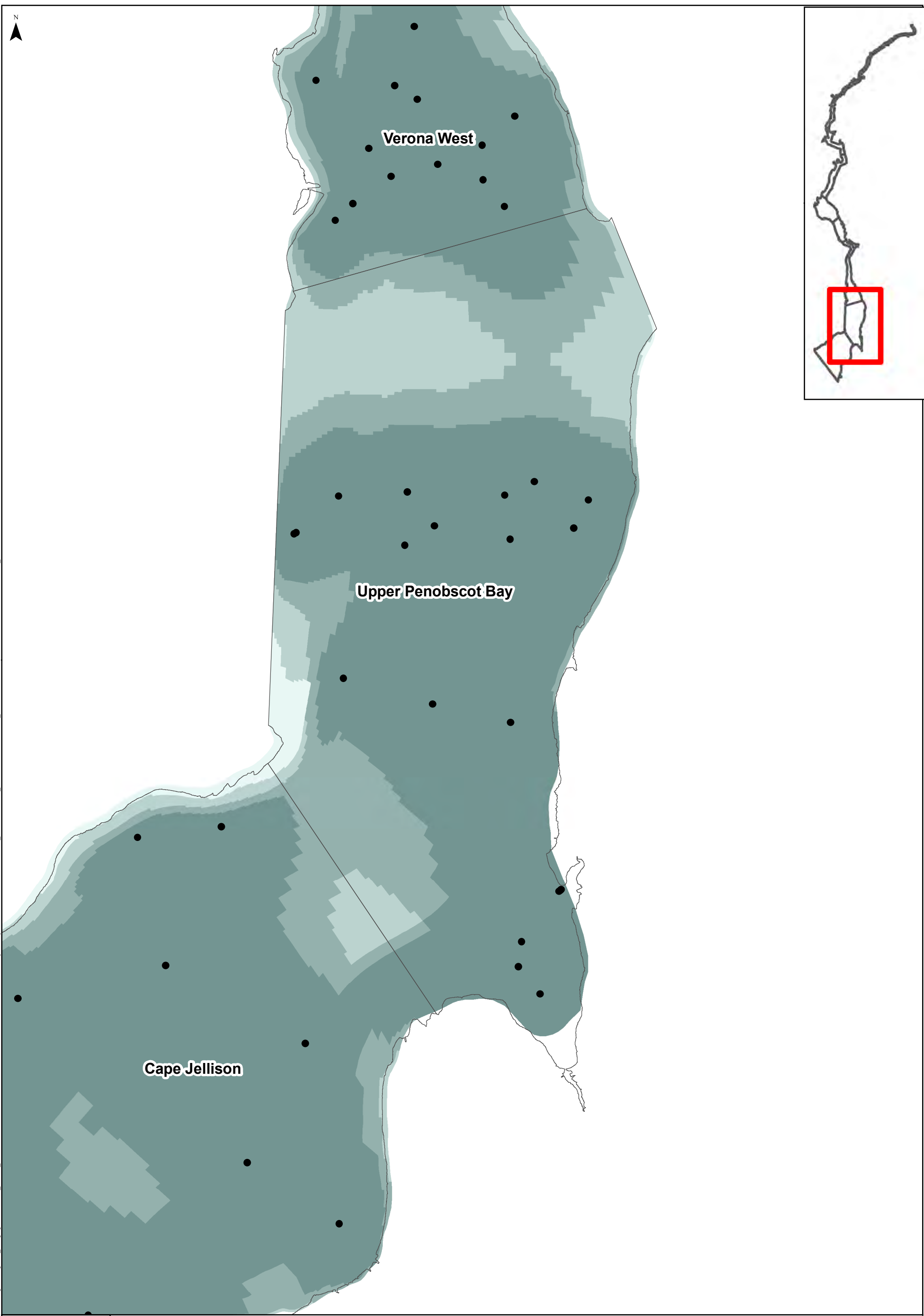


Figure 5-2
Kriging Standard Deviation
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Symbol Key

Kriging Standard Deviation (ng/g)	2.51 - 3.00
IPWC 0 to 6 inches	3.01 - 3.50
	3.51 - 4.00
	1.17 - 2.50

- Sample Locations
- Reach Boundary

Upper Penobscot Bay

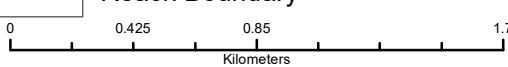
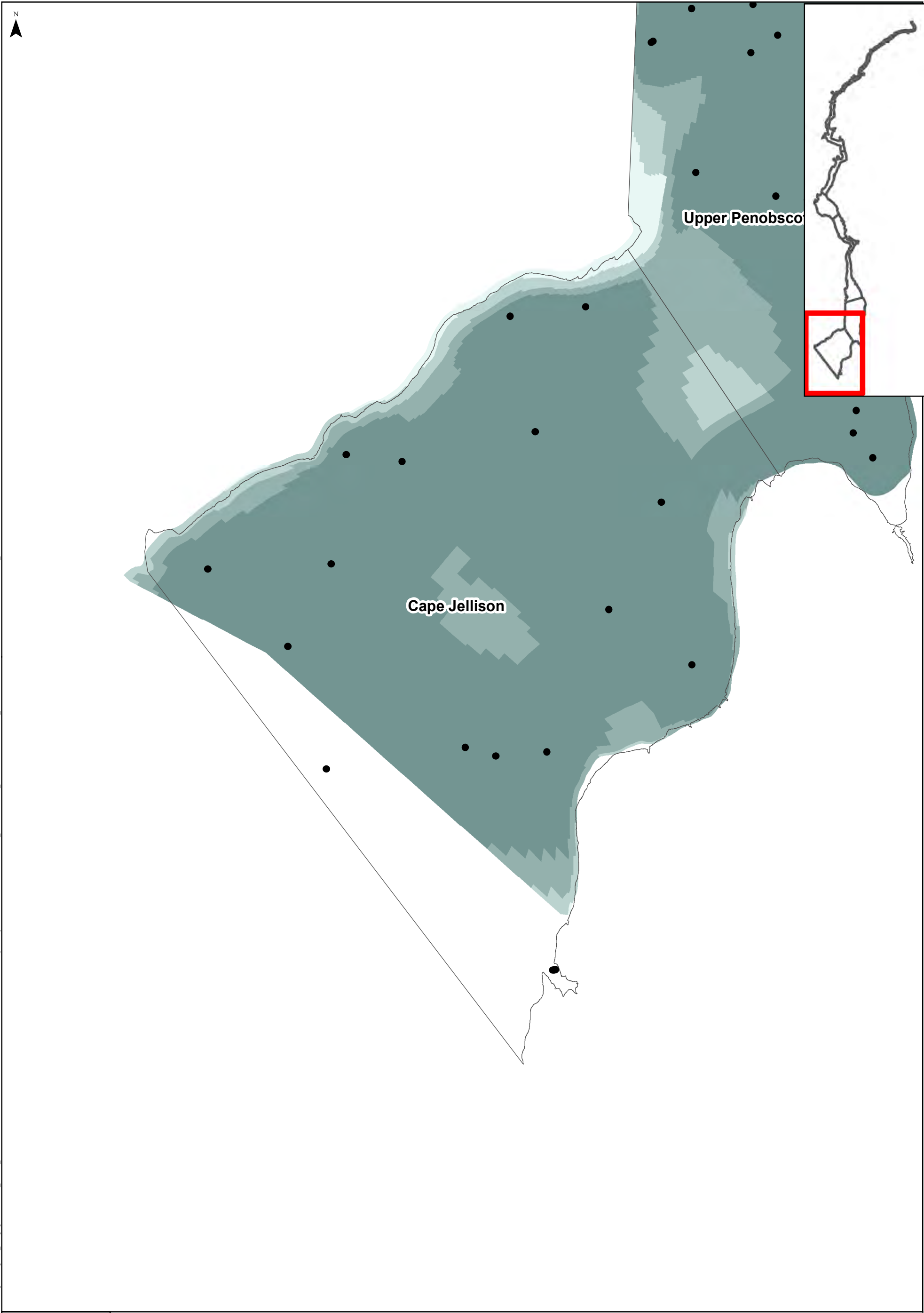


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Symbol Key

Kriging Standard Deviation (ng/g)	2.51 - 3.00
IPWC 0 to 6 inches	3.01 - 3.50
	3.51 - 4.00
	1.17 - 2.50

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- Sample Locations
- Reach Boundary

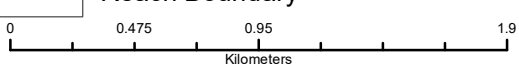
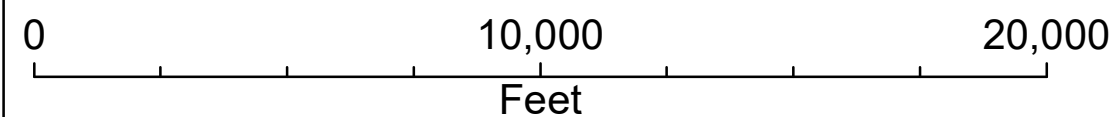
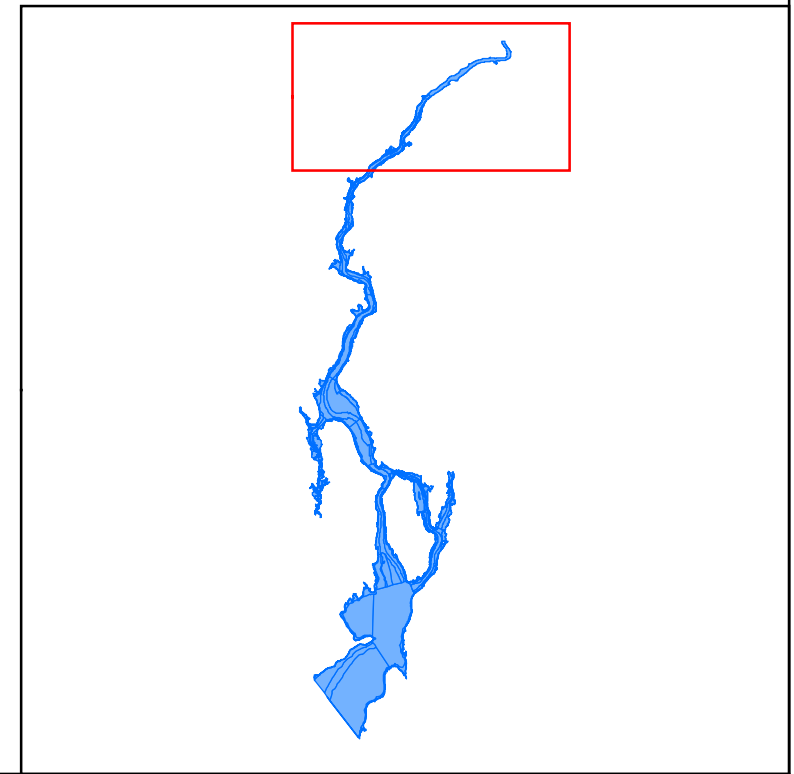


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Symbol Key
IPWC 0 - 6 inch Total Hg (ug/g)

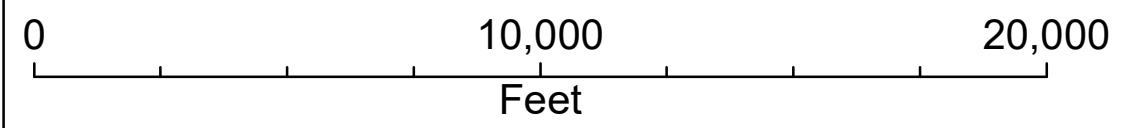
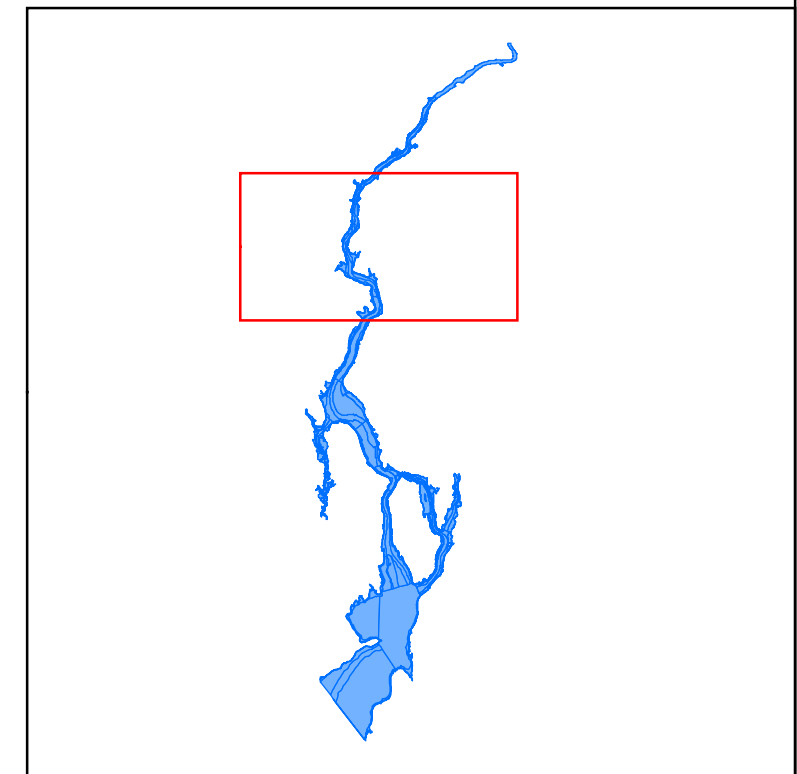
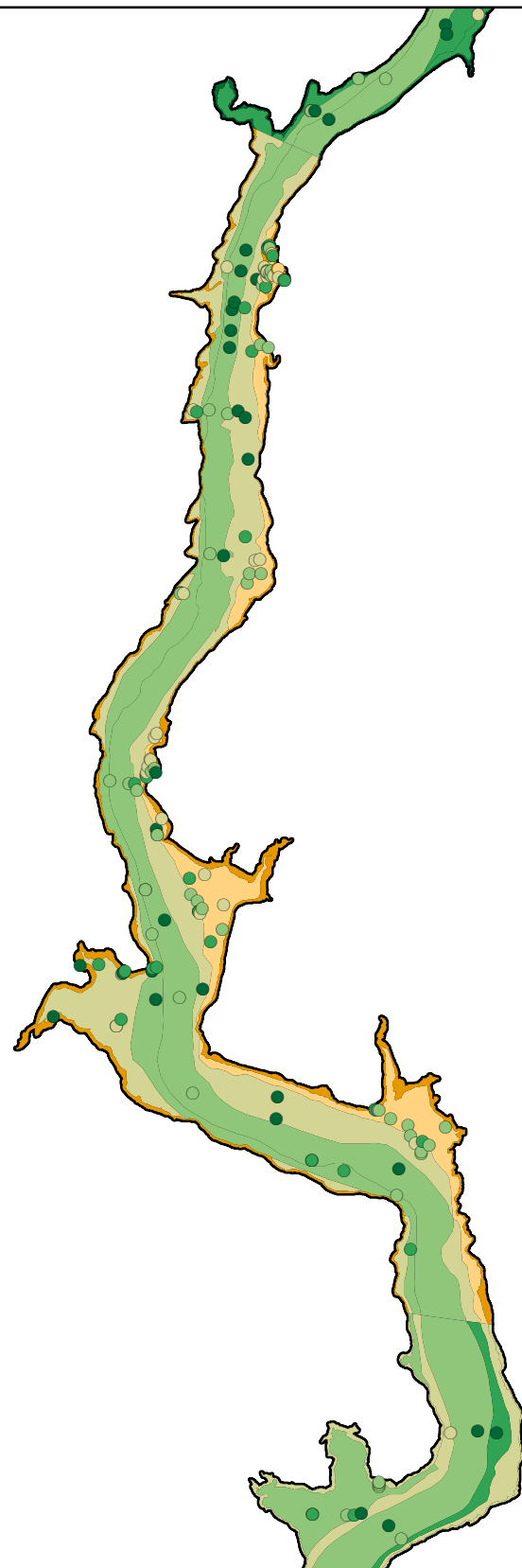
0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	Sample Location
500 - 750	> 1500	

Figure 6-2
Total Mercury Concentrations Bootstrap Mean
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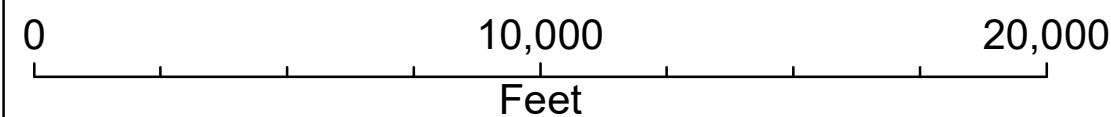
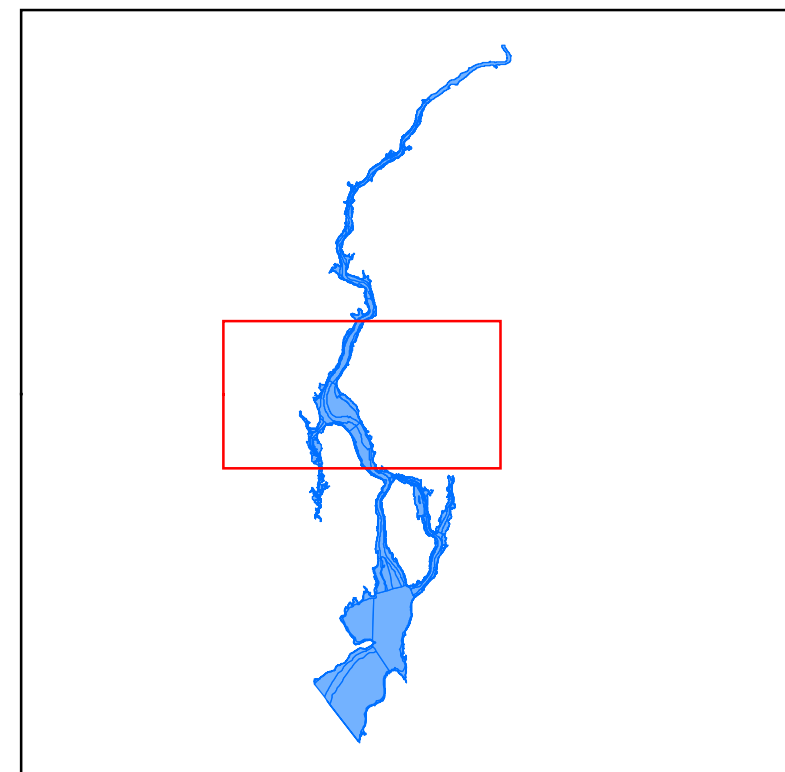
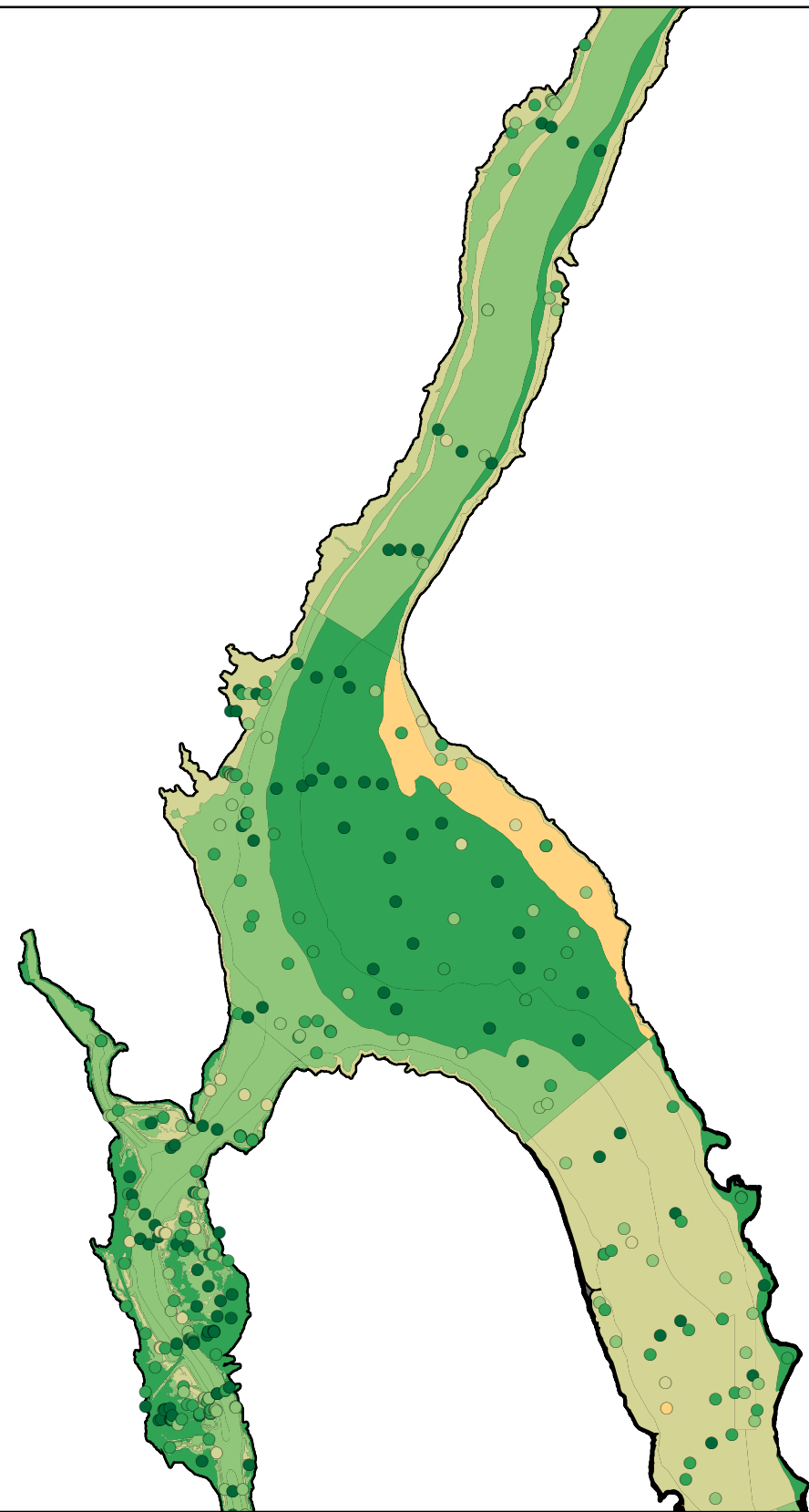


Symbol Key		
IPWC 0 - 6 inch Total Hg (ug/g)		
0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	Sample Location
500 - 750	> 1500	

Figure 6-2
Total Mercury Concentrations Bootstrap Mean
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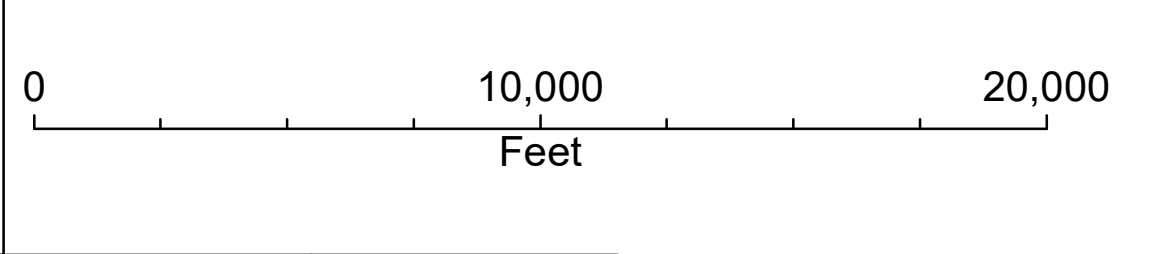
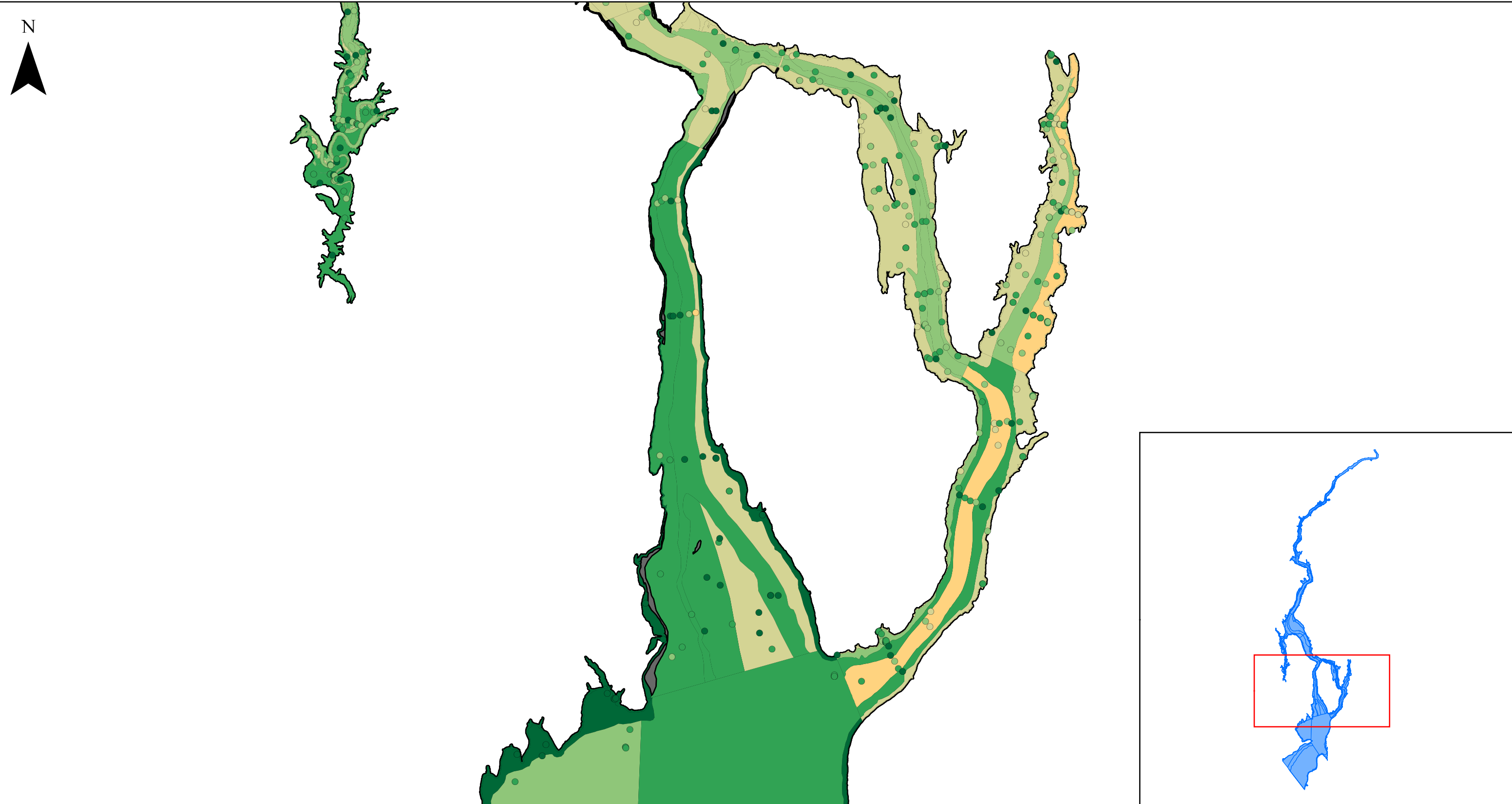
Symbol Key		
IPWC 0 - 6 inch Total Hg (ug/g)		
0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	○ Sample Location
500 - 750	> 1500	

Figure 6-2
Total Mercury Concentrations Bootstrap Mean
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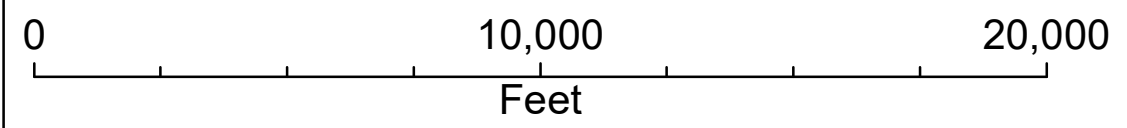
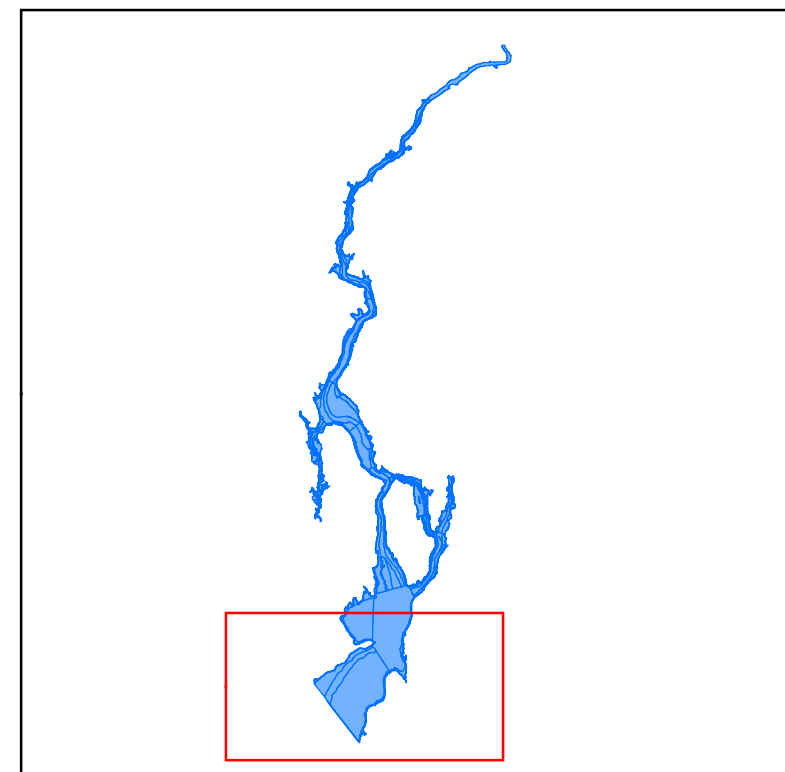
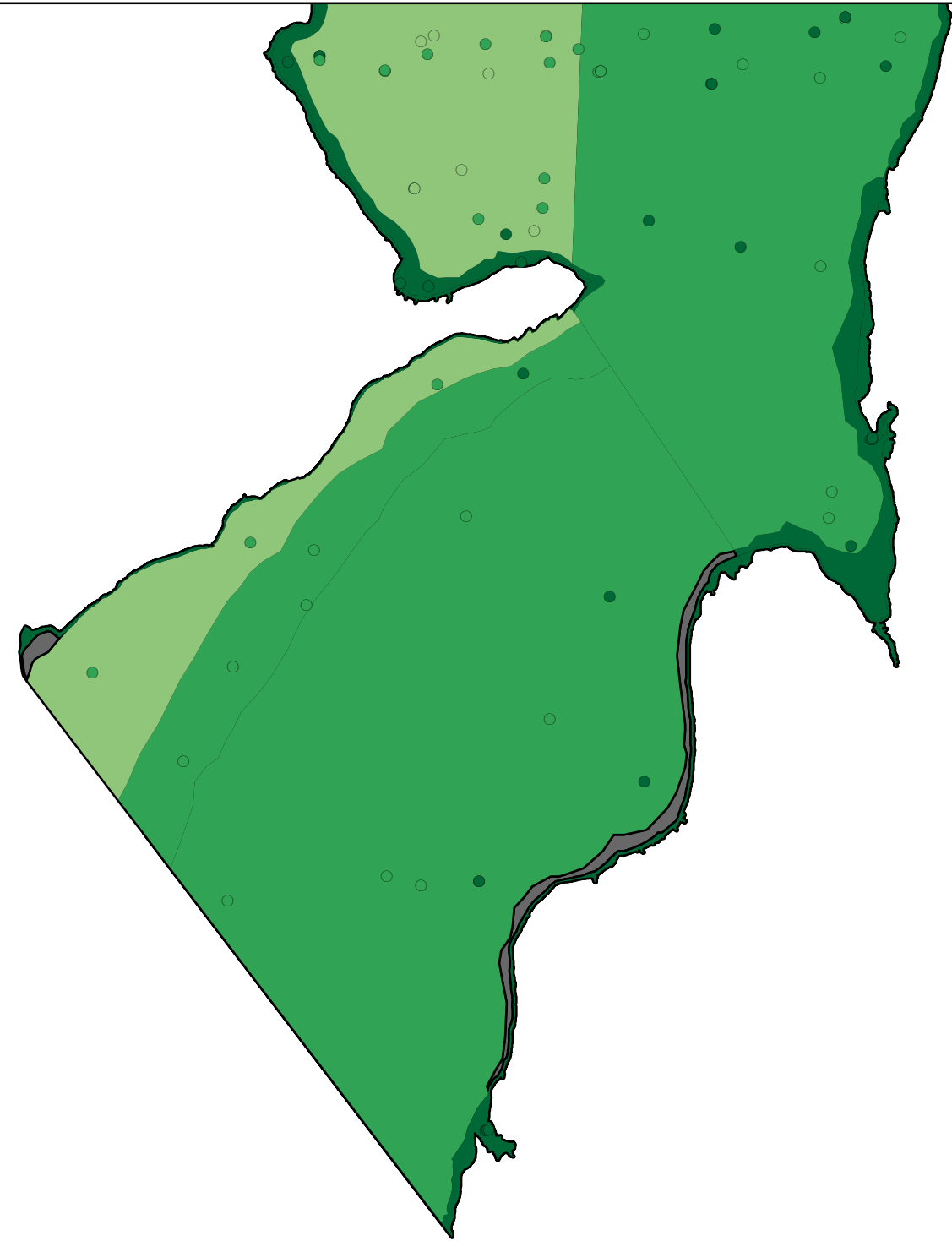


Symbol Key		
IPWC 0 - 6 inch Total Hg (ug/g)		
0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	○ Sample Location
500 - 750	> 1500	

Figure 6-2
Total Mercury Concentrations Bootstrap Mean
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Symbol Key
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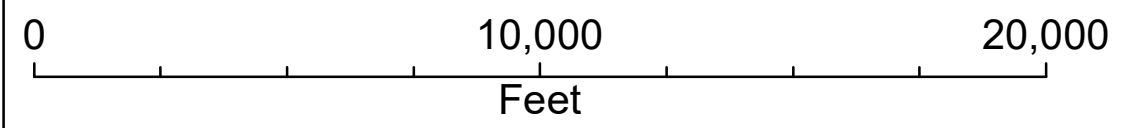
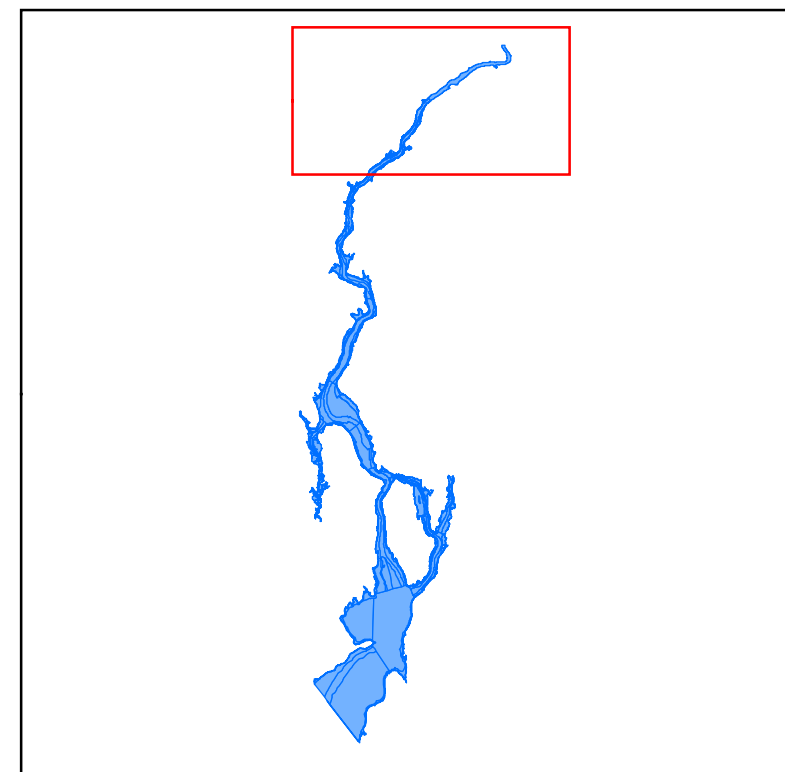
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250 - 500	1000 - 1500	Sample Location
500 - 750	> 1500	

Figure 6-2
Total Mercury Concentrations Bootstrap Mean
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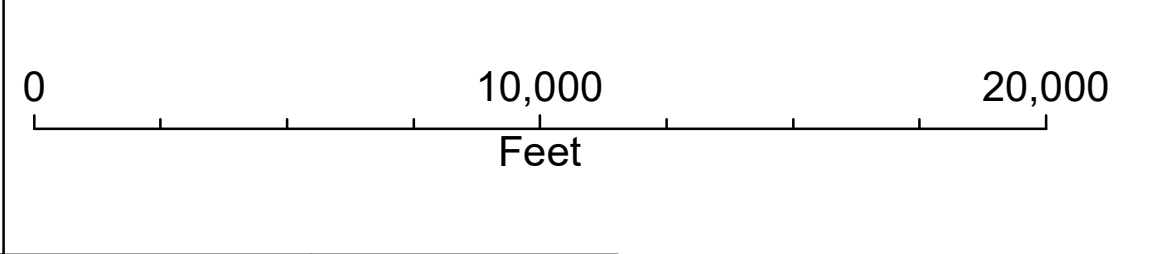
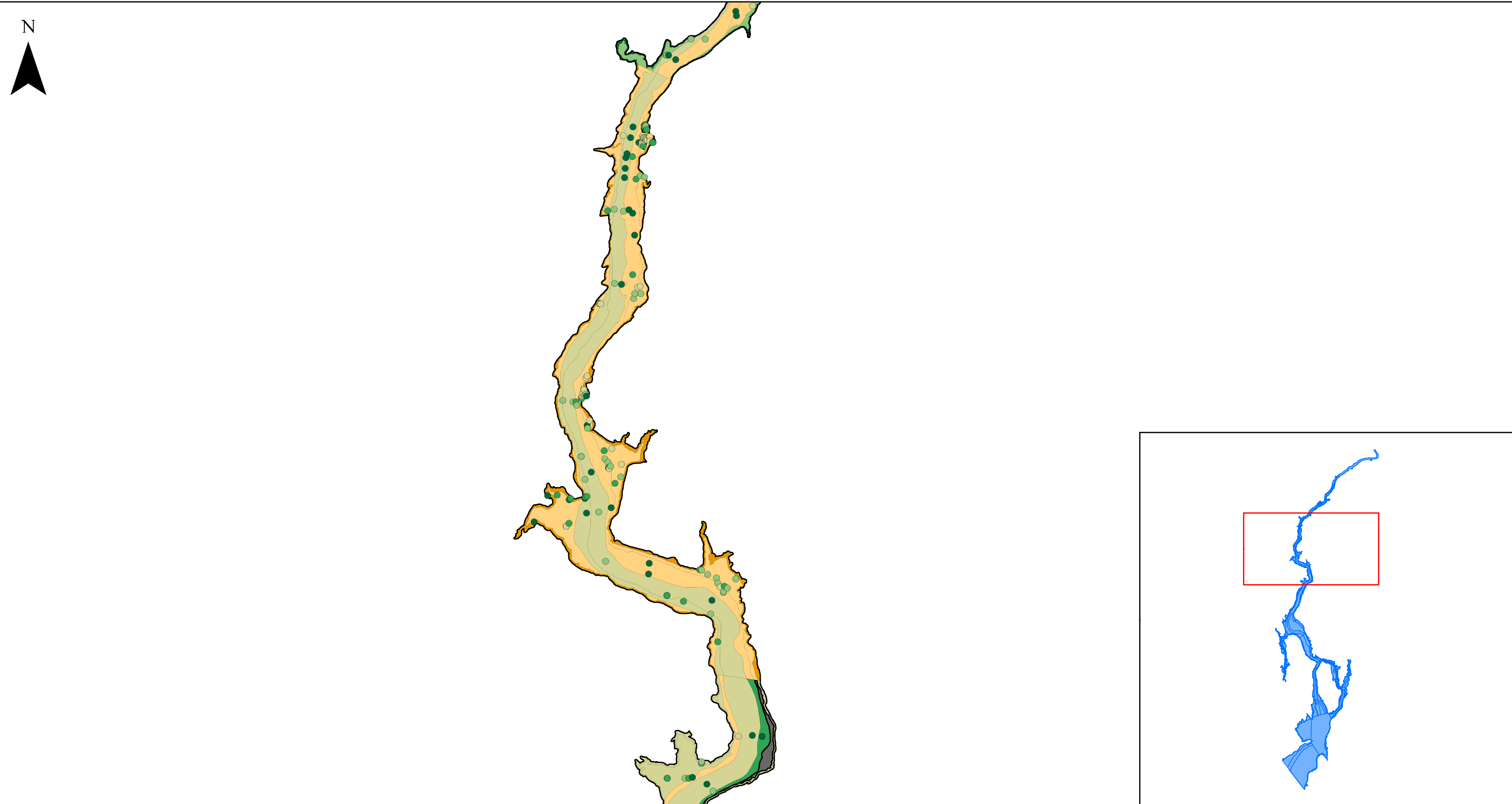
Symbol Key
IPWC 0 - 6 inch Total Hg (ug/g)

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250 - 500	1000 - 1500	Sample Location
500 - 750	> 1500	

Figure 6-3
Total Mercury Concentrations Bootstrap Mean
Upper Confidence Interval
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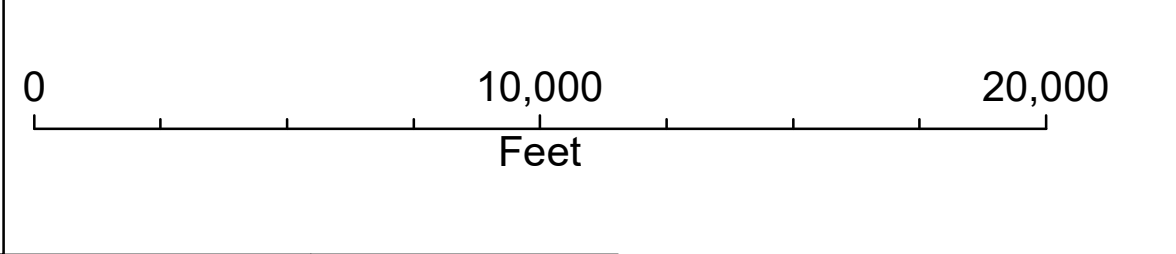
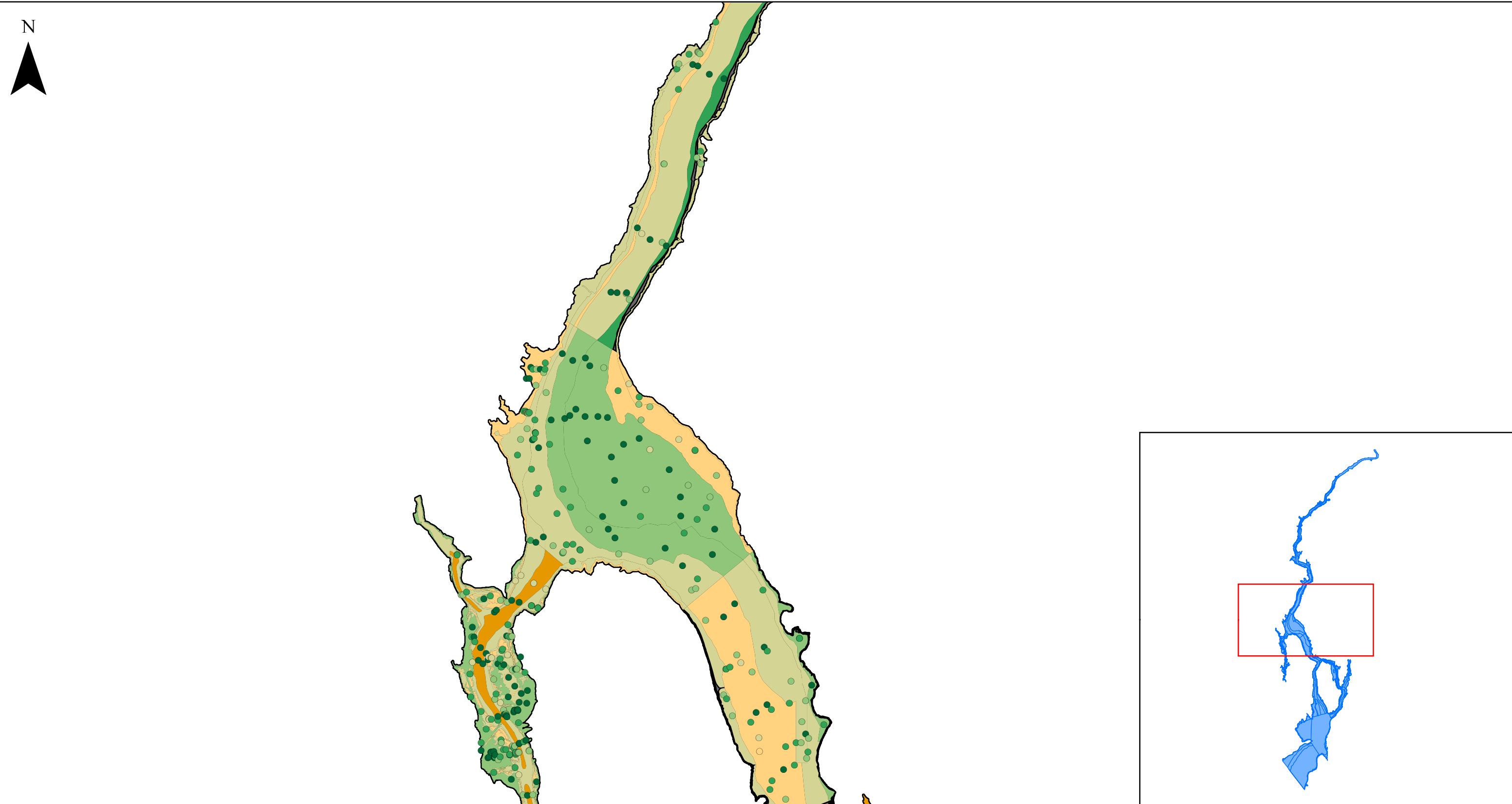


Symbol Key
IPWC 0 - 6 inch Total Hg (ug/g)

0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	○ Sample Location
500 - 750	> 1500	

Figure 6-3
Total Mercury Concentrations Bootstrap Mean
Upper Confidence Interval
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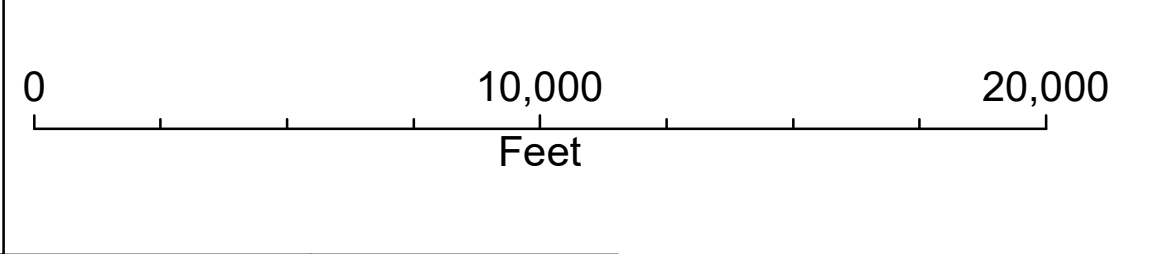
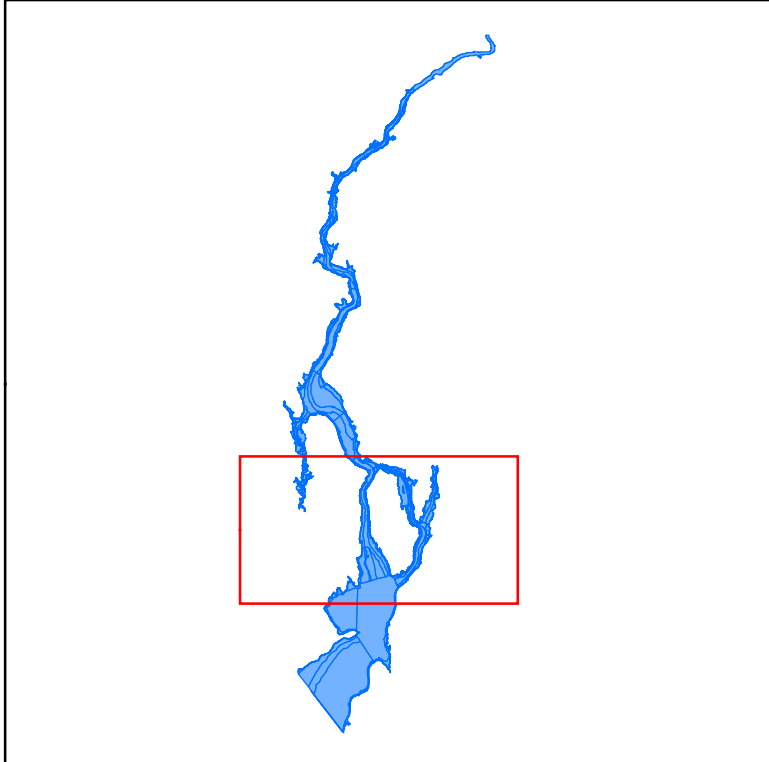
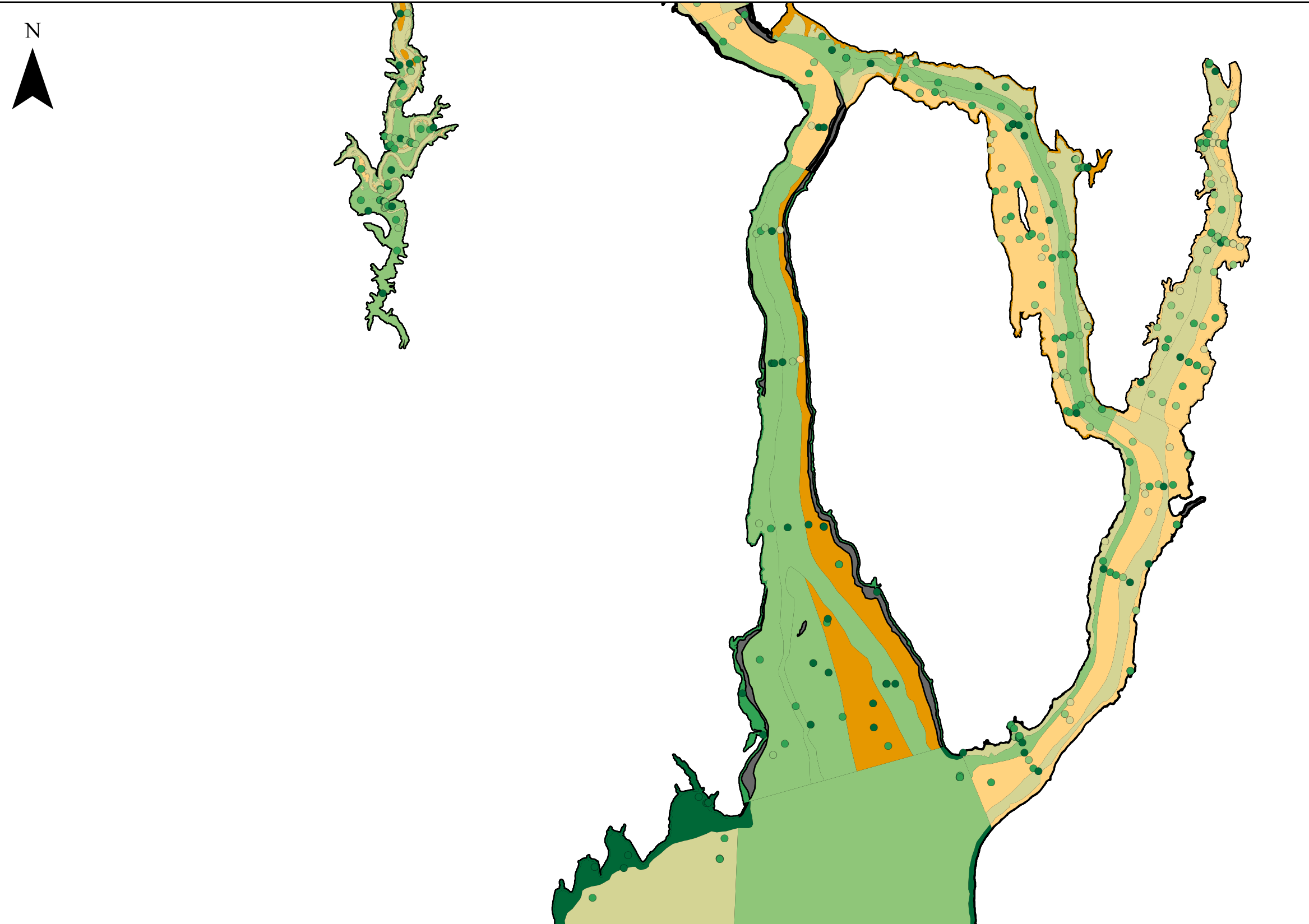


Symbol Key
IPWC 0 - 6 inch Total Hg (ug/g)

0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	○ Sample Location
500 - 750	> 1500	

Figure 6-3
Total Mercury Concentrations Bootstrap Mean
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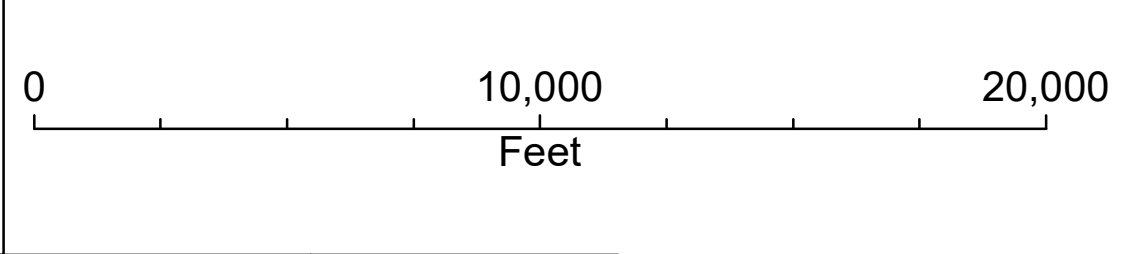
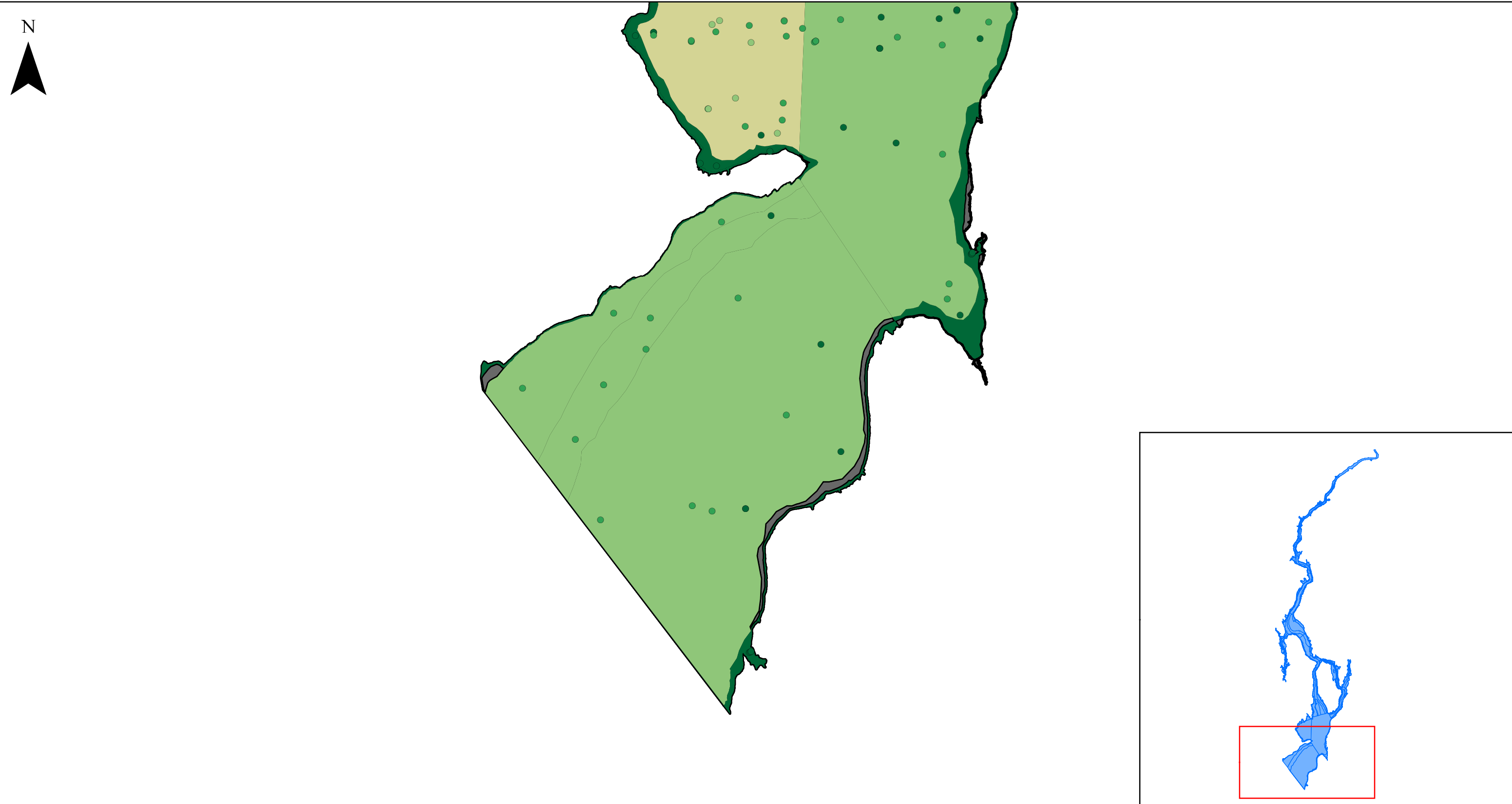


Symbol Key
IPWC 0 - 6 inch Total Hg (ug/g)

0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	○ Sample Location
500 - 750	> 1500	

Figure 6-3
Total Mercury Concentrations Bootstrap Mean
Upper Confidence Interval
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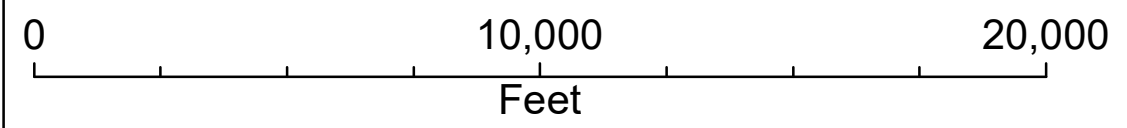
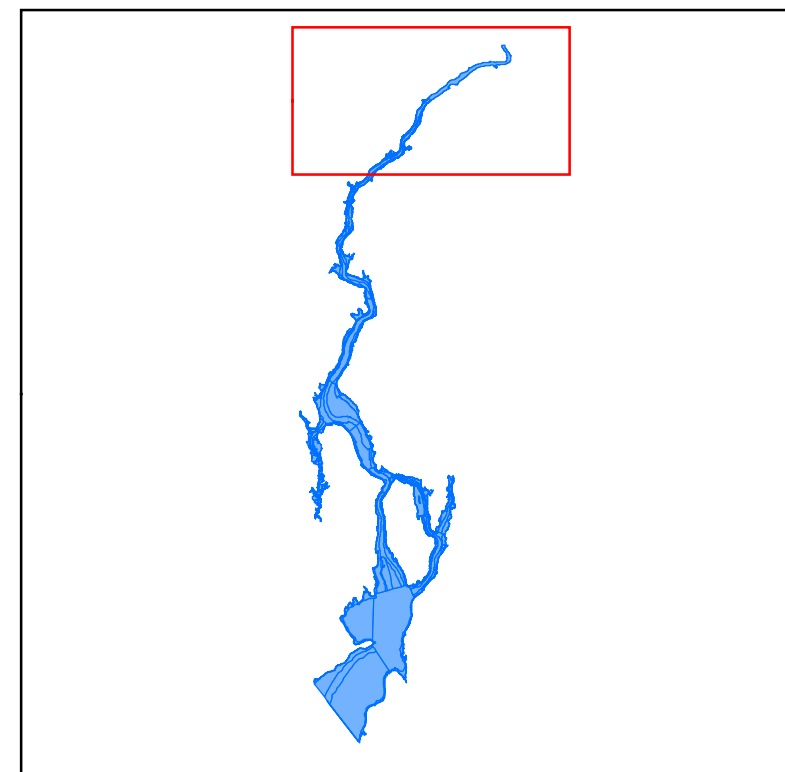
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Symbol Key		
IPWC 0 - 6 inch Total Hg (ug/g)		
0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	○ Sample Location
500 - 750	> 1500	

Figure 6-3
Total Mercury Concentrations Bootstrap Mean
Upper Confidence Interval
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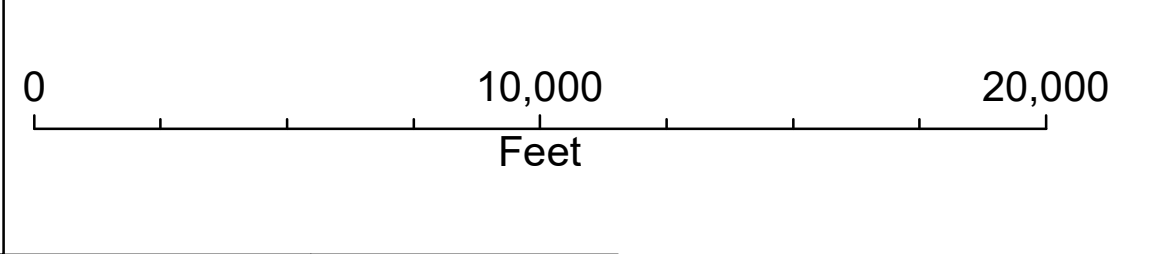
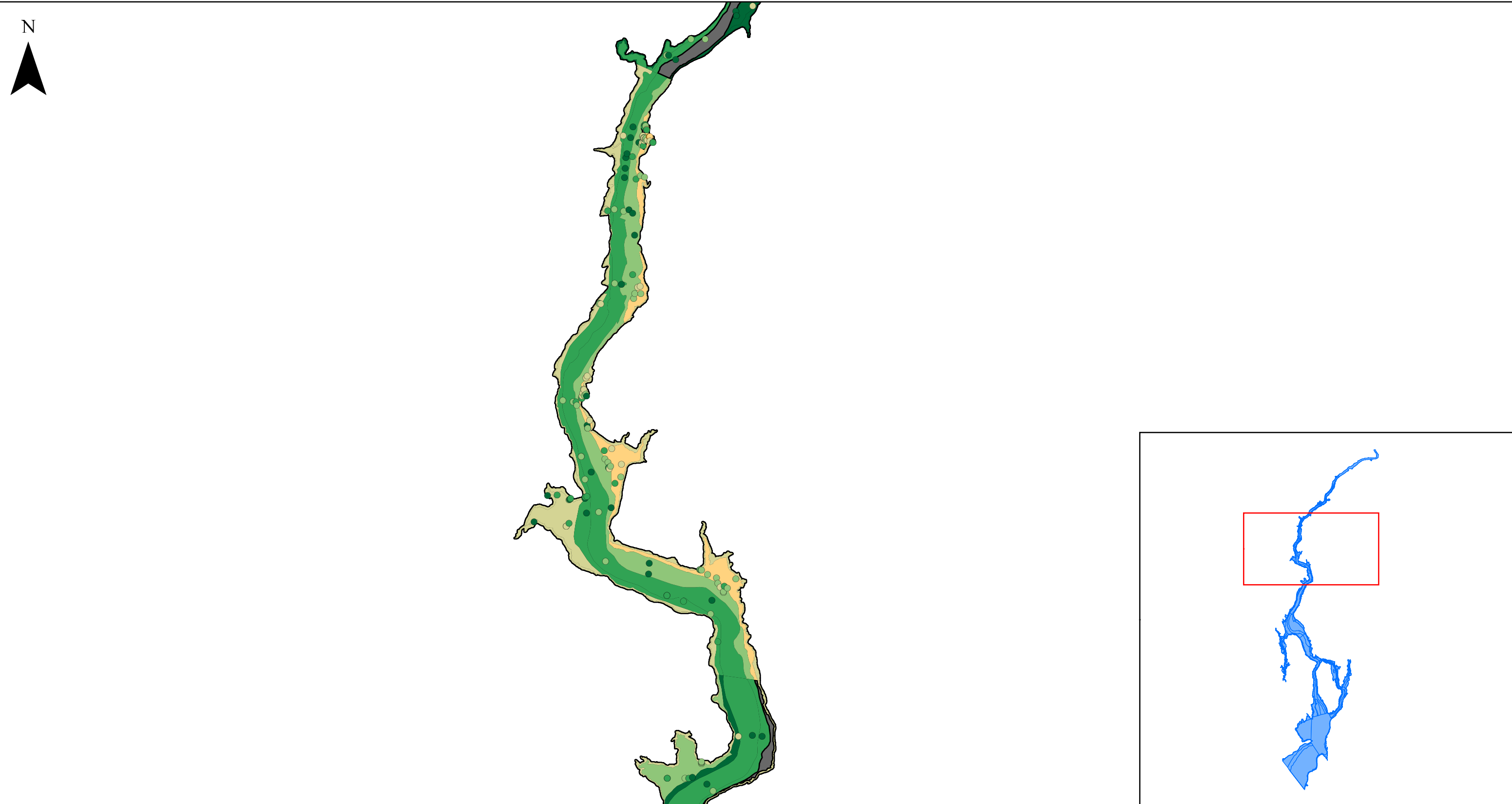
Symbol Key
IPWC 0 - 6 inch Total Hg (ug/g)

0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	Sample Location
500 - 750	> 1500	

Figure 6-4
Total Mercury Concentrations Bootstrap Mean
Lower Confidence Interval
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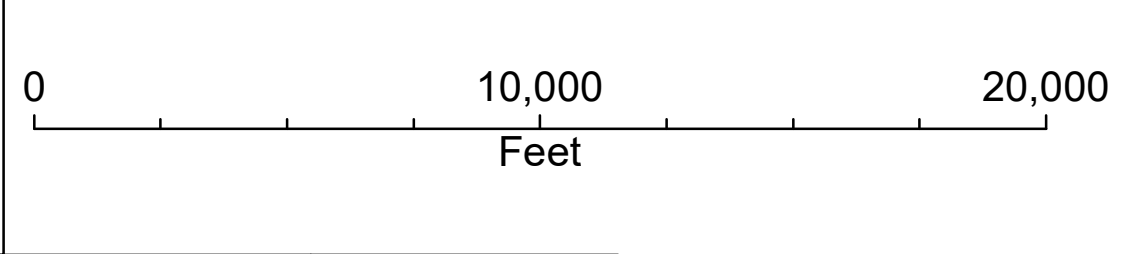
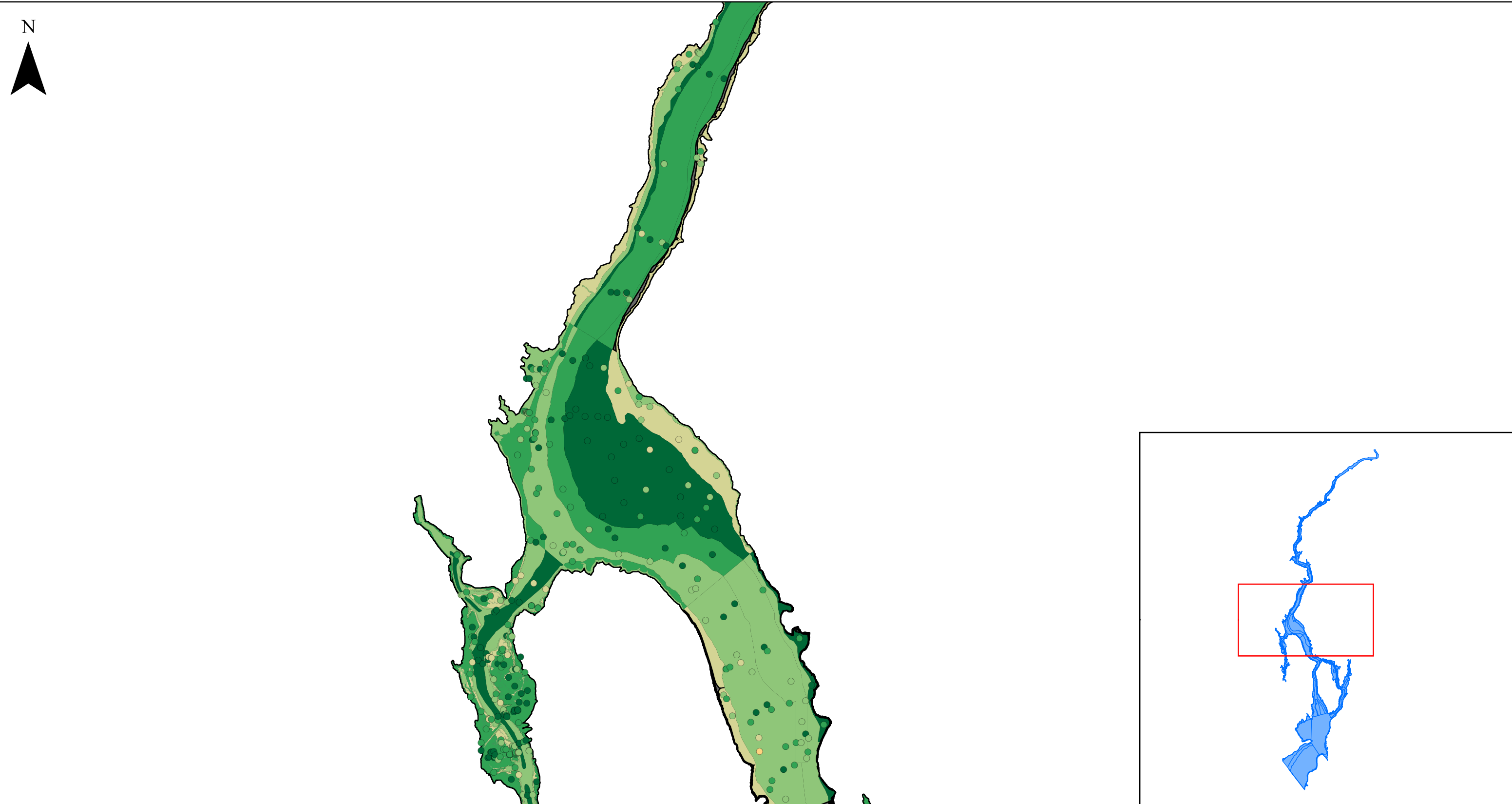


Symbol Key
IPWC 0 - 6 inch Total Hg (ug/g)

0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	○ Sample Location
500 - 750	> 1500	

Figure 6-4
Total Mercury Concentrations Bootstrap Mean
Lower Confidence Interval
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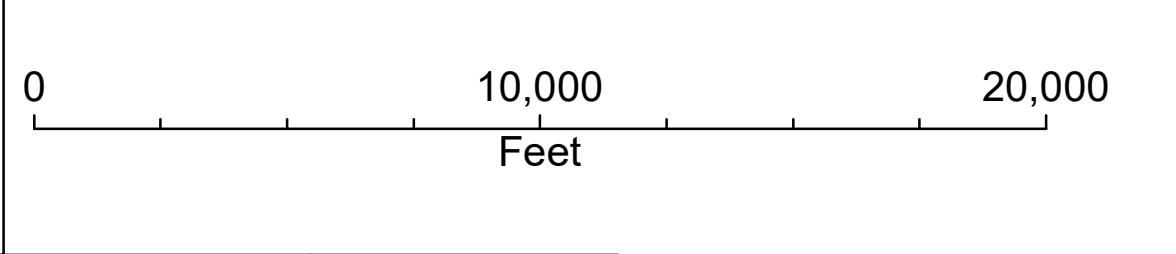
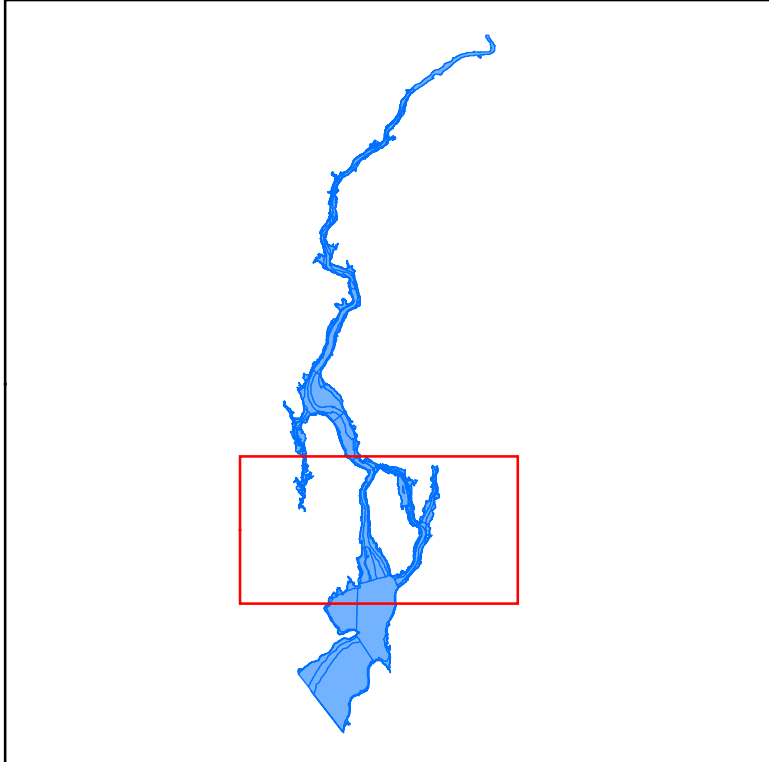
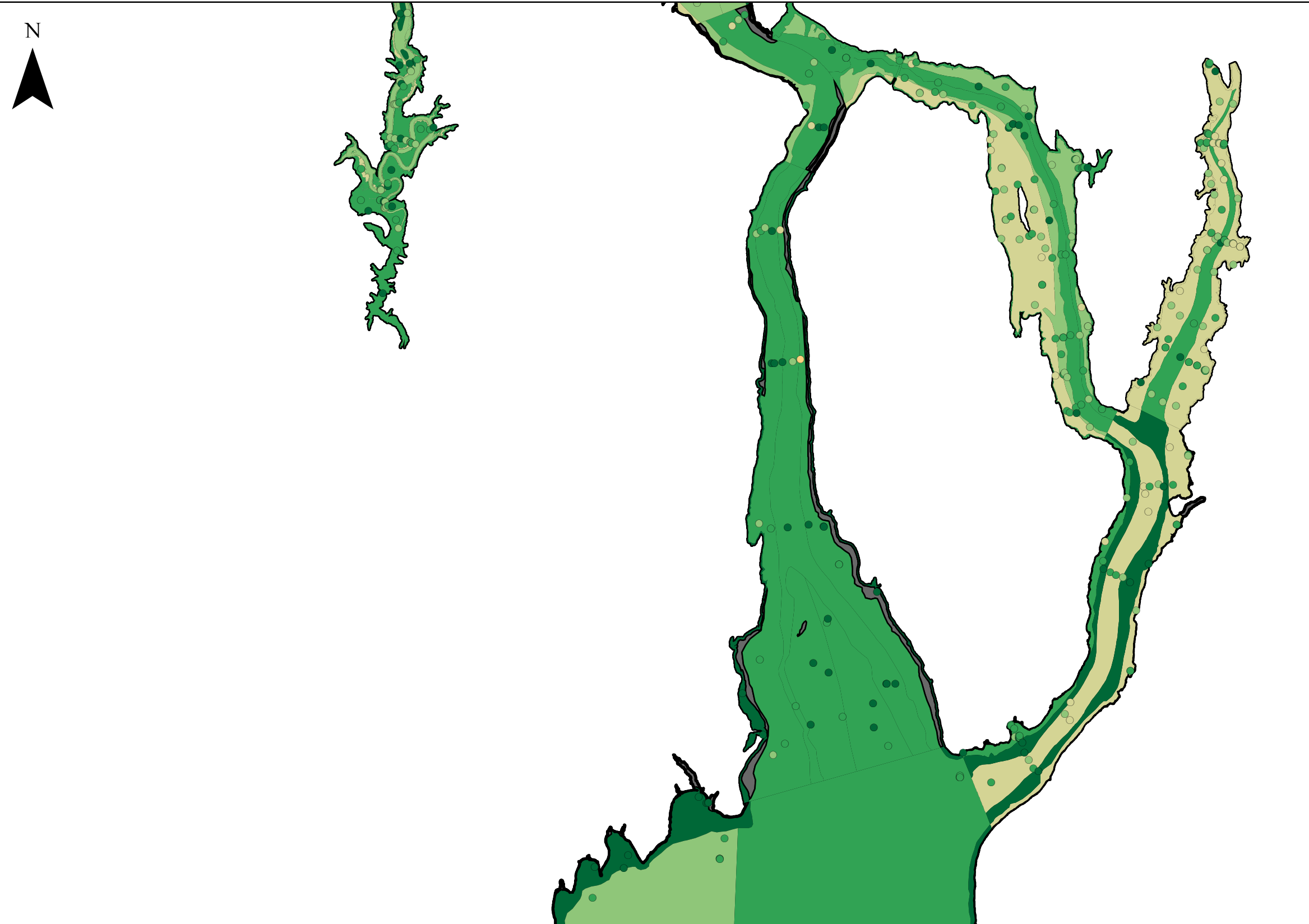


Symbol Key
IPWC 0 - 6 inch Total Hg (ug/g)

0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	○ Sample Location
500 - 750	> 1500	

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Total Mercury Concentrations Bootstrap Mean
Lower Confidence Interval
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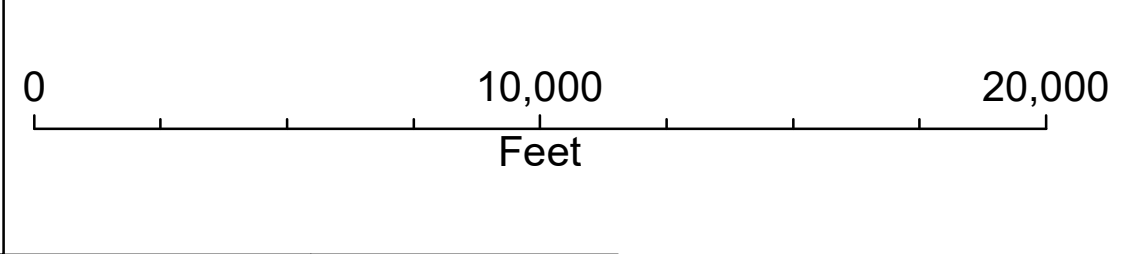
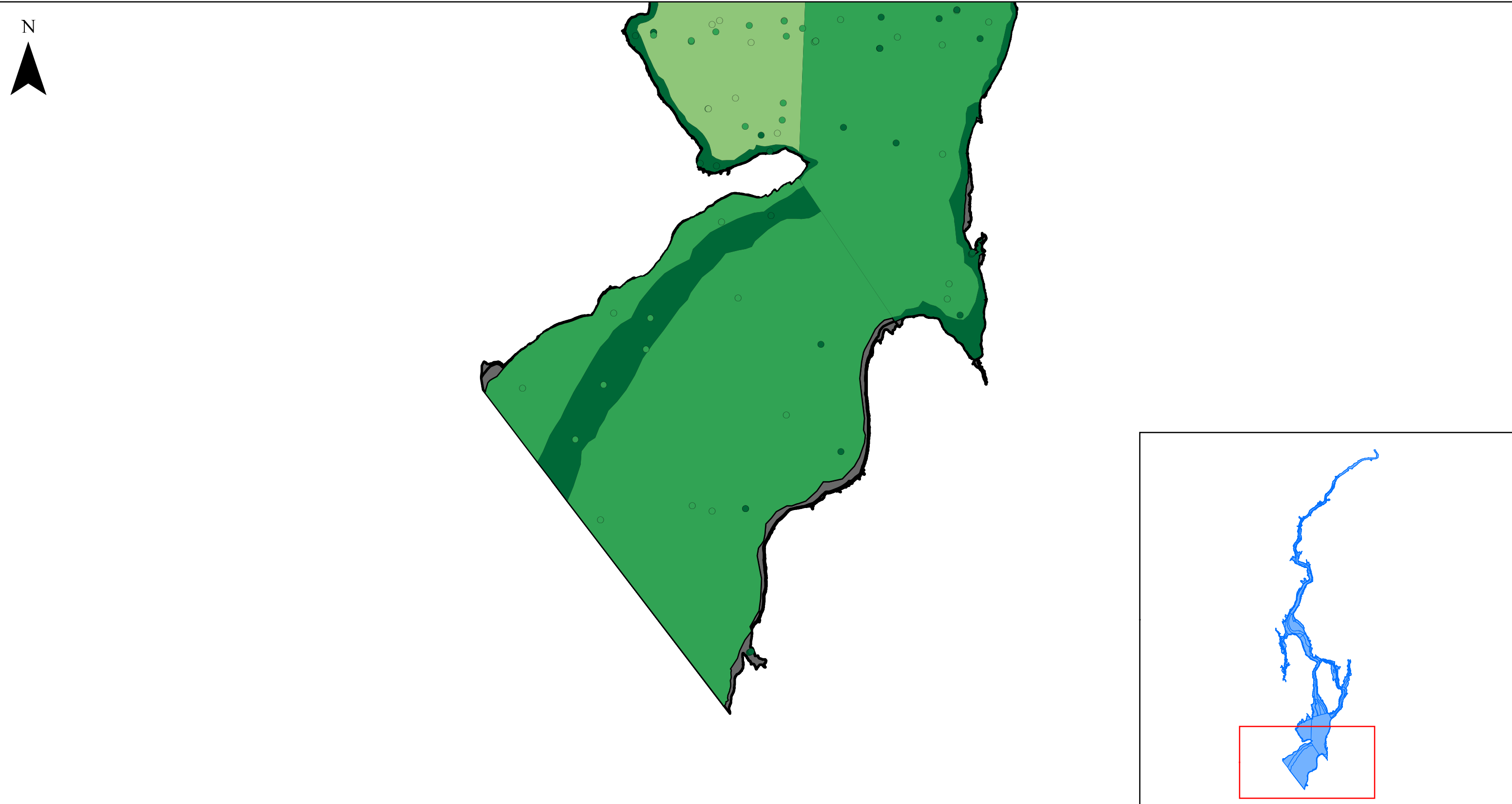


Symbol Key
IPWC 0 - 6 inch Total Hg (ug/g)

0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	○ Sample Location
500 - 750	> 1500	

Figure 6-4
Total Mercury Concentrations Bootstrap Mean
Lower Confidence Interval
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Symbol Key
IPWC 0 - 6 inch Total Hg (ug/g)

0 - 250	750 - 1000	No Data or Too Few Data to Determine Confidence Interval
250 - 500	1000 - 1500	○ Sample Location
500 - 750	> 1500	

Figure 6-4
Total Mercury Concentrations Bootstrap Mean
Lower Confidence Interval
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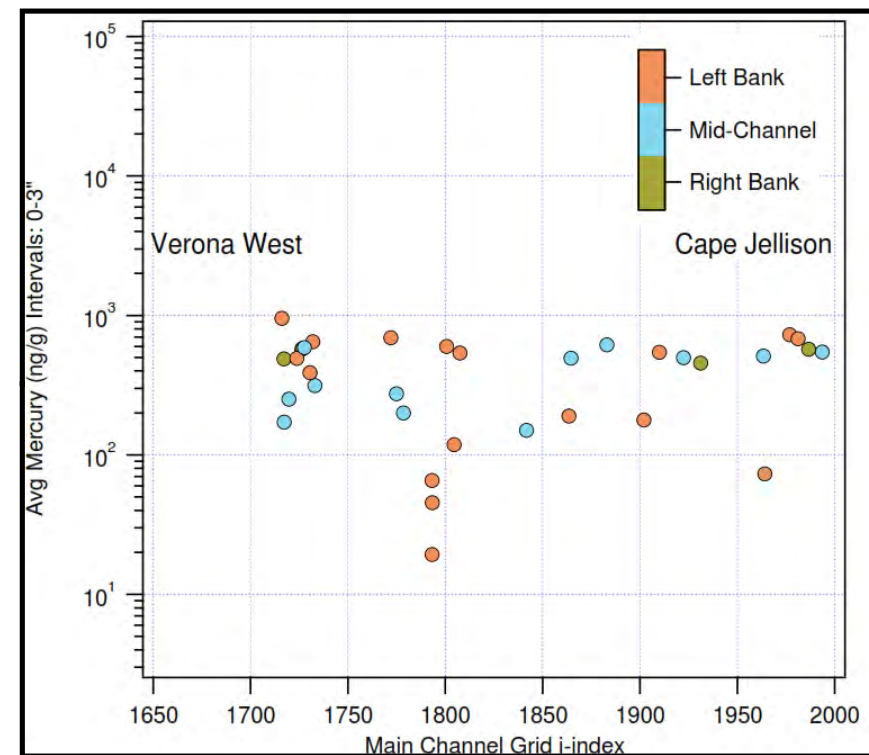
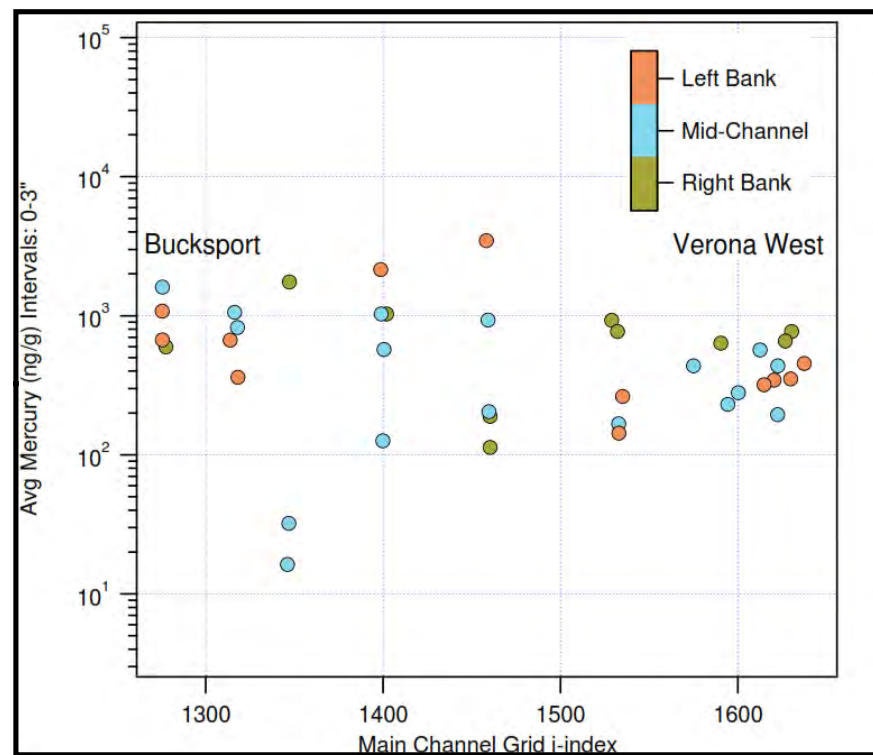
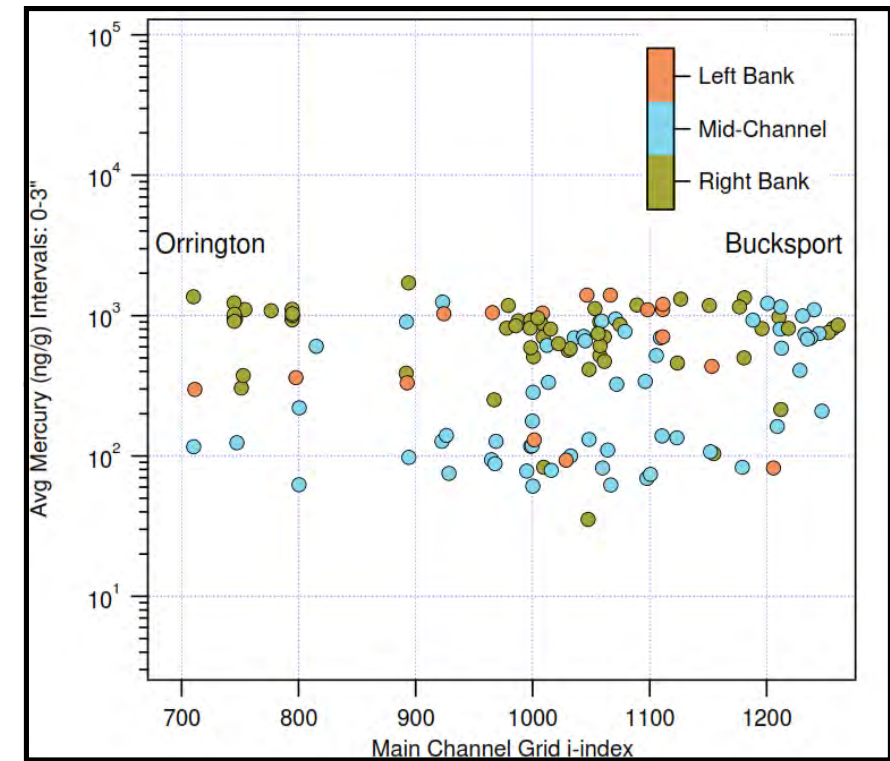
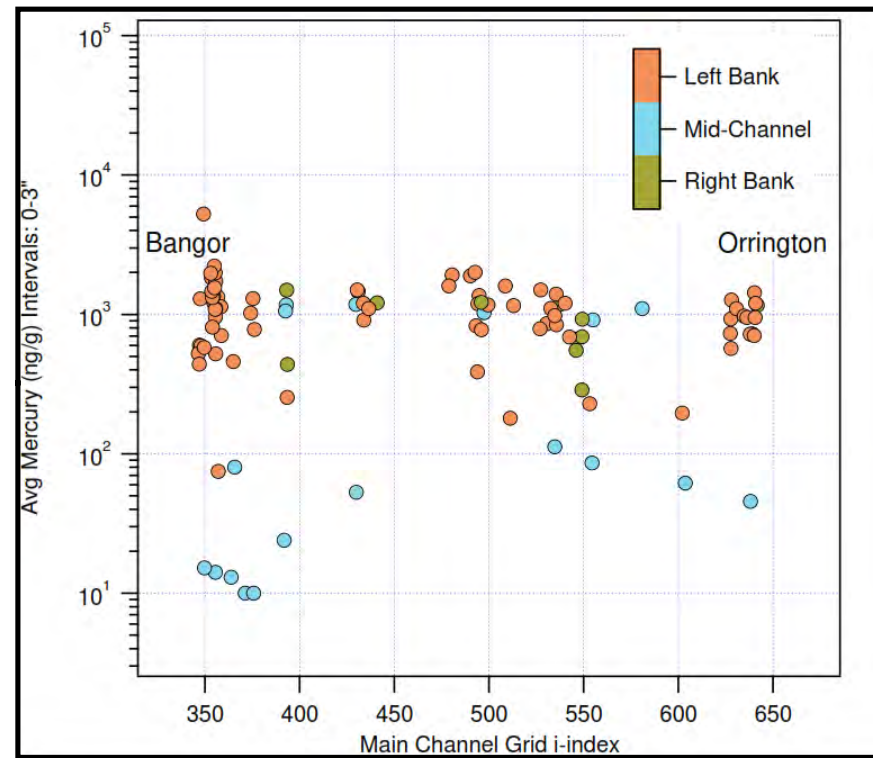
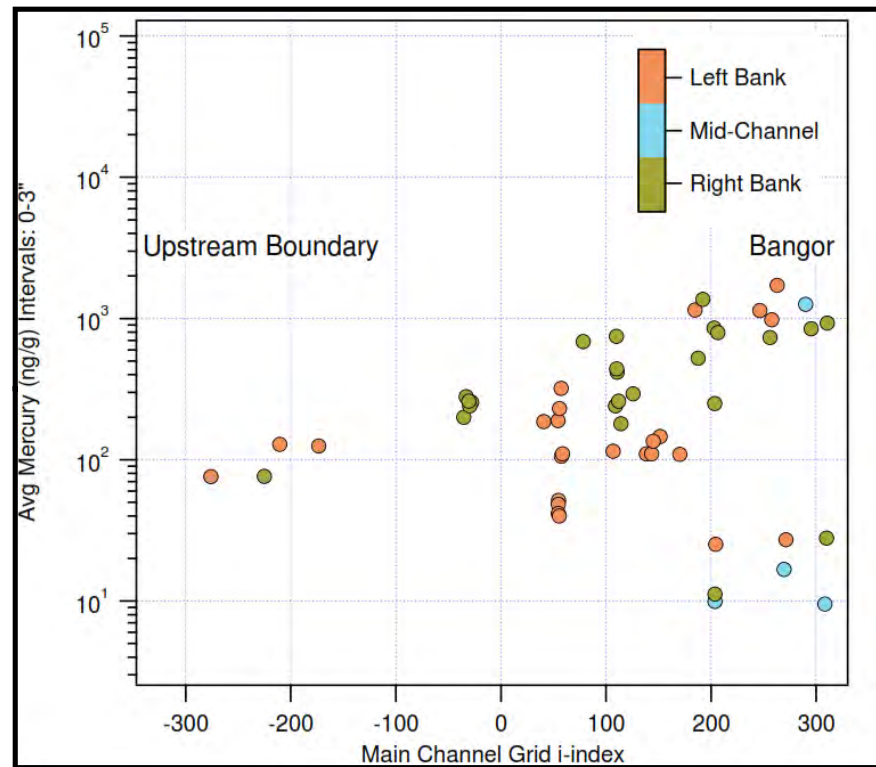


Figure 7-1
IPWC 0-3 inch Total Hg (ij space)

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TABLES

TABLE 4-1
Sample Counts Per Management Unit for Geostatistical SWAC Estimation

MU Name	Number of Samples	MU Area (acres)	MU Name	Number of Samples	MU Area (acres)
BG-MU-5	2	923	VN-MU-6	4	1936
BT-MU-11	2	619	VW-MU-1	4	10154
BU-MU-1	2	2325	WP-MU-1	4	2933
BU-MU-2	2	2159	BG-MU-2	5	13697
BU-MU-3	2	3141	BG-MU-23	5	15918
FPC-MU-1	2	2849	MM-MU-6	5	3885
MM-MU-5	2	533	VE-MU-6	5	6431
ON-MU-7	2	292	VN-MU-9	5	1756
UPB-MU-5	2	384	WP-MU-2	5	2593
UPB-MU-5	2	5277	BG-MU-9	6	2720
UPB-MU-7	2	4922	FF-MU-4	6	5014
VE-MU-2	2	970	ON-MU-1	6	2382
VN-MU-3	2	1666	VE-MU-3	6	1035
VW-MU-10	2	3628	BG-MU-18	7	1172
WP-MU-4	2	3042	BU-MU-4	7	6122
BG-MU-17	3	741	FF-MU-2	7	3582
BG-MU-7	3	222	CJ-MU-6	8	NA
BT-MU-4	3	2184	FF-MU-7	8	10363
CJ-MU-7	3	20481	VW-MU-13	8	14287
FF-MU-8	3	6479	BU-MU-9	9	5226
FPC-MU-4	3	7979	ON-MU-14	9	1069
MM-MU-3	3	573	OR-MU-2	9	5298
ON-MU-19	3	1656	VW-MU-2	9	17794
ON-MU-22	3	3962	VE-MU-5	10	10558
VE-MU-8	3	1585	VN-MU-5	10	5296
VN-MU-10	3	2007	FF-MU-5	11	12559
VW-MU-3	3	5018	OR-MU-1	11	6033
WP-MU-5	3	3583	ON-MU-13	12	5067
BG-MU-4	4	427	VN-MU-4	12	3072
BG-MU-6	4	218	VN-MU-2	13	9443
BU-MU-10	4	1148	WP-MU-6	13	20828
BU-MU-5	4	6770	ON-MU-2	15	2069
CJ-MU-2	4	20374	UPB-MU-12	15	NA
FPC-MU-2	4	5403	FF-MU-6	16	14407
MM-MU-1	4	1496	ON-MU-18	16	14255
MM-MU-1	4	217	FF-MU-3	17	6159
ON-MU-3	4	713	FPC-MU-3	17	NA
OR-MU-3	4	4456	ON-MU-5	19	317
VE-MU-4	4	3438	MM-MU-2	25	5512

TABLE 5-1

Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Ribbon Name	Shape Area (acres)	IPWC 0-6 in. Interval				
		n	Bootstrap Mean	Bootstrap Standard Deviation	Bootstrap Upper Confidence Interval	Bootstrap Lower Confidence Interval
Bangor_Main_Int_E	59.57	13	282	104	533	122
Bangor_Main_Int_W	72.46	13	491	97	730	336
Bangor_Main_Main	338.46	5	543	289	1217	16
Bangor_Main_Sub_E	83.29	6	498	265	1196	84
Bangor_Main_Sub_W	54.02	6	673	166	983	297
Bangor_Marsh	71.93	4	181	42	242	78
Bucksport_Thalweg_Int_E	11.82	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Int_W	3.08	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Main	153.28	7	901	247	1326	403
Bucksport_Thalweg_Main_Sub_E	19.83	1	669	NaN	NaN	NaN
Bucksport_Thalweg_Main_Sub_W	38.56	2	604	5	612	597
Bucksport_Thalweg_Marsh	10.59	0	NaN	NaN	NaN	NaN
Bucksport_Main_Int_E	32.08	4	481	113	620	82
Bucksport_Main_Int_W	57.44	3	885	41	975	806
Bucksport_Main_Main	195.66	11	761	102	937	550
Bucksport_Main_Sub_E	81.64	2	837	102	994	695
Bucksport_Main_Sub_W	384.72	21	825	160	1302	598
Bucksport_Marsh	26.01	0	NaN	NaN	NaN	NaN
Cape Jellison_Int_E	82.64	0	NaN	NaN	NaN	NaN
Cape Jellison_Int_W	10.97	0	NaN	NaN	NaN	NaN
Cape Jellison_Main_Main	503.34	5	457	69	553	222
Cape Jellison_Main_Sub_E	3,027.78	9	496	83	631	304
Cape Jellison_Main_Sub_W	506.15	3	507	28	573	468
Cape Jellison_Marsh	64.61	3	71	25	105	12
Fort Point Cove_Main_Int_W	215.36	8	156	41	247	91
Fort Point Cove_Main_Sub_W	1,063.64	27	719	53	818	600
Fort Point Cove_Marsh	43.22	3	37	10	57	16
Frankfort Flats_Main_Int_E	160.04	7	1055	89	1216	860
Frankfort Flats_Main_Int_W	116.10	10	718	93	881	493
Frankfort Flats_Main_Main	310.33	11	400	87	584	255
Frankfort Flats_Main_Sub_E	612.15	27	369	78	562	236
Frankfort Flats_Main_Sub_W	276.09	26	654	58	767	523
Frankfort Flats_Marsh	92.27	18	854	106	1137	685
Mendall Marsh_Main_Sub_W	113.82	8	642	269	1566	245
Mendall Marsh_Mendall_Int	213.89	61	708	55	841	610
MM_Elev1	54.02	15	743	97	914	534
MM_Elev2	56.39	22	940	68	1082	824
MM_Elev3	71.24	25	597	74	767	477
MM_Elev4	289.38	57	496	43	612	428
Orland River_Marsh	42.97	12	937	72	1092	814
Orland_Int_E	135.59	26	1095	67	1236	989
Orland_Int_W	144.56	29	860	50	967	760
Orland_Main	110.15	7	571	133	838	299

TABLE 5-1
Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Orrington_Main_Int_E	144.22	42	1211	67	1341	1074
Orrington_Main_Int_W	123.91	10	959	111	1234	767
Orrington_Main_Main	352.23	20	593	118	831	384
Orrington_Main_Sub_E	244.33	26	823	121	1035	600
Orrington_Main_Sub_W	139.46	8	657	155	977	373
Orrington_Marsh	94.21	21	1894	816	4598	955
Upper Penobscot Bay_Main_Int	164.70	2	55	7	66	45
Upper Penobscot Bay_Main_Sub	2,794.46	25	478	35	542	400
Upper Penobscot Bay_Marsh	41.00	1	19	NaN	NaN	NaN
Verona West_Main_Int_E	90.08	1	92	NaN	NaN	NaN
Verona West_Main_Int_W	50.71	0	NaN	NaN	NaN	NaN
Verona West_Main_Main	439.69	11	470	108	687	277
Verona West_Main_Sub_E	382.81	12	795	273	1520	397
Verona West_Main_Sub_W	582.40	11	496	92	694	329
Verona West_Marsh	49.62	2	214	54	290	137
Verona_E_Int_E	99.58	9	935	101	1286	805
Verona_E_Int_W	57.77	13	649	93	854	483
Verona_E_Main	260.90	14	1052	108	1261	842
Verona_E_Marsh	21.20	1	756	NaN	NaN	NaN
Verona_E_Sub_E	158.86	5	302	172	883	85
Verona_E_Sub_W	84.97	4	324	90	532	182
Verona_NE_Int_E	125.65	17	852	73	998	699
Verona_NE_Int_W	296.29	29	929	45	1032	848
Verona_NE_Main	149.39	12	590	81	724	404
Verona_NE_Marsh	56.14	5	941	278	1517	426
Verona_NE_Sub_E	124.38	8	569	83	730	422
Verona_NE_Sub_W	93.20	18	645	64	751	502
Winterport_Main_Int_E	71.27	1	857	NaN	NaN	NaN
Winterport_Main_Int_W	141.49	12	749	101	924	556
Winterport_Main_Main	514.66	15	585	128	877	361
Winterport_Main_Sub_E	104.29	3	330	16	361	297
Winterport_Main_Sub_W	75.16	2	781	401	1360	220
Winterport_Marsh	118.56	9	888	30	942	830

Note: All concentrations reported in ug/kg

TABLE 5-1

Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Ribbon Name	Shape Area (acres)	IPWC 6-12 in. Interval				
		n	Bootstrap Mean	Bootstrap Standard Deviation	Bootstrap Upper Confidence Interval	Bootstrap Lower Confidence Interval
Bangor_Main_Int_E	59.57	8	437	106	764	296
Bangor_Main_Int_W	72.46	7	430	91	612	254
Bangor_Main_Main	338.46	1	1231	NaN	NaN	NaN
Bangor_Main_Sub_E	83.29	2	803	394	1360	250
Bangor_Main_Sub_W	54.02	3	1318	255	1648	700
Bangor_Marsh	71.93	1	490	NaN	NaN	NaN
Bucksport_Thalweg_Int_E	11.82	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Int_W	3.08	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Main	153.28	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Sub_E	19.83	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Sub_W	38.56	1	478	NaN	NaN	NaN
Bucksport_Thalweg_Marsh	10.59	0	NaN	NaN	NaN	NaN
Bucksport_Main_Int_E	32.08	2	656	7	666	646
Bucksport_Main_Int_W	57.44	1	1036	NaN	NaN	NaN
Bucksport_Main_Main	195.66	3	632	124	836	359
Bucksport_Main_Sub_E	81.64	0	NaN	NaN	NaN	NaN
Bucksport_Main_Sub_W	384.72	2	423	48	489	356
Bucksport_Marsh	26.01	0	NaN	NaN	NaN	NaN
Cape_Jellison_Int_E	82.64	0	NaN	NaN	NaN	NaN
Cape_Jellison_Int_W	10.97	0	NaN	NaN	NaN	NaN
Cape_Jellison_Main_Main	503.34	0	NaN	NaN	NaN	NaN
Cape_Jellison_Main_Sub_E	3,027.78	3	358	165	744	132
Cape_Jellison_Main_Sub_W	506.15	0	NaN	NaN	NaN	NaN
Cape_Jellison_Marsh	64.61	0	NaN	NaN	NaN	NaN
Fort_Point_Cove_Main_Int_W	215.36	1	15	NaN	NaN	NaN
Fort_Point_Cove_Main_Sub_W	1,063.64	9	997	156	1308	724
Fort_Point_Cove_Marsh	43.22	0	NaN	NaN	NaN	NaN
Frankfort_Flats_Main_Int_E	160.04	4	1060	328	1853	549
Frankfort_Flats_Main_Int_W	116.10	4	1492	715	3298	396
Frankfort_Flats_Main_Main	310.33	0	NaN	NaN	NaN	NaN
Frankfort_Flats_Main_Sub_E	612.15	5	74	45	223	23
Frankfort_Flats_Main_Sub_W	276.09	3	378	279	1066	26
Frankfort_Flats_Marsh	92.27	6	1581	500	2478	638
Mendall_Marsh_Main_Sub_W	113.82	2	80	46	146	14
Mendall_Marsh_Mendall_Int	213.89	34	660	114	915	461
MM_Elev1	54.02	11	1206	282	1813	714
MM_Elev2	56.39	15	1869	217	2254	1440
MM_Elev3	71.24	12	411	159	837	178
MM_Elev4	289.38	34	194	58	359	118
Orland_River_Marsh	42.97	7	1384	301	2112	911
Orland_Int_E	135.59	19	1301	161	1654	1058
Orland_Int_W	144.56	20	995	128	1226	708
Orland_Main	110.15	3	48	15	82	20

TABLE 5-1
Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Orrington_Main_Int_E	144.22	29	5008	1840	11736	2440
Orrington_Main_Int_W	123.91	7	1038	195	1493	730
Orrington_Main_Main	352.23	4	846	32	907	784
Orrington_Main_Sub_E	244.33	8	1302	555	2714	464
Orrington_Main_Sub_W	139.46	0	NaN	NaN	NaN	NaN
Orrington_Marsh	94.21	13	1900	1006	6188	647
Upper Penobscot Bay_Main_Int	164.70	0	NaN	NaN	NaN	NaN
Upper Penobscot Bay_Main_Sub	2,794.46	8	515	119	733	251
Upper Penobscot Bay_Marsh	41.00	0	NaN	NaN	NaN	NaN
Verona West_Main_Int_E	90.08	1	10	NaN	NaN	NaN
Verona West_Main_Int_W	50.71	0	NaN	NaN	NaN	NaN
Verona West_Main_Main	439.69	1	24	NaN	NaN	NaN
Verona West_Main_Sub_E	382.81	3	661	122	824	367
Verona West_Main_Sub_W	582.40	2	1661	667	2615	656
Verona West_Marsh	49.62	2	34	3	38	30
Verona_E_Int_E	99.58	8	1360	83	1532	1203
Verona_E_Int_W	57.77	7	516	189	971	227
Verona_E_Main	260.90	1	1547	NaN	NaN	NaN
Verona_E_Marsh	21.20	1	1660	NaN	NaN	NaN
Verona_E_Sub_E	158.86	0	NaN	NaN	NaN	NaN
Verona_E_Sub_W	84.97	1	604	NaN	NaN	NaN
Verona_NE_Int_E	125.65	11	831	148	1113	554
Verona_NE_Int_W	296.29	24	1133	81	1337	996
Verona_NE_Main	149.39	2	527	197	808	255
Verona_NE_Marsh	56.14	2	972	246	1330	631
Verona_NE_Sub_E	124.38	5	522	62	619	370
Verona_NE_Sub_W	93.20	7	648	175	947	285
Winterport_Main_Int_E	71.27	1	841	NaN	NaN	NaN
Winterport_Main_Int_W	141.49	5	442	165	794	216
Winterport_Main_Main	514.66	1	906	NaN	NaN	NaN
Winterport_Main_Sub_E	104.29	0	NaN	NaN	NaN	NaN
Winterport_Main_Sub_W	75.16	0	NaN	NaN	NaN	NaN
Winterport_Marsh	118.56	5	1345	456	2266	564

Note: All concentrations reported in ug/kg

TABLE 5-1
Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Ribbon Name	Shape Area (acres)	IPWC 12-24 in. Interval				
		n	Bootstrap Mean	Bootstrap Standard Deviation	Bootstrap Upper Confidence Interval	Bootstrap Lower Confidence Interval
Bangor_Main_Int_E	59.57	2	255	30	298	211
Bangor_Main_Int_W	72.46	3	606	115	861	438
Bangor_Main_Main	338.46	1	1484	NaN	NaN	NaN
Bangor_Main_Sub_E	83.29	1	1843	NaN	NaN	NaN
Bangor_Main_Sub_W	54.02	2	1066	32	1111	1021
Bangor_Marsh	71.93	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Int_E	11.82	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Int_W	3.08	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Main	153.28	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Sub_E	19.83	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Sub_W	38.56	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Marsh	10.59	0	NaN	NaN	NaN	NaN
Bucksport_Main_Int_E	32.08	1	71	NaN	NaN	NaN
Bucksport_Main_Int_W	57.44	1	1093	NaN	NaN	NaN
Bucksport_Main_Main	195.66	3	614	271	964	19
Bucksport_Main_Sub_E	81.64	0	NaN	NaN	NaN	NaN
Bucksport_Main_Sub_W	384.72	2	363	119	535	187
Bucksport_Marsh	26.01	0	NaN	NaN	NaN	NaN
Cape_Jellison_Int_E	82.64	0	NaN	NaN	NaN	NaN
Cape_Jellison_Int_W	10.97	0	NaN	NaN	NaN	NaN
Cape_Jellison_Main_Main	503.34	0	NaN	NaN	NaN	NaN
Cape_Jellison_Main_Sub_E	3,027.78	3	215	161	622	21
Cape_Jellison_Main_Sub_W	506.15	0	NaN	NaN	NaN	NaN
Cape_Jellison_Marsh	64.61	0	NaN	NaN	NaN	NaN
Fort_Point_Cove_Main_Int_W	215.36	0	NaN	NaN	NaN	NaN
Fort_Point_Cove_Main_Sub_W	1,063.64	8	419	130	724	194
Fort_Point_Cove_Marsh	43.22	0	NaN	NaN	NaN	NaN
Frankfort_Flats_Main_Int_E	160.04	2	391	65	479	297
Frankfort_Flats_Main_Int_W	116.10	1	16	NaN	NaN	NaN
Frankfort_Flats_Main_Main	310.33	0	NaN	NaN	NaN	NaN
Frankfort_Flats_Main_Sub_E	612.15	5	20	2	23	15
Frankfort_Flats_Main_Sub_W	276.09	3	335	252	948	20
Frankfort_Flats_Marsh	92.27	0	NaN	NaN	NaN	NaN
Mendall_Marsh_Main_Sub_W	113.82	2	25	3	29	20
Mendall_Marsh_Mendall_Int	213.89	14	360	138	741	151
MM_Elev1	54.02	8	955	267	1541	514
MM_Elev2	56.39	12	646	158	972	389
MM_Elev3	71.24	2	88	52	165	16
MM_Elev4	289.38	9	40	11	76	26
Orland_River_Marsh	42.97	2	469	133	664	275
Orland_Int_E	135.59	11	1284	298	1897	737
Orland_Int_W	144.56	7	779	292	1411	293
Orland_Main	110.15	2	18	1	18	17

TABLE 5-1
Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Orrington_Main_Int_E	144.22	13	22620	10606	52777	7546
Orrington_Main_Int_W	123.91	4	914	434	1754	27
Orrington_Main_Main	352.23	2	863	55	942	785
Orrington_Main_Sub_E	244.33	6	148	85	420	46
Orrington_Main_Sub_W	139.46	0	NaN	NaN	NaN	NaN
Orrington_Marsh	94.21	7	914	454	2423	361
Upper Penobscot Bay_Main_Int	164.70	0	NaN	NaN	NaN	NaN
Upper Penobscot Bay_Main_Sub	2,794.46	5	597	254	1092	94
Upper Penobscot Bay_Marsh	41.00	0	NaN	NaN	NaN	NaN
Verona West_Main_Int_E	90.08	0	NaN	NaN	NaN	NaN
Verona West_Main_Int_W	50.71	0	NaN	NaN	NaN	NaN
Verona West_Main_Main	439.69	1	22	NaN	NaN	NaN
Verona West_Main_Sub_E	382.81	2	77	13	97	58
Verona West_Main_Sub_W	582.40	2	99	57	178	18
Verona West_Marsh	49.62	0	NaN	NaN	NaN	NaN
Verona_E_Int_E	99.58	5	1082	205	1533	657
Verona_E_Int_W	57.77	2	17	4	23	12
Verona_E_Main	260.90	1	1310	NaN	NaN	NaN
Verona_E_Marsh	21.20	0	NaN	NaN	NaN	NaN
Verona_E_Sub_E	158.86	0	NaN	NaN	NaN	NaN
Verona_E_Sub_W	84.97	1	604	NaN	NaN	NaN
Verona_NE_Int_E	125.65	5	708	348	1430	71
Verona_NE_Int_W	296.29	11	762	145	1098	520
Verona_NE_Main	149.39	2	432	266	808	49
Verona_NE_Marsh	56.14	0	NaN	NaN	NaN	NaN
Verona_NE_Sub_E	124.38	2	737	117	897	565
Verona_NE_Sub_W	93.20	4	572	195	936	107
Winterport_Main_Int_E	71.27	0	NaN	NaN	NaN	NaN
Winterport_Main_Int_W	141.49	3	322	122	600	155
Winterport_Main_Main	514.66	1	2465	NaN	NaN	NaN
Winterport_Main_Sub_E	104.29	0	NaN	NaN	NaN	NaN
Winterport_Main_Sub_W	75.16	0	NaN	NaN	NaN	NaN
Winterport_Marsh	118.56	0	NaN	NaN	NaN	NaN

Note: All concentrations reported in ug/kg

TABLE 5-1

Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Ribbon Name	Shape Area (acres)	IPWC 24-36 in. Interval				
		n	Bootstrap Mean	Bootstrap Standard Deviation	Bootstrap Upper Confidence Interval	Bootstrap Lower Confidence Interval
Bangor_Main_Int_E	59.57	0	NaN	NaN	NaN	NaN
Bangor_Main_Int_W	72.46	3	219	93	417	23
Bangor_Main_Main	338.46	1	393	NaN	NaN	NaN
Bangor_Main_Sub_E	83.29	0	NaN	NaN	NaN	NaN
Bangor_Main_Sub_W	54.02	1	32	NaN	NaN	NaN
Bangor_Marsh	71.93	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Int_E	11.82	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Int_W	3.08	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Main	153.28	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Sub_E	19.83	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Sub_W	38.56	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Marsh	10.59	0	NaN	NaN	NaN	NaN
Bucksport_Main_Int_E	32.08	0	NaN	NaN	NaN	NaN
Bucksport_Main_Int_W	57.44	0	NaN	NaN	NaN	NaN
Bucksport_Main_Main	195.66	2	1513	246	1860	1171
Bucksport_Main_Sub_E	81.64	0	NaN	NaN	NaN	NaN
Bucksport_Main_Sub_W	384.72	2	175	75	279	69
Bucksport_Marsh	26.01	0	NaN	NaN	NaN	NaN
Cape Jellison_Int_E	82.64	0	NaN	NaN	NaN	NaN
Cape Jellison_Int_W	10.97	0	NaN	NaN	NaN	NaN
Cape Jellison_Main_Main	503.34	0	NaN	NaN	NaN	NaN
Cape Jellison_Main_Sub_E	3,027.78	3	35	17	76	6
Cape Jellison_Main_Sub_W	506.15	0	NaN	NaN	NaN	NaN
Cape Jellison_Marsh	64.61	0	NaN	NaN	NaN	NaN
Fort Point Cove_Main_Int_W	215.36	0	NaN	NaN	NaN	NaN
Fort Point Cove_Main_Sub_W	1,063.64	8	47	9	68	32
Fort Point Cove_Marsh	43.22	0	NaN	NaN	NaN	NaN
Frankfort Flats_Main_Int_E	160.04	2	240	98	376	102
Frankfort Flats_Main_Int_W	116.10	1	15	NaN	NaN	NaN
Frankfort Flats_Main_Main	310.33	0	NaN	NaN	NaN	NaN
Frankfort Flats_Main_Sub_E	612.15	4	17	2	21	12
Frankfort Flats_Main_Sub_W	276.09	3	358	267	1030	22
Frankfort Flats_Marsh	92.27	0	NaN	NaN	NaN	NaN
Mendall Marsh_Main_Sub_W	113.82	2	14	5	21	7
Mendall Marsh_Mendall_Int	213.89	12	242	149	685	39
MM_Elev1	54.02	6	842	431	1884	96
MM_Elev2	56.39	12	319	124	677	140
MM_Elev3	71.24	2	27	3	31	22
MM_Elev4	289.38	9	23	2	26	19
Orland River_Marsh	42.97	1	117	NaN	NaN	NaN
Orland_Int_E	135.59	10	430	186	1075	214
Orland_Int_W	144.56	7	175	77	385	62
Orland_Main	110.15	2	20	2	23	16

2017 SPATIAL VISUALIZATION AND DATA UNCERTAINTY ANALYSES

Penobscot River Phase III Engineering Study (WO 2A-100)

Penobscot River Estuary

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TABLE 5-1
Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Orrington_Main_Int_E	144.22	1	42	NaN	NaN	NaN
Orrington_Main_Int_W	123.91	3	662	533	1920	22
Orrington_Main_Main	352.23	2	945	572	1725	112
Orrington_Main_Sub_E	244.33	3	42	10	54	17
Orrington_Main_Sub_W	139.46	0	NaN	NaN	NaN	NaN
Orrington_Marsh	94.21	3	404	161	650	6
Upper Penobscot Bay_Main_Int	164.70	0	NaN	NaN	NaN	NaN
Upper Penobscot Bay_Main_Sub	2,794.46	5	729	444	1997	13
Upper Penobscot Bay_Marsh	41.00	0	NaN	NaN	NaN	NaN
Verona West_Main_Int_E	90.08	0	NaN	NaN	NaN	NaN
Verona West_Main_Int_W	50.71	0	NaN	NaN	NaN	NaN
Verona West_Main_Main	439.69	1	28	NaN	NaN	NaN
Verona West_Main_Sub_E	382.81	1	44	NaN	NaN	NaN
Verona West_Main_Sub_W	582.40	2	14	1	16	12
Verona West_Marsh	49.62	0	NaN	NaN	NaN	NaN
Verona_E_Int_E	99.58	3	45	10	59	22
Verona_E_Int_W	57.77	2	9	3	13	4
Verona_E_Main	260.90	1	1330	NaN	NaN	NaN
Verona_E_Marsh	21.20	0	NaN	NaN	NaN	NaN
Verona_E_Sub_E	158.86	0	NaN	NaN	NaN	NaN
Verona_E_Sub_W	84.97	0	NaN	NaN	NaN	NaN
Verona_NE_Int_E	125.65	4	70	25	120	19
Verona_NE_Int_W	296.29	7	53	12	82	33
Verona_NE_Main	149.39	1	35	NaN	NaN	NaN
Verona_NE_Marsh	56.14	0	NaN	NaN	NaN	NaN
Verona_NE_Sub_E	124.38	1	917	NaN	NaN	NaN
Verona_NE_Sub_W	93.20	2	36	13	56	18
Winterport_Main_Int_E	71.27	0	NaN	NaN	NaN	NaN
Winterport_Main_Int_W	141.49	3	154	80	353	52
Winterport_Main_Main	514.66	1	242	NaN	NaN	NaN
Winterport_Main_Sub_E	104.29	0	NaN	NaN	NaN	NaN
Winterport_Main_Sub_W	75.16	0	NaN	NaN	NaN	NaN
Winterport_Marsh	118.56	0	NaN	NaN	NaN	NaN

Note: All concentrations reported in ug/kg

TABLE 5-1

Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Ribbon Name	Shape Area (acres)	IPWC >36 in. Interval				
		n	Bootstrap Mean	Bootstrap Standard Deviation	Bootstrap Upper Confidence Interval	Bootstrap Lower Confidence Interval
Bangor_Main_Int_E	59.57	0	NaN	NaN	NaN	NaN
Bangor_Main_Int_W	72.46	0	NaN	NaN	NaN	NaN
Bangor_Main_Main	338.46	0	NaN	NaN	NaN	NaN
Bangor_Main_Sub_E	83.29	0	NaN	NaN	NaN	NaN
Bangor_Main_Sub_W	54.02	0	NaN	NaN	NaN	NaN
Bangor_Marsh	71.93	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Int_E	11.82	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Int_W	3.08	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Main	153.28	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Sub_E	19.83	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Sub_W	38.56	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Marsh	10.59	0	NaN	NaN	NaN	NaN
Bucksport_Main_Int_E	32.08	0	NaN	NaN	NaN	NaN
Bucksport_Main_Int_W	57.44	0	NaN	NaN	NaN	NaN
Bucksport_Main_Main	195.66	2	1307	226	1636	989
Bucksport_Main_Sub_E	81.64	0	NaN	NaN	NaN	NaN
Bucksport_Main_Sub_W	384.72	1	104	NaN	NaN	NaN
Bucksport_Marsh	26.01	0	NaN	NaN	NaN	NaN
Cape_Jellison_Int_E	82.64	0	NaN	NaN	NaN	NaN
Cape_Jellison_Int_W	10.97	0	NaN	NaN	NaN	NaN
Cape_Jellison_Main_Main	503.34	0	NaN	NaN	NaN	NaN
Cape_Jellison_Main_Sub_E	3,027.78	0	NaN	NaN	NaN	NaN
Cape_Jellison_Main_Sub_W	506.15	0	NaN	NaN	NaN	NaN
Cape_Jellison_Marsh	64.61	0	NaN	NaN	NaN	NaN
Fort_Point_Cove_Main_Int_W	215.36	0	NaN	NaN	NaN	NaN
Fort_Point_Cove_Main_Sub_W	1,063.64	1	12	NaN	NaN	NaN
Fort_Point_Cove_Marsh	43.22	0	NaN	NaN	NaN	NaN
Frankfort_Flats_Main_Int_E	160.04	2	55	13	72	37
Frankfort_Flats_Main_Int_W	116.10	0	NaN	NaN	NaN	NaN
Frankfort_Flats_Main_Main	310.33	0	NaN	NaN	NaN	NaN
Frankfort_Flats_Main_Sub_E	612.15	2	21	0	21	20
Frankfort_Flats_Main_Sub_W	276.09	1	361	NaN	NaN	NaN
Frankfort_Flats_Marsh	92.27	0	NaN	NaN	NaN	NaN
Mendall_Marsh_Main_Sub_W	113.82	0	NaN	NaN	NaN	NaN
Mendall_Marsh_Mendall_Int	213.89	0	NaN	NaN	NaN	NaN
MM_Elev1	54.02	3	770	412	1724	226
MM_Elev2	56.39	1	59	NaN	NaN	NaN
MM_Elev3	71.24	0	NaN	NaN	NaN	NaN
MM_Elev4	289.38	0	NaN	NaN	NaN	NaN
Orland_River_Marsh	42.97	0	NaN	NaN	NaN	NaN
Orland_Int_E	135.59	4	49	10	71	29
Orland_Int_W	144.56	0	NaN	NaN	NaN	NaN
Orland_Main	110.15	0	NaN	NaN	NaN	NaN

TABLE 5-1
Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Orrington_Main_Int_E	144.22	0	NaN	NaN	NaN	NaN
Orrington_Main_Int_W	123.91	1	19	NaN	NaN	NaN
Orrington_Main_Main	352.23	1	1019	NaN	NaN	NaN
Orrington_Main_Sub_E	244.33	0	NaN	NaN	NaN	NaN
Orrington_Main_Sub_W	139.46	0	NaN	NaN	NaN	NaN
Orrington_Marsh	94.21	0	NaN	NaN	NaN	NaN
Upper Penobscot Bay_Main_Int	164.70	0	NaN	NaN	NaN	NaN
Upper Penobscot Bay_Main_Sub	2,794.46	1	330	NaN	NaN	NaN
Upper Penobscot Bay_Marsh	41.00	0	NaN	NaN	NaN	NaN
Verona West_Main_Int_E	90.08	0	NaN	NaN	NaN	NaN
Verona West_Main_Int_W	50.71	0	NaN	NaN	NaN	NaN
Verona West_Main_Main	439.69	1	13	NaN	NaN	NaN
Verona West_Main_Sub_E	382.81	0	NaN	NaN	NaN	NaN
Verona West_Main_Sub_W	582.40	0	NaN	NaN	NaN	NaN
Verona West_Marsh	49.62	0	NaN	NaN	NaN	NaN
Verona_E_Int_E	99.58	0	NaN	NaN	NaN	NaN
Verona_E_Int_W	57.77	0	NaN	NaN	NaN	NaN
Verona_E_Main	260.90	1	568	NaN	NaN	NaN
Verona_E_Marsh	21.20	0	NaN	NaN	NaN	NaN
Verona_E_Sub_E	158.86	0	NaN	NaN	NaN	NaN
Verona_E_Sub_W	84.97	0	NaN	NaN	NaN	NaN
Verona_NE_Int_E	125.65	0	NaN	NaN	NaN	NaN
Verona_NE_Int_W	296.29	1	17	NaN	NaN	NaN
Verona_NE_Main	149.39	1	20	NaN	NaN	NaN
Verona_NE_Marsh	56.14	0	NaN	NaN	NaN	NaN
Verona_NE_Sub_E	124.38	1	756	NaN	NaN	NaN
Verona_NE_Sub_W	93.20	2	19	1	20	18
Winterport_Main_Int_E	71.27	0	NaN	NaN	NaN	NaN
Winterport_Main_Int_W	141.49	0	NaN	NaN	NaN	NaN
Winterport_Main_Main	514.66	1	27	NaN	NaN	NaN
Winterport_Main_Sub_E	104.29	0	NaN	NaN	NaN	NaN
Winterport_Main_Sub_W	75.16	0	NaN	NaN	NaN	NaN
Winterport_Marsh	118.56	0	NaN	NaN	NaN	NaN

Note: All concentrations reported in ug/kg

TABLE 5-1

Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Ribbon Name	Shape Area (acres)	IPWC 0-3 in. Interval				
		n	Bootstrap Mean	Bootstrap Standard Deviation	Bootstrap Upper Confidence Interval	Bootstrap Lower Confidence Interval
Bangor_Main_Int_E	59.57	13	281	104	592	126
Bangor_Main_Int_W	72.46	13	471	78	647	336
Bangor_Main_Main	338.46	5	526	275	1076	16
Bangor_Main_Sub_E	83.29	6	501	255	1200	84
Bangor_Main_Sub_W	54.02	6	537	134	781	251
Bangor_Marsh	71.93	4	180	42	242	78
Bucksport_Thalweg_Int_E	11.82	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Int_W	3.08	0	NaN	NaN	NaN	NaN
Bucksport_Thalweg_Main_Main	153.28	7	903	244	1347	406
Bucksport_Thalweg_Main_Sub_E	19.83	1	669	NaN	NaN	NaN
Bucksport_Thalweg_Main_Sub_W	38.56	2	618	15	639	597
Bucksport_Thalweg_Marsh	10.59	0	NaN	NaN	NaN	NaN
Bucksport_Main_Int_E	32.08	4	491	112	624	211
Bucksport_Main_Int_W	57.44	3	884	38	975	830
Bucksport_Main_Main	195.66	11	769	103	955	531
Bucksport_Main_Sub_E	81.64	2	846	106	994	695
Bucksport_Main_Sub_W	384.72	21	843	165	1277	613
Bucksport_Marsh	26.01	0	NaN	NaN	NaN	NaN
Cape Jellison_Int_E	82.64	0	NaN	NaN	NaN	NaN
Cape Jellison_Int_W	10.97	0	NaN	NaN	NaN	NaN
Cape Jellison_Main_Main	503.34	5	459	71	553	229
Cape Jellison_Main_Sub_E	3,027.78	9	478	80	625	306
Cape Jellison_Main_Sub_W	506.15	3	507	28	573	468
Cape Jellison_Marsh	64.61	3	72	25	105	12
Fort Point Cove_Main_Int_W	215.36	8	158	42	258	90
Fort Point Cove_Main_Sub_W	1,063.64	27	686	47	765	581
Fort Point Cove_Marsh	43.22	3	36	10	57	16
Frankfort Flats_Main_Int_E	160.04	7	966	121	1202	736
Frankfort Flats_Main_Int_W	116.10	10	638	80	780	467
Frankfort Flats_Main_Main	310.33	11	400	82	582	246
Frankfort Flats_Main_Sub_E	612.15	27	388	78	553	247
Frankfort Flats_Main_Sub_W	276.09	26	680	60	794	574
Frankfort Flats_Marsh	92.27	18	753	81	905	608
Mendall Marsh_Main_Sub_W	113.82	8	688	292	1490	285
Mendall Marsh_Mendall_Int	213.89	61	695	56	826	596
MM_Elev1	54.02	15	666	84	811	446
MM_Elev2	56.39	22	722	34	787	655
MM_Elev3	71.24	25	513	43	587	418
MM_Elev4	289.38	57	429	30	494	377
Orland River_Marsh	42.97	12	793	52	922	708
Orland_Int_E	135.59	26	1042	65	1183	922
Orland_Int_W	144.56	28	853	48	940	754
Orland_Main	110.15	7	648	129	860	352

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TABLE 5-1
Bootstrap Ribbon Mean Estimates, Confidence Intervals and Sample Numbers

Orrington_Main_Int_E	144.22	42	1193	65	1303	1067
Orrington_Main_Int_W	123.91	10	943	120	1190	747
Orrington_Main_Main	352.23	20	612	116	827	384
Orrington_Main_Sub_E	244.33	26	757	105	981	574
Orrington_Main_Sub_W	139.46	8	663	154	981	366
Orrington_Marsh	94.21	21	2086	1094	7439	832
Upper Penobscot Bay_Main_Int	164.70	2	55	7	66	45
Upper Penobscot Bay_Main_Sub	2,794.46	25	490	38	561	414
Upper Penobscot Bay_Marsh	41.00	1	19	NaN	NaN	NaN
Verona West_Main_Int_E	90.08	1	111	NaN	NaN	NaN
Verona West_Main_Int_W	50.71	0	NaN	NaN	NaN	NaN
Verona West_Main_Main	439.69	11	477	108	710	301
Verona West_Main_Sub_E	382.81	12	774	277	1534	423
Verona West_Main_Sub_W	582.40	11	473	80	666	331
Verona West_Marsh	49.62	2	218	89	344	91
Verona_E_Int_E	99.58	9	914	95	1203	769
Verona_E_Int_W	57.77	13	675	80	869	557
Verona_E_Main	260.90	14	1043	108	1262	853
Verona_E_Marsh	21.20	1	775	NaN	NaN	NaN
Verona_E_Sub_E	158.86	5	309	178	857	76
Verona_E_Sub_W	84.97	4	319	89	532	197
Verona_NE_Int_E	125.65	17	826	72	964	673
Verona_NE_Int_W	296.29	29	891	42	984	812
Verona_NE_Main	149.39	12	648	100	853	462
Verona_NE_Marsh	56.14	5	739	195	1187	424
Verona_NE_Sub_E	124.38	8	571	83	755	430
Verona_NE_Sub_W	93.20	18	636	59	737	510
Winterport_Main_Int_E	71.27	1	689	NaN	NaN	NaN
Winterport_Main_Int_W	141.49	12	755	96	936	551
Winterport_Main_Main	514.66	15	588	133	850	329
Winterport_Main_Sub_E	104.29	3	329	15	351	297
Winterport_Main_Sub_W	75.16	2	792	413	1360	220
Winterport_Marsh	118.56	9	805	59	901	676

Note: All concentrations reported in ug/kg

Attachment A: Geostatistical Methodology for Estimating IPWC Total Mercury Sediment Concentrations

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1.0 Introduction

The purpose of Attachment A is to detail geostatistical procedures for estimating total mercury in the Penobscot River as partial fulfillment of the Phase III Engineering Study under Work Order 2A-100 (WO 2A-100). This Attachment is supplementary to the 2017 Spatial Visualization and Data Uncertainty Technical Memorandum (Memo).

Spatial estimates of total mercury concentrations were made using geostatistical estimation methods, specifically ordinary kriging (OK), to service the Technical Objectives stated in the Memo. Kriging estimation included the use of curvilinear gridding methods and data transformations. Spatial estimates were made in two-dimension for pre-specified depth increments and river reaches. An average depth concentration, called the Interval participation weighted concentration (IPWC), was calculated for sample locations where multiple samples were collected within a given depth increment.

This supporting document provides details on the methods and results of estimation outcomes.

2.0 Methods

2.1. CSM Interpolation Grid Development

The CSM grid is a curvilinear, ordered grid that conformed to the existing main channel centerline (thalweg), shoreline shapefiles, and Penobscot study area boundaries.

The CSM grid was constructed by tracing the assumed river main channel centerline. Existing topobathy and aerial imagery were used to map the assumed centerline. Once the centerline was mapped, 2000 vertices were placed on the CSM centerline with even spacing (approximately 80 feet), and a curvilinear-orthogonal (hyperbolic/structured) grid for the right and left sides of the grid was formed using the MeshGen tool within Tecplot 360 (version 2013r1). The dimensions of the main-channel grid were set to 2000 x 49 vertices (1999 x 48 cells). Because flow bifurcates around Verona Island, separate curvilinear grids were developed for the Verona East channel, Orland River, Mendall Marsh, and Ft. Point Cove.

Figure 2 shows the CSM grid with a meander in the present-day river channel. The orientation of the CSM grid, in this context, is expected to be more representative of the direction of flow.

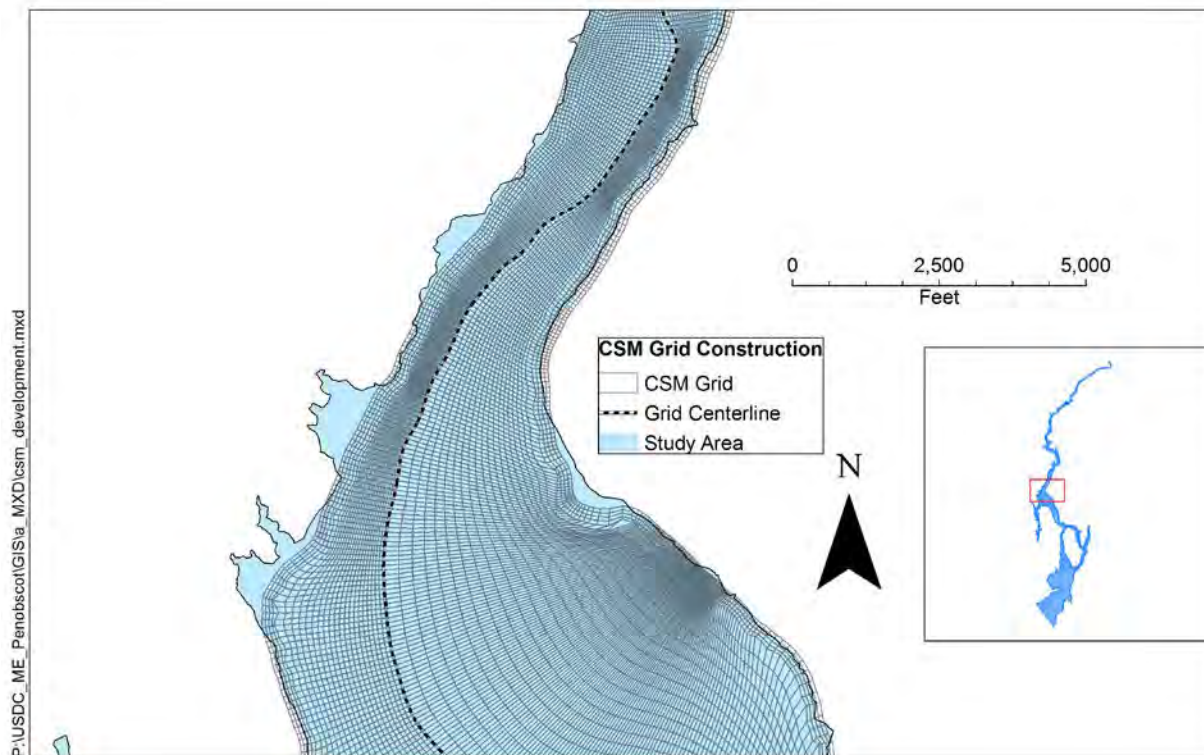


Figure 1. Main Channel CSM Grid

2.1.1. Coordinate Conversion

The horizontal coordinates for sample locations were converted to grid coordinates (XY positions converted to ij positions) prior to geostatistical evaluation. Linear interpolation was used to provide positions relative to the corresponding grid system, usually with accuracies better than 1/10th of the grid cell spacing. No special effort was used to align the grid to sample positions, or to report sample positions to a regular grid value (sample points were not “snapped to the grid”). For the few sample locations outside the grids, neighboring positions were estimated by extrapolation.

2.2. Exploratory Data Analysis

Exploratory data analysis (EDA) is a data diagnostic or screening step to determine if the sample data are adequate for geostatistical estimation. The Memo details EDA methods for performing geostatistical estimation, including the assessment of data skewness, outliers and data gaps. This Attachment provides supporting information specifically for interpreting box and whisker plots and performing data transformations.

2.2.1. Box and Whisker Plots

Box and whisker plots are a good screening method for visually interpreting potential data outliers and data distributions. Figure 2 below explains basic components of a box and whisker plot. The

center band is of the “box” is equal to the median, the lower edge of the box equal to the first quartile (Q1), and the upper edge of the box equal to the third quartile (3Q). The lower and upper “whiskers” or fences flanking either side of the first and third quartiles reflect 1.5 times the interquartile range (i.e., $1.5 \times Q3 - Q1$). Potential outliers are sample values falling outside the lower and upper fence. A box and whisker plot that symmetric about the median value is indicative of a normal distribution. Plotting multiple box and whisker plots together can provide a relative understanding of data distributions according to pre-defined data groupings (e.g. data grouped according to river reach, management unit, etc.). The Memo contains the results of the box and whisker plot analysis. Box and whisker plots were generated using U.S. EPA’s ProUCL 5.1 software.

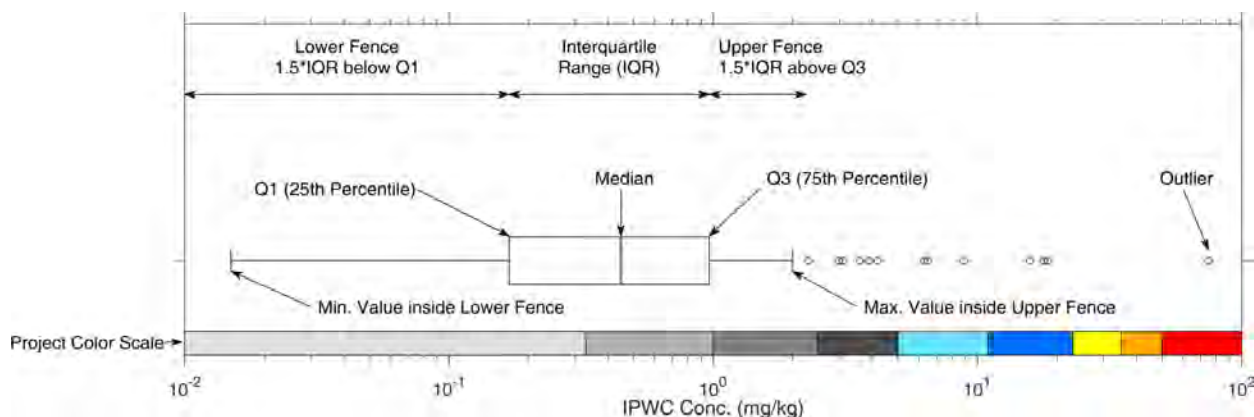


Figure 2. Boxplot key

2.2.2. Data Transformations

Environmental data typically exhibit some degree of skewness, meaning the sample values do not fall symmetrically about a central data tendency, such as the mean value. Environmental impact assessment data tend to exhibit positive skewness, also known as being right-skewed, where the mean of the data distribution is higher than the median and mode values. A few geostatistical estimation methods can withstand slight to moderate degrees of skewness, such as ordinary kriging. However, strong skewness (assuming outliers are not present) can generate misleading results and the data should be transformed to a normal or near-normal distribution prior to analyzing spatial correlation in the data and performing geostatistical estimation. In this case, the geostatistical methods are applied to the transformed data, then back transformed as a final data processing step before visualizing the spatial distribution of estimated IPWC total mercury concentrations.

Two transformations were explored, including the log transformation and Gaussian anamorphosis.

The log transform consists of the following equation:

$$Y_{log} = \log(Y)$$

where Y is the raw sample value and Y_{log} is the transformed sample value. The the back transform (Y_{BT}) of the kriged estimates and standard deviation was obtained using the following equation:

$$Y_{BT} = exp(Y_{log})$$

In layman's terms, Gaussian anamorphosis is akin to what is more commonly identified as a normal-score transformation. The method of normal-score transformations (Goovaerts, 2009) was used to reduce the data skewness and achieve a normal data distribution with a mean equal to zero and a variance equal to one. The transformation involves three steps:

1. The original dataset is ranked in ascending order.
2. The sample cumulative frequency for each value of the ranked dataset is calculated.
3. The normal score transform of each value of the ranked dataset is matched to the corresponding quantile of the standard normal cumulative distribution function.

A diagram representing the normal-scores transformation is shown in Figure 3. Gaussian anamorphosis was performed using Isatis.

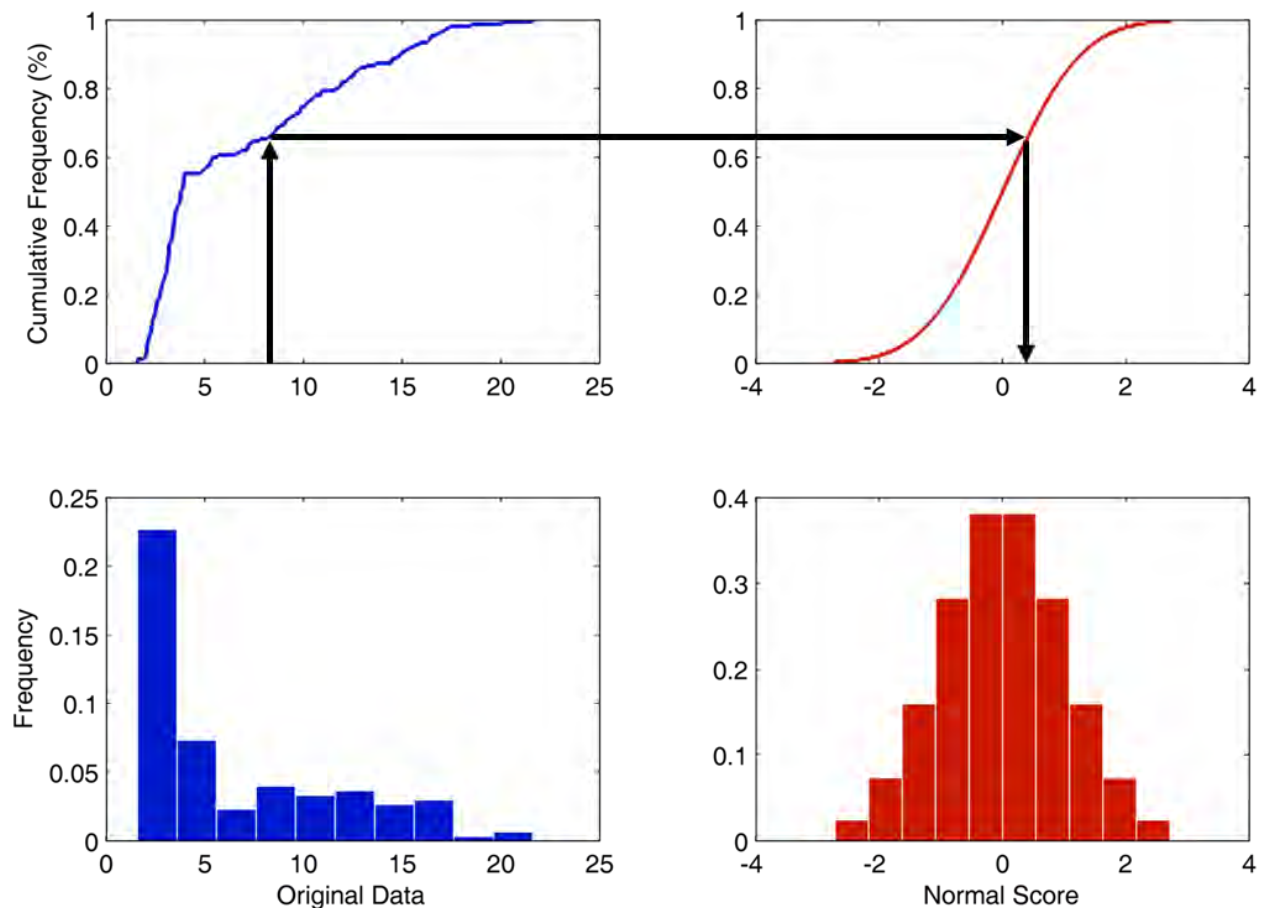


Figure 3. Example of the normal scores transformation

In general, the log transform outperformed the normal-score transform during our preliminary geostatistical investigations using the data prescribed in the accompanying Memo.

2.3. Geostatistical Estimation

Kriging is a geostatistical method that generates spatial estimates of a sampled constituent in unsampled locations. Kriging is generally classified as an interpolation method but is unique from other interpolation methods for two reasons. First, kriging generates spatial estimates using the underlying modeled spatial correlation in the sampled data; in this sense, kriging is considered to be a data-driven interpolation technique. Second, kriging is recognized as a best linear unbiased estimator because:

- 1) it generates spatial estimates by minimizing the kriging variance (finds the best fit between the model and the sampled data) and,
- 2) it optimizes the weights of sampled data so that the kriged estimates are neither systematically overestimated or underestimated (they are unbiased).

For these reasons, kriging is a preferred interpolation method for estimating IPWC total mercury concentrations in unsampled locations.

There are a variety of kriging methods available to generate spatial estimates. The objective is to implement a kriging method that best fit the sampled data and best services the data evaluation objectives set forth. A variety of kriging methods were investigated to determine which method was most appropriate to service stated Technical Objectives. Preliminary analyses compared results of ordinary kriging in cartesian coordinate space using locally varying anisotropy and variogram fitting, multivariate ordinary kriging using topobathy data, ordinary kriging in i,j space, bundled indicator kriging, conditional simulation and polygon kriging. Kriging estimates in ij space were generated using the CSM interpolation grid (described above). Out of the multiple methods explored, cross validation results indicate ordinary kriging using the CSM interpolation grid was the most adequate method for the current sample dataset. Results also showed more realistic interpolations when using the CSM grid.

2.3.1. Variogram Analysis and Spatial Correlation

Geostatistical methods follow the concept of Tobler's First Law of Geography, where everything is related to everything else but near things are more related than distant things. This concept means that geostatistical methods inherently assume that each field sample will exhibit a spatial relationship with another as a function of separation distance, and sometimes, direction. This spatial relationship is recognized as spatial correlation, or data dependence, and results from synergies between the underlying sediment properties and hydrodynamic processes that characterize the river system. Data dependence is an assumption that, in part, distinguishes geostatistics from traditional statistics (discussed in the next section), where the latter assumes the sample data are independent, or not correlated as a function of space or time (e.g. two samples collected near one another exhibit the same relationship as two sampled collected farther apart).

The notion of spatial correlation indicates that sample locations contain varying degrees of redundant information, from one location to the next, as a function of separation distance and direction (thereby making the samples “dependent”). The experimental variogram is one way to quantify spatial correlation, or the underlying spatial structure, in the sample data. This structure is best parameterized by fitting a variogram (also known as a semi-variogram) model.

The variogram is a scatter plot describing the average dissimilarity (variance) of a set of points as a function of lag distance. Three variogram model parameters are of interest: the sill, the nugget, and the range. The sill value represents the experimental variance, or total variance, of the sample population. The nugget represents “white noise,” or the fraction of the experimental variance that is independent, or not spatially correlated. The nugget provides a measure of spatial uncertainty and is attributed to human error and local-scale spatial heterogeneity that is beneath the detection of the current sampling design. The spatially correlated variance, therefore, represents the fraction of the experimental variance that is dependent, or spatially correlated (e.g. total variance minus the nugget). As a general rule of thumb, a dataset is adequate for mapping concentrations using geostatistical methods if the nugget:sill ratio is <50%. The final parameter is called the range, and is the lag separation distance where the variogram plateaus, or reaches the sill value. In layman’s terms, the range is the distance over which a property, in this case total mercury concentrations, exhibit spatial correlation.

Figure 4 provides an example variogram (based on fictitious data) to illustrate the different variogram parameters, nugget, sill, and range that characterize the variogram. Variograms were constructed for the IPWC sediment data in ij space with grid spacing approximately 100 feet by 40 feet.

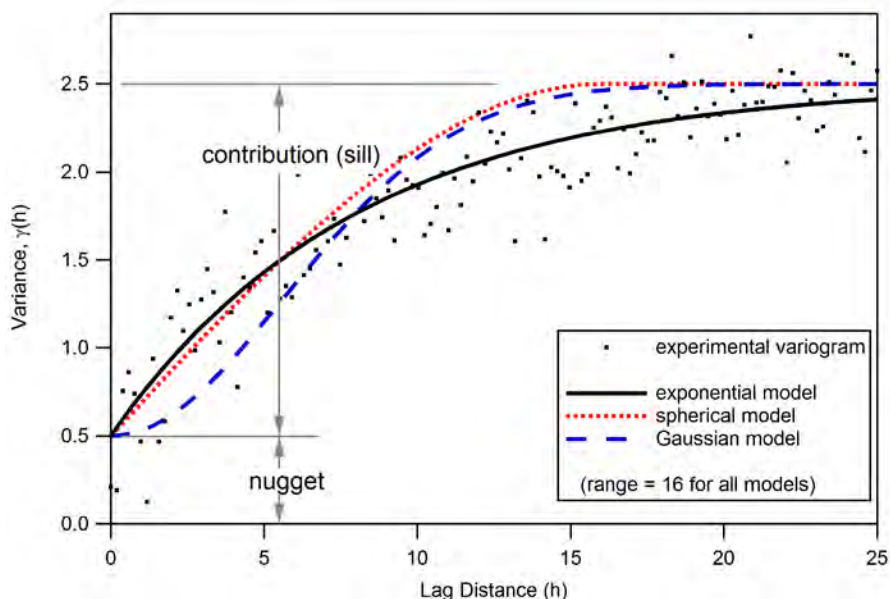


Figure 4. Example experimental and model variograms using fictitious data.

Sometimes the spatial correlation in the sampled data is not omnidirectional (the same in every direction), but is preferential in certain directions over others. For example, in sediment environments, it is generally common to observe longer ranges of spatial correlation parallel to the direction of river flow, whereas shorter ranges of spatial correlation are observed perpendicular to the direction of river flow. Preferential direction(s) of correlation are referred to as anisotropy. Due to natural meandering of river systems, the direction of spatial correlation (in XY directions) is localized, or changes, according to river mile. In general, the curvilinear grid standardizes the directional anisotropy to either along the channel or cross-channel. Variograms were constructed both along the channel dimension and in the cross-channel dimension to assess possible differences in spatial structures. All variograms were computed and modeled using Isatis software (Geovariances, France). Model variograms were used in the kriging procedure to properly reflect the spatial correlations in the IPWC values.

2.3.2. Cross-Validation

Cross-validation is performed by the leave-one-out approach, in which a measurement is temporarily removed and replaced with an estimated (e.g. predicted) value using a surrounding neighborhood of values. The predicted value is compared to the measured value using the following four criteria:

Mean Error (ME):

$$\frac{1}{N} \sum_N (Z^* - Z)$$

Variance of Error (VE):

$$\frac{1}{N} \sum_N (Z^* - Z)^2$$

Mean Standardized Error (MSE):

$$\frac{1}{N} \sum_N \left(\frac{Z^* - Z}{\sigma} \right)$$

Variance of the Standardized Error (VSE):

$$\frac{1}{N} \sum_N \left(\frac{Z^* - Z}{\sigma} \right)^2$$

where Z^* is the estimated value, Z is the true value, σ is the standard deviation of the estimates and N is the number of observations. The mean error (ME) and mean standardized error (MSE) measure the degree of unbiasedness and should be close to zero. The variance of error (VE) measures precision of estimates and should be as small as possible. Taking the square root of the VE results in the standard deviation. The mean standardized error (MSE) allows one to compare the performance of different variables modeled. The variance of the standardized error (VSE) compares experimental (numerator) and kriging (denominator) variances. The numerator of the variance of the standardized error represents all model parameters except the sill, while the denominator is directly proportional to the sill. The VSE should be close to unity. The tolerance interval for the variance of the standardized error is defined as (Chilés and Delfiner 1999) [Eqn. 4-6], where N is the number of observations:

$$\text{tolerance} = 1 \pm 3 \sqrt{\frac{2}{N}} \quad [\text{Eqn. 4-6}]$$

2.3.3. Ordinary Kriging

Ordinary kriging was performed to estimate IPWC values at unsampled locations. Kriging is an optimized linear interpolation method which incorporates the results from the variogram modeling (Wackernagel, 2010). As one technique in a broader set of interpolating methods, kriging estimates are subject to a relatively large set of adjustable parameters. However, the approach used for IWPC estimation was based on several guiding principles:

- Data transformations, such as normal scores or log transformations, may be helpful for providing a kriging dataset that is normally distributed.
- Variogram modeling is used to capture spatial correlation in the data.
- Linearized grid strategies can be used to improve and generalize anisotropy characteristics (e.g. from a meandering river).
- Kriging parameters for the search region should not extend too far beyond the ranges identified in the variogram modeling step.

Ordinary kriging of transformed IPWC data was performed using Isatis (Geovariances, France).

Kriging was performed using the five separate CSM interpolation grids (discussed in Section 2.1) with separate kriging parameters for each grid. For overlapping grid cells, concentration estimates were weighted and combined in inverse proportion to their kriging variance. Typical cell sizes were approximately 3800-4200 sq. ft.

References

Chilés, J., P. Delfiner (1999). *Geostatistics: Modeling Spatial Uncertainty*. New York, John Wiley & Sons, Inc.

Goovaerts, Pierre (2009), *Geostatistics for Natural Resources Evaluation*, Oxford Press.

Remy, N., A. Boucher, and J. Wu. (2009). *Applied Geostatistics with SGeMS*, Cambridge University Press.

Wackernagel, Hans. 2010. *Multivariate Geostatistics*. Springer Press.

APPENDIX J
Remedial Alternative Cost Estimates

AER Alternative Cost Summary Tables

AER Alternative Detail Tables

NOT USED

Worksheet No.	Item No.	Description	Units of Meas.	Quantity on Proposal	Labor	Material	Equipment	Subcontractor	Total Field Cost	Taxes	12% Overhead - Labor, Materials, Equipment (No. T&B)	5% Overhead (Subcontractors)	5% Profit	Bid Amount	Field Unit Price (does not include taxes, O&P, profit)	Bid Unit Price	Final Bid Price
ESTIMATE WORKSHEET 1		Performance and Payment Bond															
ESTIMATE WORKSHEET 2	2	Work Plans and Submittals	LS	1					\$0.00					\$0.00	\$0.00	\$0.00	\$0
ESTIMATE WORKSHEET 3	3	Mobilization	LS	1					\$0.00					\$0.00	\$0.00	\$0.00	\$0
ESTIMATE WORKSHEET 19	19	Hydrographic Surveys - Mendall Marsh - Shallow - 500	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0
ESTIMATE WORKSHEET 27	27	Environmental Monitoring - Mendall - 500	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0
ESTIMATE WORKSHEET 37	37	Debris Removal - Mendall Marsh - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$69.37	\$69.37	\$0
ESTIMATE WORKSHEET 47	47	Dredging - Mendall Marsh - Shallow - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$19.82	\$23.83	\$0
ESTIMATE WORKSHEET 57	57	Offloading - Mendall Marsh - Shallow - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.71	\$3.27	\$0
ESTIMATE WORKSHEET 67	67	Processing - Mendall Marsh - Shallow - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$12.97	\$15.92	\$0
ESTIMATE WORKSHEET 77	77	Material Procurement and Delivery - Mendall Marsh - Shallow - 500	Ton	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$21.00	\$26.11	\$0
ESTIMATE WORKSHEET 91	91	Loading - Mendall Marsh - Shallow - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.71	\$3.27	\$0
ESTIMATE WORKSHEET 105	105	Backfilling - Mendall Marsh - Shallow - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$19.82	\$23.83	\$0
ESTIMATE WORKSHEET 119	119	T&B - Mendall Marsh - Shallow - 500	Ton	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$62.81	\$91.30	\$0
ESTIMATE WORKSHEET 153	153	Restoration Plantings and Access Agreements - Mendall Marsh - Shallow - 500	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0
ESTIMATE WORKSHEET 159	159	Demobilization	LS	1					\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0
TOTALS					\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$293.21	\$273.16	\$0.00

Indirect Expenses
 Indirect Labor \$0.00
 Markup on Indirect \$0.00
 Total Cost \$0.00
 Contingency \$0.00
 Total Cost \$0.00

NOT USED

Worksheet No.	Item No.	Description	Units of Meas.	Quantity on Proposal	Labor	Material	Equipment	Subcontractor	Total Field Cost	Taxes	12% Overhead - Labor, Materials, Equipment (No. T&B)	5% Overhead (Subcontractors)	5% Profit	Bid Amount	Field Unit Price (does not include taxes, O&P, profit)	Bid Unit Price	Final Bid Price	
ESTIMATE WORKSHEET 1		Performance and Payment Bond																
ESTIMATE WORKSHEET 2	2	Work Plans and Submittals	LS	1					\$0.00					\$0.00	\$0.00	\$0.00	\$0	
ESTIMATE WORKSHEET 5	5	Mobilization	LS	1					\$0.00					\$0.00	\$0.00	\$0.00	\$0	
ESTIMATE WORKSHEET 19	19	Hydrographic Surveys - Mendall Marsh - Shallow - 500	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	
ESTIMATE WORKSHEET 27	27	Environmental Monitoring - Mendall - 500	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	
ESTIMATE WORKSHEET 37	37	Debris Removal - Mendall Marsh - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	
ESTIMATE WORKSHEET 47	47	Dredging - Mendall Marsh - Shallow - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$19.82	\$23.83	
ESTIMATE WORKSHEET 57	57	Offloading - Mendall Marsh - Shallow - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.71	\$3.27	
ESTIMATE WORKSHEET 67	67	Processing - Mendall Marsh - Shallow - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$12.97	\$15.92	
ESTIMATE WORKSHEET 77	77	Material Procurement and Delivery - Mendall Marsh - Shallow - 500	Ton	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$21.00	\$26.11	
ESTIMATE WORKSHEET 91	91	Loading - Mendall Marsh - Shallow - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.71	\$3.27	
ESTIMATE WORKSHEET 105	105	Backfilling - Mendall Marsh - Shallow - 500	CY	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$19.82	\$23.83	
ESTIMATE WORKSHEET 129	129	T&B Ben - Mendall Marsh - Shallow - 500	Ton	0	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$12.81	\$16.17	
ESTIMATE WORKSHEET 153	153	Restoration Plantings and Access Agreements - Mendall Marsh - Shallow - 500	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	
ESTIMATE WORKSHEET 159	159	Demobilization	LS	1					\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	
TOTALS					\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$193.21	\$218.04	\$0.00

Indirect Expenses
 Indirect Labor \$0.00
 Markup on Indirect \$0.00
 Total Cost \$0.00
 Contingency \$0.00
 Total Cost \$0.00

Alternative 6: Dredging in Interstitial Zones (with Offsite Disposal)

Worksheet No.	Item No.	Description	Units of Meas.	Quantity on Proposal	Labor	Material	Equipment	Subcontractor	Total Field Cost	Taxes	12% Overhead - Labor, Materials, Equipment (No T&B)	5% Overhead (Subcontractors)	5% Profit	Bid Amount	Field Unit Price (does not include taxes, OH, profit)	Bid Unit Price	Final Bid Price	
ESTIMATE WORKSHEET 1		Performance and Payment Bond							\$335,953.87				\$6,797.69	\$142,751.57	\$135,953.87	\$142,751.57	\$142,752	
ESTIMATE WORKSHEET 2	2	Work Plans and Submittals	LS	1					\$2,452,371.81					\$2,580,240.40	\$2,452,371.81	\$2,580,240	\$2,580,240	
ESTIMATE WORKSHEET 3	3	Mobilization	LS	1					\$605,695.65	\$0.00	\$0.00	\$30,284.73	\$11,798.97	\$667,778.28	\$605,695.65	\$667,778.28	\$667,778	
ESTIMATE WORKSHEET 20	20	Hydrographic Surveys - Mendall Marsh - Shallow - 300	LS	1	\$0	\$0	\$0	\$0	\$465,741.78	\$23,028.45	\$55,889.01	\$0.00	\$26,081.54	\$550,740.78	\$465,741.78	\$550,740.78	\$550,741	
ESTIMATE WORKSHEET 28	28	Environmental Monitoring - Mendall - 300	LS	1	\$47,043	\$0	\$418,699	\$0	\$1,004,697.70	\$26,672.72	\$120,563.72	\$0.00	\$36,263.07	\$1,208,197.22	\$1,004,697.70	\$1,208,197	\$1,208,197	
ESTIMATE WORKSHEET 28	28	Debris Removal - Mendall Marsh - 300	CV	5,287	\$519,739	\$42,854	\$442,305	\$0	\$10,479,180.86	\$278,331.33	\$1,251,951.75	\$0.00	\$38,834.13	\$12,262,178.09	\$1,919,821.81	\$12,262,178	\$12,262,178	
ESTIMATE WORKSHEET 48	48	Dredging - Mendall Marsh - Shallow - 300	CV	528,707	\$5,420,975	\$446,075	\$4,611,231	\$0	\$1,432,397.61	\$44,862.97	\$171,887.71	\$0.00	\$80,214.27	\$1,729,362.56	\$2,712,412.41	\$1,729,363	\$1,729,363	
ESTIMATE WORKSHEET 58	58	Offloading - Mendall Marsh - Shallow - 300	CV	528,707	\$616,707	\$49,648	\$766,042	\$0	\$6,858,046.50	\$349,669.72	\$822,965.58	\$0.00	\$384,050.60	\$8,414,732.41	\$12,977	\$15,92	\$8,414,732	
ESTIMATE WORKSHEET 68	68	Processing - Mendall Marsh - Shallow - 300	CV	528,707	\$500,415	\$6,089,417	\$268,214	\$0	\$17,647,575.07	\$970,616.63	\$2,117,709.01	\$0.00	\$989,264.20	\$21,714,164.93	\$33,00	\$38,31	\$21,714,165	
ESTIMATE WORKSHEET 78	78	Material Procurement and Delivery - Mendall Marsh - Shallow - 300	Tem	787,286	\$0	\$17,647,575	\$0	\$0	\$1,539,827.43	\$48,227.69	\$184,779.29	\$0.00	\$86,230.34	\$1,859,064.75	\$2,71	\$3,27	\$1,859,065	
ESTIMATE WORKSHEET 92	92	Loading - Mendall Marsh - Shallow - 300	CV	568,360	\$662,960	\$53,272	\$823,495	\$0	\$11,265,119.42	\$299,066.43	\$1,351,814.33	\$0.00	\$630,846.69	\$13,546,846.87	\$19,82	\$23,83	\$13,546,847	
ESTIMATE WORKSHEET 106	106	Backfilling - Mendall Marsh - Shallow - 300	CV	628,104	\$0	\$6,296	\$0	\$0	\$52,006,999	\$32,013,289.26	\$346,28	\$765.51	\$2,669,349.67	\$2,740,719.72	\$37,345,460.44	\$62,81	\$91,80	\$37,345,460
ESTIMATE WORKSHEET 120	120	T&B - Mendall Marsh - Shallow - 300	Tem	628,104	\$0	\$6,296	\$0	\$0	\$10,156,627	\$30,196,626.53	\$0.00	\$0.00	\$593,831.33	\$353,322.89	\$11,241,780.75	\$10,156,626.53	\$11,241,781	
ESTIMATE WORKSHEET 144C	144C	Monitoring Program - Dredge and Backfill - MM - 300	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	
ESTIMATE WORKSHEET 154	154	Restoration Plantings and Access Agreements - Mendall Marsh - Shallow - 300	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	
ESTIMATE WORKSHEET 159	159	Demobilization	LS	1					\$2,457,371.81	\$0.00	\$0.00	\$0.00	\$122,868.59	\$2,580,240.40	\$2,457,371.81	\$2,580,240	\$2,580,240	
TOTALS					\$13,595,387.35	\$24,816,635.90	\$12,286,859.07	\$62,809,314.43	\$118,558,894.25	\$2,040,692.22	\$6,083,865.88	\$3,140,465.72	\$6,389,161.29	\$136,213,079.37	\$16,319,134.26	\$137,983,950.44	\$136,213,079.37	
Indirect Expenses																		
Indirect Labor																		
Markup on Indirect																		
Total Cost																		
Contingency																		
Total Cost																		

Alternative 6: Dredging in Intertidal Zones (with Beneficial Reuse)

Worksheet No.	Item No.	Description	Units of Meas.	Quantity on Proposal	Labor	Material	Equipment	Subcontractor	Total Field Cost	Taxes	12% Overhead - Labor, Materials, Equipment (No T&B)	5% Overhead (Subcontractors)	5% Profit	Bid Amount	Field Unit Price (does not include taxes, O&P, profit)	Bid Unit Price	Final Bid Price
ESTIMATE WORKSHEET 1		Performance and Payment Bond							\$335,953.87				\$6,797.69	\$142,751.57	\$135,953.87	\$142,751.57	\$142,752
ESTIMATE WORKSHEET 2	2	Work Plans and Submittals	LS	1					\$2,457,371.81					\$2,580,240.40	\$2,457,371.81	\$2,580,240	\$2,580,240
ESTIMATE WORKSHEET 3	3	Mobilization	LS	1					\$605,695	\$0.00	\$0.00	\$30,284.73	\$31,798.97	\$667,778.28	\$605,695.58	\$667,778.28	\$667,778
ESTIMATE WORKSHEET 20	20	Hydrographic Surveys - Mendall Marsh - Shallow - 300	LS	1	\$0	\$0	\$0	\$605,695	\$605,694.58	\$0.00	\$0.00	\$30,284.73	\$31,798.97	\$667,778.28	\$605,695.58	\$667,778.28	\$667,778
ESTIMATE WORKSHEET 28	28	Environmental Monitoring - Mendall - 300	LS	1	\$47,043	\$0	\$418,699	\$0	\$465,741.78	\$23,028.45	\$55,889.01	\$0.00	\$26,081.54	\$570,740.78	\$465,741.78	\$570,740.78	\$570,741
ESTIMATE WORKSHEET 28	28	Debris Removal - Mendall Marsh - 300	CV	5,287	\$519,739	\$42,854	\$442,305	\$0	\$1,004,697.70	\$26,672.72	\$126,563.72	\$0.00	\$26,263.07	\$1,208,197.22	\$100,000	\$1,208,197	\$1,208,197
ESTIMATE WORKSHEET 48	48	Dredging - Mendall Marsh - Shallow - 300	CV	528,707	\$5,420,975	\$446,975	\$4,611,131	\$0	\$10,479,100.86	\$278,201.33	\$1,251,951.75	\$0.00	\$26,834.13	\$12,005,718.09	\$19,82	\$12,005,718	\$12,005,718
ESTIMATE WORKSHEET 58	58	Offloading - Mendall Marsh - Shallow - 300	CV	528,707	\$616,707	\$49,648	\$766,042	\$0	\$1,432,997.61	\$44,862.97	\$171,887.71	\$0.00	\$80,214.27	\$1,729,362.56	\$2,71	\$1,729,363	\$1,729,363
ESTIMATE WORKSHEET 68	68	Processing - Mendall Marsh - Shallow - 300	CV	528,707	\$500,415	\$6,089,417	\$268,214	\$0	\$6,858,046.50	\$349,669.72	\$822,965.58	\$0.00	\$384,050.60	\$8,414,732.41	\$12,97	\$15,92	\$8,414,732
ESTIMATE WORKSHEET 78	78	Material Procurement and Delivery - Mendall Marsh - Shallow - 300	Ton	78,236	\$0	\$1,641,575	\$0	\$0	\$1,641,575.07	\$970,616.63	\$2,117,709.01	\$0.00	\$989,264.20	\$3,714,144.93	\$23.00	\$38.31	\$3,714,145
ESTIMATE WORKSHEET 92	92	Loading - Mendall Marsh - Shallow - 300	CV	568,360	\$662,960	\$53,272	\$823,495	\$0	\$1,539,827.43	\$48,222.60	\$184,779.29	\$0.00	\$86,230.34	\$1,859,064.75	\$2,71	\$1,859,065	\$1,859,065
ESTIMATE WORKSHEET 106	106	Backfilling - Mendall Marsh - Shallow - 300	CV	568,360	\$5,827,548	\$480,498	\$4,957,073	\$0	\$11,265,119.42	\$299,066.43	\$1,351,814.33	\$0.00	\$630,846.69	\$13,546,846.87	\$19.82	\$23.83	\$13,546,847
ESTIMATE WORKSHEET 130	130	T&B Ben - Mendall Marsh - Shallow - 300	Ton	628,104	\$0	\$6,296	\$0	\$20,601,894	\$20,608,100.06	\$346.28	\$765.51	\$1,080,090.21	\$1,081,947.29	\$22,721,249.35	\$12.81	\$36.17	\$22,721,249
ESTIMATE WORKSHEET 144C	144C	Monitoring Program - Dredge and Backfill - MM - 300	LS	1	\$0	\$0	\$0	\$10,106,627	\$10,106,626.53	\$0.00	\$0.00	\$509,813.33	\$535,322.89	\$11,241,790.75	\$10,106,626.53	\$11,241,790.75	\$11,241,791
ESTIMATE WORKSHEET 154	154	Restoration Plantings and Access Agreements - Mendall Marsh - Shallow - 300	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0
ESTIMATE WORKSHEET 159	159	Demobilization	LS	1					\$2,457,371.81	\$0.00	\$0.00	\$0.00	\$0.00	\$122,868.59	\$2,580,240.40	\$2,457,371.81	\$2,580,240
TOTALS					\$13,595,387.35	\$24,816,635.90	\$12,286,859.07	\$31,494,125.23	\$87,153,705.05	\$2,040,692.22	\$6,089,865.88	\$1,570,206.26	\$4,740,388.86	\$101,588,858.28	\$16,319,064.26	\$17,989,895.32	\$101,588,858.28
Indirect Expenses Indirect Labor Markup on Indirect Total Cost \$101,588,858.28 Contingency \$25,127,771.66 Total Cost \$121,906,629.93																	

Alternative 1 - Monitored Natural Recovery

Worksheet No.	Item No.	Description	Units of Meas.	Quantity on Proposal	Labor	Material	Equipment	Subcontractor	Total Field Cost	Taxes	12% Overhead - Labor, Materials, Equipment (No T&B)	5% Overhead (Subcontractors)	3% Profit	Bid Amount	Field Unit Price (does not include taxes, O&G, profit)	Bid Unit Price	Final Bid Price
ESTIMATE WORKSHEET 141	141	Monitoring Program - MNR - 500	LS	1	\$0	\$0	\$0	\$15,000,000	\$15,000,000.00	\$0.00	\$0.00	\$750,000.00	\$787,500.00	\$16,537,500.00	\$15,000,000.00	\$16,537,500.00	\$16,537,500.00
TOTALS					\$0.00	\$0.00	\$0.00	\$15,000,000.00	\$15,000,000.00	\$0.00	\$0.00	\$750,000.00	\$787,500.00	\$16,537,500.00	\$15,000,000.00	\$16,537,500.00	\$16,537,500.00
															Indirect Expenses		
															Indirect Labor		
															Markup on Indirect		\$0.00
															Total Cost		\$16,537,500.00
															Contingency		\$1,307,500.00
															Total Cost		\$19,845,000.00

Alternative 1- Monitored Natural Recovery

Worksheet No.	Item No.	Description	Units of Meas.	Quantity on Proposal	Labor	Material	Equipment	Subcontractor	Total Field Cost	Taxes	12% Overhead - Labor, Materials, Equipment (No T&B)	5% Overhead (Subcontractors)	3% Profit	Bid Amount	Field Unit Price (does not include taxes, O&G, profit)	Bid Unit Price	Final Bid Price
ESTIMATE WORKSHEET 142	142	Monitoring Program - MNR - 300	LS	1	\$0	\$0	\$0	\$15,000,000	\$15,000,000.00	\$0.00	\$0.00	\$750,000.00	\$787,500.00	\$16,537,500.00	\$15,000,000.00	\$16,537,500.00	\$16,537,500.00
TOTALS					\$0.00	\$0.00	\$0.00	\$15,000,000.00	\$15,000,000.00	\$0.00	\$0.00	\$750,000.00	\$787,500.00	\$16,537,500.00	\$15,000,000.00	\$16,537,500.00	\$16,537,500.00
															Indirect Expenses		
															Indirect Labor		
															Markup on Indirect	\$0.00	
															Total Cost	\$16,537,500.00	
															Contingency	\$3,307,500.00	
															Total Cost	\$19,845,000.00	

Alternative 2 - Enhanced Monitored Natural Recovery (500 ng/d)

Worksheet No.	Item No.	Description	Units of Meas.	Quantity on Proposal	Labor	Material	Equipment	Subcontractor	Total Field Cost	Taxes	12% Overhead - Labor, Materials, Equipment (No T&B)	5% Overhead (Subcontractors)	5% Profit	Bid Amount	Field Unit Price (does not include taxes, OH, profit)	Bid Unit Price	Final Bid Price
ESTIMATE WORKSHEET 1		Performance and Payment Bond	LS	1					\$369,028.09				\$8,451.30	\$177,477.40	\$169,028.09	\$177,477.40	\$177,477.40
ESTIMATE WORKSHEET 2		Work Plans and Submittals	LS	1					\$2,491,851.09					\$474,503.55	\$9,965,548.65	\$9,965,548.65	\$9,965,548.65
ESTIMATE WORKSHEET 3		Mobilization	LS	1					\$2,376,856.64	\$28,949.01	\$84,747.80	\$83,531.25	\$127,256.78	\$2,701,341.48	\$2,376,856.64	\$2,701,341.48	\$2,701,341.48
ESTIMATE WORKSHEET 4A		Temporary Construction - Main NE Coal Processing	LS	1	\$179,886	\$433,422	\$92,824	\$1,670,625	\$2,376,856.64	\$28,949.01	\$84,747.80	\$83,531.25	\$127,256.78	\$2,701,341.48	\$2,376,856.64	\$2,701,341.48	\$2,701,341.48
ESTIMATE WORKSHEET 7		Conditions Surveys	LS	1	\$16,988	\$0	\$797	\$0	\$17,784.27	\$43.82	\$2,134.11	\$0.00	\$995.52	\$20,958.11	\$17,784.27	\$20,958.11	\$20,958.11
ESTIMATE WORKSHEET 8A		Topographic Surveys - Dredge - NE Coal	LS	1	\$0	\$0	\$0	\$38,940	\$38,940.00	\$0.00	\$0.00	\$1,947.00	\$2,044.35	\$42,931.35	\$38,940.00	\$42,931.35	\$42,931.35
ESTIMATE WORKSHEET 21		Hydrographic Surveys - EMNR - 500	LS	1	\$0	\$0	\$0	\$3,832,756	\$3,832,756.33	\$0.00	\$0.00	\$191,637.82	\$201,215.71	\$4,225,613.86	\$3,832,756.33	\$4,225,613.86	\$4,225,613.86
ESTIMATE WORKSHEET 31		Environmental Monitoring - EMNR - 500	LS	1	\$137,125	\$0	\$3,627,543	\$0	\$3,764,667.71	\$199,514.88	\$451,760.12	\$0.00	\$210,823.39	\$4,626,764.10	\$3,764,667.71	\$4,626,764.10	\$4,626,764.10
ESTIMATE WORKSHEET 79		Material Procurement and Delivery - EMNR - 500	Ton	5,265,000	\$0	\$121,095,000	\$0	\$0	\$121,095,000.00	\$6,660,235.00	\$14,511,400.00	\$0.00	\$6,781,320.00	\$149,067,845.00	\$121,000	\$28.11	\$149,067,845.00
ESTIMATE WORKSHEET 93		Loading - EMNR - 500	CY	3,900,000	\$1,902,443	\$134,167	\$4,847,415	\$0	\$9,064,025.25	\$283,387.03	\$1,087,683.03	\$0.00	\$507,585.41	\$10,943,180.79	\$1,902,443	\$28.81	\$10,943,180.79
ESTIMATE WORKSHEET 107		Backfilling - EMNR - 500	CY	3,900,000	\$12,666,168	\$1,188,683	\$10,415,223	\$0	\$24,270,074.77	\$638,214.86	\$2,912,408.97	\$0.00	\$1,359,124.19	\$29,179,822.79	\$12,666,168	\$74.88	\$29,179,822.79
ESTIMATE WORKSHEET 143		Monitoring Program - EMNR - 500	LS	1	\$0	\$0	\$0	\$16,598,090	\$16,598,090.01	\$0.00	\$0.00	\$829,904.50	\$871,399.73	\$18,299,394.24	\$16,598,090.01	\$18,299,394.24	\$18,299,394.24
ESTIMATE WORKSHEET 155		Restoration Plantings and Access Agreements- EMNR - 500	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ESTIMATE WORKSHEET 159		Demolition	LS	1					\$9,491,951.09	\$0.00	\$0.00	\$0.00	\$474,597.55	\$9,966,548.65	\$9,491,951.09	\$9,966,548.65	\$9,966,549
TOTALS					\$16,902,609.22	\$123,031,272.23	\$18,983,902.19	\$22,140,411.35	\$200,211,123.26	\$7,810,834.59	\$19,070,134.04	\$1,107,020.57	\$11,019,413.89	\$239,218,526.35	\$45,782,054.78	\$50,027,616.43	\$239,218,526.35
																Indirect Expenses	
																Indirect Labor	
																Markup on Indirect	
																50.00	
																Total Cost	
																\$239,218,526.35	
																Contingency	
																\$43,543,705.27	
																Total Cost	
																\$282,762,231.63	

Alternative 2 - Enhanced Monitored Natural Recovery (300 ng/d)

Worksheet No.	Item No.	Description	Units of Meas.	Quantity on Proposal	Labor	Material	Equipment	Subcontractor	Total Field Cost	Taxes	12% Overhead - Labor, Materials, Equipment (No. TAB)	5% Overhead (Subcontractors)	5% Profit	Bid Amount	Field Unit Price (does not include taxes, OH, profit)	Bid Unit Price	Final Bid Price
ESTIMATE WORKSHEET 1		Performance and Payment Bond							\$463,592.03				\$23,179.60	\$486,771.63	\$463,592.03	\$486,771.63	\$486,772
ESTIMATE WORKSHEET 2	2	Work Plans and Submittals	LS	1					\$70,000,848.55					\$70,000,848.55		\$70,000,849	\$70,000,852
ESTIMATE WORKSHEET 3	3	Mobilization	LS	1													
ESTIMATE WORKSHEET 4A	4A	Temporary Construction - Main NE Coal Processing	LS	1	\$179,886	\$433,422	\$92,824	\$1,670,625	\$2,376,856.64	\$28,949.01	\$84,747.80	\$83,531.25	\$127,256.78	\$2,701,341.48	\$2,376,856.64	\$2,701,341.48	\$2,701,341
ESTIMATE WORKSHEET 7	7	Conditions Surveys	LS	1	\$16,988	\$0	\$797	\$0	\$17,784.27	\$43.82	\$2,134.11	\$0.00	\$995.92	\$20,958.11	\$17,784.27	\$20,958.11	\$20,958
ESTIMATE WORKSHEET 8A	8A	Topographic Surveys - Dredge - NE Coal	LS	1	\$0	\$0	\$0	\$38,940	\$38,940.00	\$0.00	\$0.00	\$1,947.00	\$2,044.35	\$42,931.35	\$38,940.00	\$42,931.35	\$42,931
ESTIMATE WORKSHEET 22	22	Hydrographic Surveys - EMNR - 300	LS	1	\$0	\$0	\$0	\$10,515,511	\$10,515,510.96	\$0.00	\$0.00	\$523,775.55	\$552,064.33	\$11,093,350.83	\$10,515,510.96	\$11,093,350.83	\$11,093,351
ESTIMATE WORKSHEET 32	32	Environmental Monitoring - EMNR - 300	LS	1	\$376,213	\$0	\$9,952,490	\$0	\$10,328,703.70	\$547,386.97	\$1,239,444.44	\$0.00	\$578,407.41	\$12,693,942.52	\$10,328,703.70	\$12,693,942.52	\$12,693,943
ESTIMATE WORKSHEET 80	80	Material Procurement and Delivery - EMNR - 300	Ton	14,445,000	\$0	\$32,235,000	\$0	\$0	\$32,235,000.00	\$18,272,925.00	\$39,868,200.00	\$0.00	\$18,605,160.00	\$408,981,285.00	\$23.00	\$28.31	\$408,981,285
ESTIMATE WORKSHEET 94	94	Loading - EMNR - 300	CY	10,700,000	\$10,700,702	\$80,346	\$13,299,318	\$0	\$24,807,964.72	\$778,869.36	\$2,984,154.01	\$0.00	\$1,203,604.24	\$30,021,598.42	\$21.32	\$21.81	\$30,021,598
ESTIMATE WORKSHEET 108	108	Backfilling - EMNR - 300	CY	10,700,000	\$35,079,414	\$2,811,388	\$28,575,100	\$0	\$66,465,901.72	\$1,726,256.82	\$7,975,908.21	\$0.00	\$3,722,090.50	\$79,890,157.24	\$6.21	\$7.47	\$79,890,157
ESTIMATE WORKSHEET 144	144	Monitoring Program - EMNR - 300	LS	1	\$0	\$0	\$0	\$19,606,575	\$19,606,574.55	\$0.00	\$0.00	\$980,328.73	\$1,029,345.16	\$21,616,248.44	\$19,606,574.55	\$21,616,248.44	\$21,616,248
ESTIMATE WORKSHEET 156	156	Restoration Plantings and Access Agreements- EMNR - 300	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0
ESTIMATE WORKSHEET 159	159	Demolition	LS	1					\$70,000,849.33	\$0.00	\$0.00	\$0.00		\$70,000,849.33		\$70,000,849	\$70,000,852
TOTALS					\$46,359,203.13	\$96,341,755.79	\$51,920,628.13	\$31,891,650.51	\$607,102,529.25	\$21,354,431.17	\$52,154,590.57	\$1,591,582.53	\$33,042,435.12	\$715,245,568.63	\$183,533,692.34	\$186,350,566.55	\$715,245,568.63
Indirect Expenses																	
Indirect Labor																	
Markup on Indirect 50.00																	
Total Cost \$715,245,568.63																	
Contingency \$145,049,113.73																	
Total Cost \$858,294,682.35																	

Alternative 4 and 6: Thin-Layer Capping

Worksheet No.	Item No.	Description	Units of Meas.	Quantity on Proposal	Labor	Material	Equipment	Subcontractor	Total Field Cost	Taxes	12% Overhead - Labor, Materials, Equipment (No T&B)	5% Overhead (Subcontractors)	5% Profit	Bid Amount	Field Unit Price (does not include taxes, OH, profit)	Bid Unit Price	Final Bid Price
ESTIMATE WORKSHEET 1		Performance and Payment Bond															
ESTIMATE WORKSHEET 2	2	Work Plans and Submittals	LS	1					\$72,732.19				\$3,636.63	\$76,368.80	\$72,732.19	\$76,368.80	\$76,369
ESTIMATE WORKSHEET 3	3	Mobilization	LS	1					\$2,168,187.81				\$108,409.39	\$2,276,597.20	\$2,168,187.81	\$2,276,597	\$2,276,597
ESTIMATE WORKSHEET 4A	4A	Temporary Construction - Main NE Coal Processing	LS	1	\$179,886	\$433,422	\$92,824	\$1,670,625	\$2,376,856.64	\$28,949.01	\$84,747.80	\$83,531.25	\$127,256.78	\$2,701,341.48	\$2,376,856.64	\$2,701,341.48	\$2,701,341
ESTIMATE WORKSHEET 7	7	Conditions Surveys	LS	1	\$16,988	\$0	\$797	\$0	\$17,784.27	\$43.82	\$2,134.11	\$0.00	\$995.52	\$20,958.11	\$17,784.27	\$20,958.11	\$20,958
ESTIMATE WORKSHEET 9	9	Topographic Surveys - TLC -500	LS	1	\$0	\$0	\$0	\$618,739	\$618,738.55	\$0.00	\$0.00	\$40,996.93	\$22,483.77	\$682,199.25	\$618,738.55	\$682,199.25	\$682,199
ESTIMATE WORKSHEET 29	29	Environmental Monitoring - Mendall - TLC - 500	LS	1	\$57,671	\$0	\$0	\$513,293	\$570,963.41	\$48,331.10	\$68,515.61	\$0.00	\$33,973.95	\$699,684.07	\$570,963.41	\$699,684	\$699,684
ESTIMATE WORKSHEET 81	81	Material Procurement and Delivery - TLC - 500	Ton	265,166	\$0	\$6,098,815	\$0	\$0	\$6,098,815.37	\$335,434.85	\$733,857.84	\$0.00	\$341,533.66	\$7,507,647.72	\$23.00	\$28.31	\$7,507,642
ESTIMATE WORKSHEET 95	95	Loading - TLC - 500	CV	196,419	\$1,641,259	\$132,130	\$2,038,688	\$0	\$1,812,076.47	\$119,394.98	\$457,449.18	\$0.00	\$213,476.28	\$4,602,396.90	\$19.41	\$23.43	\$4,602,397
ESTIMATE WORKSHEET 109	109	Backfilling - TLC - 500	CV	196,419	\$5,377,416	\$430,965	\$8,195,238	\$0	\$14,003,619.43	\$474,441.27	\$1,480,434.33	\$0.00	\$782,202.69	\$16,940,697.62	\$71.29	\$86.26	\$16,940,698
ESTIMATE WORKSHEET 144D	144D	Monitoring Program - TLC	LS	1	\$0	\$0	\$0	\$5,356,334	\$5,356,333.92	\$0.00	\$0.00	\$267,816.70	\$283,207.53	\$5,905,358.15	\$5,356,333.92	\$5,905,358	\$5,905,358
ESTIMATE WORKSHEET 157	157	Restoration Plantings and Access Agreements - TLC - 500	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0
ESTIMATE WORKSHEET 159	159	Demobilization	LS	1					\$2,168,187.81	\$0.00	\$0.00	\$0.00	\$108,409.39	\$2,276,597.20	\$2,168,187.81	\$2,276,597.20	\$2,276,597
TOTALS					\$7,373,216.38	\$7,095,332.22	\$10,640,939.63	\$7,645,697.47	\$37,364,295.85	\$986,494.92	\$3,025,138.87	\$380,284.87	\$2,033,546.98	\$43,691,800.50	\$13,349,898.39	\$14,630,202.35	\$43,691,800.50
Indirect Expenses																	
Indirect Labor																	
Markup on Indirect																	
Total Cost																	
\$43,691,800.50																	
Contingency																	
Total Cost																	
\$52,430,160.58																	

Alternative 4 and 6: Thin-Layer Capping

Worksheet No.	Item No.	Description	Units of Meas.	Quantity on Proposal	Labor	Material	Equipment	Subcontractor	Total Field Cost	Taxes	12% Overhead - Labor, Materials, Equipment (No T&B)	5% Overhead (Subcontractors)	5% Profit	Bid Amount	Field Unit Price (does not include taxes, OH, profit)	Bid Unit Price	Final Bid Price
ESTIMATE WORKSHEET 1		Performance and Payment Bond															
ESTIMATE WORKSHEET 2	2	Work Plans and Submittals	LS	1					\$72,732.19				\$3,636.61	\$76,368.80	\$72,732.19	\$76,368.80	\$76,369
ESTIMATE WORKSHEET 3	3	Mobilization	LS	1					\$2,168,187.81				\$108,409.39	\$2,276,597.20	\$2,168,187.81	\$2,276,597.20	\$2,276,597
ESTIMATE WORKSHEET 4A	4A	Temporary Construction - Main NE Coal Processing	LS	1	\$179,886	\$433,422	\$92,824	\$1,670,625	\$2,376,856.64	\$28,949.01	\$84,747.80	\$83,531.25	\$127,256.78	\$2,701,341.48	\$2,376,856.64	\$2,701,341.48	\$2,701,341
ESTIMATE WORKSHEET 7	7	Conditions Surveys	LS	1	\$16,988	\$0	\$797	\$0	\$17,784.27	\$43.82	\$2,134.11	\$0.00	\$995.92	\$20,958.11	\$17,784.27	\$20,958.11	\$20,958
ESTIMATE WORKSHEET 10	10	Topographic Surveys - TLC - 300	LS	1	\$0	\$0	\$0	\$618,739	\$618,738.55	\$0.00	\$0.00	\$40,996.93	\$22,483.77	\$682,199.25	\$618,738.55	\$682,199.25	\$682,199
ESTIMATE WORKSHEET 30	30	Environmental Monitoring - Mendall - TLC - 300	LS	1	\$57,671	\$0	\$513,293	\$0	\$570,963.41	\$48,331.10	\$68,515.61	\$0.00	\$33,973.95	\$699,684.07	\$570,963.41	\$699,684.07	\$699,684
ESTIMATE WORKSHEET 82	82	Material Procurement and Delivery - TLC - 300	Ton	265,166	\$0	\$6,098,815	\$0	\$6,098,815.37	\$335,434.85	\$733,857.84	\$0.00	\$341,533.66	\$7,507,641.72	\$23.00	\$28.31	\$7,507,642	\$7,507,642
ESTIMATE WORKSHEET 96	96	Loading - TLC - 300	CV	196,419	\$1,641,259	\$132,130	\$2,038,688	\$0	\$1,812,076.47	\$119,394.98	\$457,449.18	\$0.00	\$213,476.28	\$4,602,396.90	\$19.41	\$23.43	\$4,602,397
ESTIMATE WORKSHEET 110	110	Backfilling - TLC - 300	CV	196,419	\$5,377,416	\$430,965	\$8,195,238	\$0	\$14,003,619.43	\$474,441.27	\$1,680,434.33	\$0.00	\$786,202.69	\$16,943,697.62	\$71.29	\$86.26	\$16,943,698
ESTIMATE WORKSHEET 144D	144D	Monitoring Program - TLC	LS	1	\$0	\$0	\$0	\$5,356,334	\$5,356,333.92	\$0.00	\$0.00	\$267,816.70	\$283,207.53	\$5,905,358.15	\$5,356,333.92	\$5,905,358.15	\$5,905,358
ESTIMATE WORKSHEET 158	158	Restoration Plantings and Access Agreements - TLC - 300	LS	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0
ESTIMATE WORKSHEET 159	159	Demobilization	LS	1					\$2,168,187.81	\$0.00	\$0.00	\$0.00	\$108,409.39	\$2,276,597.20	\$2,168,187.81	\$2,276,597.20	\$2,276,597
TOTALS					\$7,373,219.39	\$7,095,312.22	\$10,640,939.63	\$7,645,697.47	\$37,364,295.85	\$986,494.92	\$3,025,138.87	\$380,284.87	\$2,033,546.98	\$43,691,800.50	\$13,349,898.39	\$14,630,202.25	\$43,691,800.50
Indirect Expenses																	
Indirect Labor																	
Markup on Indirect																	
Total Cost																	
\$43,691,800.50																	
Contingency																	
\$8,738,360.10																	
Total Cost																	
\$52,430,160.59																	

Alternative 6 - Amendment Application

Worksheet No.	Item No.	Description	Units of Meas.	Quantity on Proposal	Labor	Material	Equipment	Subcontractor	Total Field Cost	Taxes	12% Overhead - Labor, Materials, Equipment (No. T&B)	5% Overhead (Subcontractors)	5% Profit	Bid Amount	Field Unit Price (does not include taxes, OH, profit)	Bid Unit Price	Final Bid Price
ESTIMATE WORKSHEET 1		Performance and Payment Bond	LS	1					\$11,029.88				\$551.49	\$11,581.38	\$11,029.88	\$11,581.38	\$11,581
ESTIMATE WORKSHEET 2		Work Plans and Submittals	LS	1					\$60,863.77					\$60,863.77	\$60,863.77	\$60,864	\$60,864
ESTIMATE WORKSHEET 3		Mobilization	LS	1					\$1,670.625	\$28,949.01	\$84,747.80	\$83,531.25	\$127,256.78	\$2,701,341.48	\$2,376,856.64	\$2,701,341.48	\$2,701,341
ESTIMATE WORKSHEET 4A	4A	Temporary Construction - Main NE Coal Processing	LS	1	\$179,886	\$433,422	\$92,824		\$1,670.625	\$2,376,856.64	\$28,949.01	\$84,747.80	\$83,531.25	\$127,256.78	\$2,701,341.48	\$2,376,856.64	\$2,701,341
ESTIMATE WORKSHEET 7	7	Conditions Surveys	LS	1	\$16,988	\$0	\$797	\$0	\$17,784.27	\$43.82	\$2,134.11	\$0.00	\$995.52	\$20,958.11	\$17,784.27	\$20,958.11	\$20,958
ESTIMATE WORKSHEET 8A	8A	Topographic Surveys - Dredge - NE Coal	LS	1	\$0	\$0	\$0	\$38,940	\$38,940.00	\$0.00	\$0.00	\$1,947.00	\$2,048.35	\$42,931.35	\$38,940.00	\$42,931.35	\$42,931
ESTIMATE WORKSHEET 10A	10A	Topographic Surveys - Amended	LS	1	\$0	\$0	\$0	\$10,493	\$10,493.34	\$0.00	\$0.00	\$6,024.67	\$6,125.90	\$170,493.34	\$10,493.34	\$170,493	
ESTIMATE WORKSHEET 82A	82A	Material Procurement and Delivery - Amended Cap	Ton	5,174	\$0	\$17,072,592	\$0	\$0	\$17,072,592.29	\$918,992.58	\$2,048,713.08	\$0.00	\$956,066.17	\$21,016,361.12	\$3,300.00	\$4,062.30	\$21,016,361
ESTIMATE WORKSHEET 96A	96A	Loading - Amended Cap	CY	9,238	\$230,856	\$18,585	\$286,758	\$0	\$536,199.26	\$16,793.87	\$64,843.91	\$0.00	\$30,027.16	\$647,364.20	\$68.04	\$70.07	\$647,364
ESTIMATE WORKSHEET 110A	110A	Backfilling - Amended Cap	SCYF	20,432,215	\$678,258	\$54,152	\$835,597	\$0	\$1,166,007.84	\$48,936.20	\$187,900.89	\$0.00	\$87,440.42	\$1,899,384.95	\$0.08	\$0.09	\$1,899,385
ESTIMATE WORKSHEET 144E	144E	Monitoring Program - Amended Cap	LS	1	\$0	\$0	\$0	\$5,703,592	\$5,703,592.11	\$0.00	\$0.00	\$285,179.61	\$299,438.59	\$6,288,210.31	\$5,703,592.11	\$6,288,210	\$6,288,210
ESTIMATE WORKSHEET 159	159	Demobilization	LS	1					\$60,803.77	\$0.00	\$0.00	\$0.00	\$3,040.19	\$63,843.96	\$60,803.77	\$63,843.96	\$63,844
TOTALS					\$1,102,988.22	\$17,578,751.20	\$1,216,075.48	\$7,533,650.45	\$27,564,102.78	\$1,033,715.47	\$2,387,737.79	\$376,682.52	\$1,516,426.15	\$32,878,664.71	\$8,393,661.90	\$9,379,686.92	\$32,878,664.71
																Indirect Expenses	
																Indirect Labor	\$0.00
																Markup on Indirect	\$32,878,664.71
																Total Cost	\$6,575,732.94
																Contingency	\$38,454,937.66
																Total Cost	\$38,454,937.66

AER Cost Estimate Worksheets

ESTIMATE WORKSHEET 4												
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.
March 7, 2018		Penobscot					Temporary Construction - Main FF Processing					4
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
1	LS					12	6	7.5	1.73	-	45	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR		TOTAL	Notes		
Temporary Construction - Main FF Processing	4	\$269,829.00	\$722,808.65	\$139,385.84			\$3,670,000.00		\$4,802,023.49	Sediment Processing Area Only		
									\$0.00			
									\$0.00			
									\$0.00			
GRAND TOTALS		\$269,829.00	\$722,808.65	\$139,385.84			\$3,670,000.00		\$4,802,023.49			
UNIT PRICES		\$269,829.00	\$722,808.65	\$139,385.84			\$3,670,000.00		\$4,802,023.49			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
ELECTRICAL INSTALLATION	ELECTRIC	1	\$10,000.00	LS	\$10,000.00	KOMATSU PC300	SPA/RSA		1	540	\$65.51	\$35,377.70
WATER UTILITY INSTALLATION	WATER	1	\$10,000.00	LS	\$10,000.00	KOMATSU D39P	SPA/RSA		1	540	\$34.48	\$18,621.77
ASPHALT PAVING	SPA	540,000	\$5.00	SF	\$2,700,000.00	Wheeled Loaded WA320	SPA/RSA		1	540	\$41.72	\$22,530.00
Dolphin Install	Barge docking	15	\$50,000.00	SF	\$750,000.00	84" SMOOTH COMPACTOR	SPA/RSA		1	540	\$38.96	\$21,036.38
Temporary Dock	Barge docking	400	\$500.00	LF	\$200,000.00	CRANE - 40 TON	SPA/RSA		1	540	\$77.44	\$41,820.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$3,670,000.00	TOTAL COST	\$3,670,000.00			BARE UNIT COST		\$139,385.84	0	TOTAL RENTED EQUIP	\$139,385.84
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
OPERATOR 2	PC300	1	540	\$71.24	\$38,467.80	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
OPERATOR 3	WA320/D39P	2	1080	\$70.43	\$76,066.20	Maintenance / Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
LABORER	ALL	4	2160	\$53.80	\$116,197.20	PPE Level D	ALL	13.86	\$12.00	MTH	\$166.28	
Crane Operator	40-ton	1	540	\$72.40	\$39,097.80	Per Diem	ALL	360	\$51.00	MD	\$18,360.00	
					\$0.00	Misc Safety Supplies	ALL	1.73	\$1,000.00	MD	\$1,732.10	
					\$0.00	Hdpe Liner - 20 Mil	SPA	624,000.00	\$0.27	SF	\$168,480.00	
					\$0.00	Geotextile	SPA	624,000.00	\$0.08	SF	\$50,586.99	
					\$0.00	Jersey Barriers	SPA	420.00	\$295.00	EA	\$123,900.00	
					\$0.00	Bin Blocks	SPA	510.00	\$37.50	EA	\$19,125.00	
					\$0.00	Concrete Sumps	SPA	8.00	\$1,500.00	EA	\$12,000.00	
					\$0.00	Silt Fence	SPA	6,000.00	\$0.26	LF	\$1,560.00	
					\$0.00	6" Hdpe Pipe	SPA	1,000.00	\$17.36	LF	\$17,360.00	
					\$0.00	Tarp 60'x60'	Drip Apron	2.00	\$500.00	Ea	\$1,000.00	
					\$0.00	Straw Hay Bales	Drip Apron	23.13	\$4.25	Ea	\$98.28	
					\$0.00	Stockpile Tarps	SPA	20.00	22.00	Ea	\$440.00	
					\$0.00	DGA	SPA	14,000	22.00	Ton	\$308,000.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$269,829.00	TOTAL LABOR COST	\$269,829.00			BARE UNIT COST		\$722,808.65	TOTAL MATERIAL COST	\$722,808.65	

ESTIMATE WORKSHEET 4A

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018	Penobscot					Temporary Construction - Main NE Coal Processing					4A	
BID DATA		Bid Data Notes			PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS				12	6	5.0	1.15	-	30		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL		Notes			
Temporary Construction - Main NE Coal Processing	4A	\$179,886.00	\$433,421.75	\$92,923.89		\$1,670,625.00	\$2,376,856.64		Sediment Processing Area Only			
							\$0.00					
							\$0.00					
							\$0.00					
GRAND TOTALS		\$179,886.00	\$433,421.75	\$92,923.89		\$1,670,625.00	\$2,376,856.64					
UNIT PRICES		\$179,886.00	\$433,421.75	\$92,923.89		\$1,670,625.00	\$2,376,856.64					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
ELECTRICAL INSTALLATION	ELECTRIC	1	\$10,000.00	LS	\$10,000.00	KOMATSU PC300	SPA/RSA		1	360	\$65.51	\$23,585.13
WATER UTILITY INSTALLATION	WATER	1	\$10,000.00	LS	\$10,000.00	KOMATSU D39P	SPA/RSA		1	360	\$34.48	\$12,414.51
ASPHALT PAVING	SPA	215,125	\$5.00	SF	\$1,075,625.00	Wheeled Loaded WA320	SPA/RSA		1	360	\$41.72	\$15,020.00
Dolphin Install	Barge docking	8	\$50,000.00	SF	\$400,000.00	84" SMOOTH COMPACTOR	SPA/RSA		1	360	\$38.96	\$14,024.25
Temporary Dock	Barge docking	350	\$500.00	LF	\$175,000.00	CRANE - 40 TON	SPA/RSA		1	360	\$77.44	\$27,880.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$1,670,625.00	TOTAL COST		\$1,670,625.00	BARE UNIT COST		\$92,923.89	0	TOTAL RENTED EQUIP		\$92,923.89
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
OPERATOR 2	PC300	1	360	\$71.24	\$25,645.20	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
OPERATOR 3	WA320/D39P	2	720	\$70.43	\$50,710.80	Maintenance / Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
LABORER	ALL	4	1440	\$53.80	\$77,464.80	PPE Level D		ALL	9.24	\$12.00	MTH	\$110.85
Crane Operator	40-ton	1	360	\$72.40	\$26,065.20	Per Diem		ALL	240	\$51.00	MD	\$12,240.00
					\$0.00	Misc Safety Supplies		ALL	1.15	\$1,000.00	MD	\$1,154.73
					\$0.00	Hdpe Liner - 20 Mil		SPA	282,725.00	\$0.27	SF	\$76,335.75
					\$0.00	Geotextile		SPA	282,725.00	\$0.08	SF	\$22,920.20
					\$0.00	Jersey Barriers		SPA	338.00	\$295.00	EA	\$99,710.00
					\$0.00	Bin Blocks		SPA	1,530.00	\$37.50	EA	\$57,375.00
					\$0.00	Concrete Sumps		SPA	4.00	\$1,500.00	EA	\$6,000.00
					\$0.00	Silt Fence		SPA	18,000.00	\$0.26	LF	\$4,680.00
					\$0.00	6" Hdpe Pipe		SPA	1,600.00	\$17.36	LF	\$27,776.00
					\$0.00	Tarp 60'x60'		Drip Apron	2.00	\$500.00	Ea	\$1,000.00
					\$0.00	Straw Hay Bales		Drip Apron	23.13	\$4.25	Ea	\$98.28
					\$0.00	Stockpile Tarps		SPA	60.00	22.00	Ea	\$1,320.00
					\$0.00	DGA		SPA	5,577	22.00	Ton	\$122,700.93
					\$0.00							\$0.00
BARE UNIT COST		\$179,886.00	TOTAL LABOR COST		\$179,886.00	BARE UNIT COST		\$433,421.75	TOTAL MATERIAL COST			\$433,421.75

ESTIMATE WORKSHEET 5												
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018	Penobscot					Temporary Construction - FF Storage 1					5	
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
1	LS		12	6	4.2	0.96	-	25				
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
Temporary Construction - FF Storage 1	5	\$149,905.00	\$461,699.12	\$77,436.58		\$1,750,000.00		\$2,439,040.69	Sediment Processing Area Only			
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$149,905.00	\$461,699.12	\$77,436.58		\$1,750,000.00		\$2,439,040.69				
UNIT PRICES		\$149,905.00	\$461,699.12	\$77,436.58		\$1,750,000.00		\$2,439,040.69				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
ASPHALT PAVING	SPA	350,000	\$5.00	SF	\$1,750,000.00	KOMATSU PC300	SPA/RSA		1	300	\$65.51	\$19,654.28
					\$0.00	KOMATSU D39P	SPA/RSA		1	300	\$34.48	\$10,345.43
					\$0.00	Wheeled Loaded WA320	SPA/RSA		1	300	\$41.72	\$12,516.67
					\$0.00	84" SMOOTH COMPACTOR	SPA/RSA		1	300	\$38.96	\$11,686.88
					\$0.00	CRANE - 40 TON	SPA/RSA		1	300	\$77.44	\$23,233.33
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$1,750,000.00			TOTAL COST	\$1,750,000.00			BARE UNIT COST		\$77,436.58	
					TOTAL COST				TOTAL RENTED EQUIP		\$77,436.58	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
OPERATOR 2	PC300	1	300	\$71.24	\$21,371.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
OPERATOR 3	WA320/D39P	2	600	\$70.43	\$42,259.00	Maintenance / Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
LABORER	ALL	4	1200	\$53.80	\$64,554.00	PPE Level D	ALL	7.70	\$12.00	MTH	\$92.38	
Crane Operator	40-ton	1	300	\$72.40	\$21,721.00	Per Diem	ALL	200	\$51.00	MD	\$10,200.00	
					\$0.00	Misc Safety Supplies	ALL	0.96	\$1,000.00	MD	\$962.28	
					\$0.00	Hdpe Liner - 20 Mil	SPA	404,000.00	\$0.27	SF	\$109,080.00	
					\$0.00	Geotextile	SPA	404,000.00	\$0.08	SF	\$32,751.83	
					\$0.00	Jersey Barriers	SPA	270.00	\$295.00	EA	\$79,650.00	
					\$0.00	Bin Blocks	SPA	510.00	\$37.50	EA	\$19,125.00	
					\$0.00	Concrete Sumps	SPA	2.00	\$1,500.00	EA	\$3,000.00	
					\$0.00	Silt Fence	SPA	6,000.00	\$0.26	LF	\$1,560.00	
					\$0.00	6" Hdpe Pipe	SPA	300.00	\$17.36	LF	\$5,208.00	
					\$0.00	Stockpile Tarps	SPA	20.00	22.00	Ea	\$440.00	
					\$0.00	DGA	SPA	9,074	22.00	Ton	\$199,629.63	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$149,905.00			TOTAL LABOR COST	\$149,905.00			BARE UNIT COST		\$461,699.12	
					TOTAL LABOR COST				TOTAL MATERIAL COST		\$461,699.12	

ESTIMATE WORKSHEET 6

BID DATE		PROJECT LOCATION			DESCRIPTION OF ITEM				ITEM NO.			
March 7, 2018		Penobscot			Temporary Construction - FF Storage 2				6			
BID DATA		Bid Data Notes			PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	1				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
BID UNIT	LS				12	6	5.0	1.15	-	30		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
Temporary Construction - FF Storage 2	6	\$179,886.00	\$658,858.12	\$92,923.89		\$2,550,000.00		\$3,481,668.01	Sediment Processing Area Only			
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$179,886.00	\$658,858.12	\$92,923.89		\$2,550,000.00		\$3,481,668.01				
UNIT PRICES		\$179,886.00	\$658,858.12	\$92,923.89		\$2,550,000.00		\$3,481,668.01				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
ASPHALT PAVING	SPA	510,000	\$5.00	SF	\$2,550,000.00	KOMATSU PC300	SPA/RSA		1	360	\$65.51	\$23,585.13
					\$0.00	KOMATSU D39P	SPA/RSA		1	360	\$34.48	\$12,414.51
					\$0.00	Wheeled Loaded WA320	SPA/RSA		1	360	\$41.72	\$15,020.00
					\$0.00	84" SMOOTH COMPACTOR	SPA/RSA		1	360	\$38.96	\$14,024.25
					\$0.00	CRANE - 40 TON	SPA/RSA		1	360	\$77.44	\$27,880.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$2,550,000.00	TOTAL COST		\$2,550,000.00	BARE UNIT COST		\$92,923.89	TOTAL RENTED EQUIP		\$92,923.89	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
OPERATOR 2	PC300	1	360	\$71.24	\$25,645.20	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
OPERATOR 3	WA320/D39P	2	720	\$70.43	\$50,710.80	Maintenance / Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
LABORER	ALL	4	1440	\$53.80	\$77,464.80	PPE Level D	ALL	9.24	\$12.00	MTH	\$110.85	
Crane Operator	40-ton	1	360	\$72.40	\$26,065.20	Per Diem	ALL	240	\$51.00	MD	\$12,240.00	
					\$0.00	Misc Safety Supplies	ALL	1.15	\$1,000.00	MD	\$1,154.73	
					\$0.00	Hdpe Liner - 20 Mil	SPA	590,000.00	\$0.27	SF	\$159,300.00	
					\$0.00	Geotextile	SPA	590,000.00	\$0.08	SF	\$47,830.64	
					\$0.00	Jersey Barriers	SPA	400.00	\$295.00	EA	\$118,000.00	
					\$0.00	Bin Blocks	SPA	510.00	\$37.50	EA	\$19,125.00	
					\$0.00	Concrete Sumps	SPA	2.00	\$1,500.00	EA	\$3,000.00	
					\$0.00	Silt Fence	SPA	6,000.00	\$0.26	LF	\$1,560.00	
					\$0.00	6" Hdpe Pipe	SPA	300.00	\$17.36	LF	\$5,208.00	
					\$0.00	Stockpile Tarps	SPA	20.00	22.00	Ea	\$440.00	
					\$0.00	DGA	SPA	13,222	22.00	Ton	\$290,888.89	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$179,886.00	TOTAL LABOR COST		\$179,886.00	BARE UNIT COST		\$658,858.12	TOTAL MATERIAL COST		\$658,858.12	

ESTIMATE WORKSHEET 7												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018		Penobscot				Conditions Surveys						7
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS				12	6	1.7	0.38	-	10		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes		
Conditions Surveys	7	\$16,987.60	\$0.00		\$796.67		\$0.00		\$17,784.27			
									\$0.00			
									\$0.00			
									\$0.00			
GRAND TOTALS		\$16,987.60	\$0.00		\$796.67		\$0.00		\$17,784.27			
UNIT PRICES		\$16,987.60	\$0.00		\$796.67		\$0.00		\$17,784.27			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	Workboat	TRANSPORT		1	120	\$6.64	\$796.67
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$0.00	TOTAL COST	\$0.00		BARE UNIT COST	\$796.67	0	TOTAL RENTED EQUIP	\$796.67			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Boat Operator	Survey	1	120	\$62.23	\$7,467.60	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Foreman	Survey	1	120	\$79.33	\$9,520.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST	\$16,987.60	TOTAL LABOR COST	\$16,987.60		BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00				

ESTIMATE WORKSHEET 8													
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018	Penobscot					Topographic Surveys - Dredge						8	
BID DATA			Bid Data Notes					PRODUCTION DATA					
TOTAL QUANTITY ON PROPOSAL	BID UNIT												
1	LS												
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Topographic Surveys - Dredge	8	\$0.00	\$0.00	\$0.00		\$129,800.00	\$129,800.00						
							\$0.00						
							\$0.00						
							\$0.00						
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$129,800.00	\$129,800.00						
UNIT PRICES		\$0.00	\$0.00	\$0.00		\$129,800.00	\$129,800.00						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
Administrative/Survey Prep	Survey	250	\$90.00	HR	\$22,500.00							\$0.00	
Establish Benchmarks	Survey	13	\$2,500.00	LS	\$31,250.00							\$0.00	
Topographic Survey	Survey	25	\$2,500.00	DAY	\$62,500.00							\$0.00	
Per Diem	Survey	50	\$35.00	DAY	\$1,750.00							\$0.00	
Expenses & Fuel	Survey	1	\$11,800.00	of Total (	\$11,800.00							\$0.00
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$129,800.00	TOTAL COST		\$129,800.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP			\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				\$0.00	
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST	\$0.00		TOTAL MATERIAL COST			\$0.00	

ESTIMATE WORKSHEET 8A

BID DATE	PROJECT LOCATION						DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018	Penobscot						Topographic Surveys - Dredge - NE Coal						8A
BID DATA				PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL	Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
1				12	6	1.3	0.29	-	8				
BID UNIT	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes		
LS													
ESTIMATE WORKSHEET	ITEM NO.												
Topographic Surveys - Dredge - NE Coal	8A	\$0.00		\$0.00		\$0.00		\$38,940.00		\$38,940.00			
										\$0.00			
										\$0.00			
										\$0.00			
GRAND TOTALS		\$0.00		\$0.00		\$0.00		\$38,940.00		\$38,940.00			
UNIT PRICES		\$0.00		\$0.00		\$0.00		\$38,940.00		\$38,940.00			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
Administrative/Survey Prep	Survey	75	\$90.00	HR	\$6,750.00							\$0.00	
Establish Benchmarks	Survey	4	\$2,500.00	LS	\$9,375.00							\$0.00	
Topographic Survey	Survey	8	\$2,500.00	DAY	\$18,750.00							\$0.00	
Per Diem	Survey	15	\$35.00	DAY	\$525.00							\$0.00	
Expenses & Fuel	Survey	1	\$3,540.00	of Total	\$3,540.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$38,940.00	TOTAL COST		\$38,940.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP			\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST	\$0.00		TOTAL MATERIAL COST		\$0.00		

ESTIMATE WORKSHEET 9

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018		Penobscot				Topographic Surveys - TLC - 500						9
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
1	LS					12	6	19.9	4.59	-	119	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL	Notes			
Topographic Surveys - TLC - 500	9	\$0.00	\$0.00		\$0.00		\$618,738.55	\$618,738.55				
GRAND TOTALS		\$0.00	\$0.00		\$0.00		\$618,738.55	\$618,738.55				
UNIT PRICES		\$0.00	\$0.00		\$0.00		\$618,738.55	\$618,738.55				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Administrative/Survey Prep	Survey	1,192	\$90.00	HR	\$107,254.37							\$0.00
Establish Benchmarks	Survey	60	\$2,500.00	LS	\$148,964.40							\$0.00
Topographic Survey	Survey	119	\$2,500.00	DAY	\$297,928.81							\$0.00
Per Diem	Survey	238	\$35.00	DAY	\$8,342.01							\$0.00
Expenses & Fuel	Survey	1	\$56,248.96	of Total	\$56,248.96							\$0.00
BARE UNIT COST → \$618,738.55 TOTAL COST → \$618,738.55 BARE UNIT COST → \$0.00 TOTAL RENTED EQUIP → \$0.00												
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST → \$0.00 TOTAL LABOR COST → \$0.00 BARE UNIT COST → \$0.00 TOTAL MATERIAL COST → \$0.00												

ESTIMATE WORKSHEET 10

ESTIMATE WORKSHEET 10												
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.
March 7, 2018		Penobscot					Topographic Surveys - TLC - 300					10
BID DATA			Bid Data Notes				PRODUCTION DATA					
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
1	LS					12	6	19.9	4.59	-	119	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes	
Topographic Surveys - TLC - 300	10		\$0.00		\$0.00		\$0.00		\$618,738.55	\$618,738.55		
										\$0.00		
										\$0.00		
										\$0.00		
GRAND TOTALS			\$0.00		\$0.00		\$0.00		\$618,738.55	\$618,738.55		
UNIT PRICES			\$0.00		\$0.00		\$0.00		\$618,738.55	\$618,738.55		
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Administrative/Survey Prep	Survey	1,192	\$90.00	HR	\$107,254.37							\$0.00
Establish Benchmarks	Survey	60	\$2,500.00	LS	\$148,964.40							\$0.00
Topographic Survey	Survey	119	\$2,500.00	DAY	\$297,928.81							\$0.00
Per Diem	Survey	238	\$35.00	DAY	\$8,342.01							\$0.00
Expenses & Fuel	Survey	1	\$56,248.96	of Total	\$56,248.96							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$618,738.55	TOTAL COST	\$618,738.55	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00				\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL			FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	\$0.00	
					\$0.00	Maintenance/Grease	ALL			FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00				\$0.00	

ESTIMATE WORKSHEET 10A

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018		Penobscot				Topographic Surveys - Ammended						10A
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	1				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
	LS				12	6	3.9	0.89	-	23		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
Topographic Surveys - Ammended	10A	\$0.00	\$0.00	\$0.00		\$120,493.34		\$120,493.34				
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$120,493.34		\$120,493.34				
UNIT PRICES		\$0.00	\$0.00	\$0.00		\$120,493.34		\$120,493.34				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Administrative/Survey Prep	Survey	232	\$90.00	HR	\$20,886.75							\$0.00
Establish Benchmarks	Survey	12	\$2,500.00	LS	\$29,009.37							\$0.00
Topographic Survey	Survey	23	\$2,500.00	DAY	\$58,018.75							\$0.00
Per Diem	Survey	46	\$35.00	DAY	\$1,624.52							\$0.00
Expenses & Fuel	Survey	1	\$10,953.94	of Total (\$10,953.94							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$120,493.34	TOTAL COST	\$120,493.34			BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00		
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00			BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00			

ESTIMATE WORKSHEET 12

ESTIMATE WORKSHEET 12														
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018		Penobscot					Hydrographic Surveys - Main Channel - Deep - 300					12		
BID DATA			Bid Data Notes			PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	BID UNIT	ESTIMATE WORKSHEET	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes	HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE
1	LS				12	6	117.6	27.15						705
	ITEM NO.													
Hydrographic Surveys - Main Channel - Deep - 300	12		\$0.00	\$0.00	\$0.00	\$10,182,966.94	\$10,182,966.94							
							\$0.00							
							\$0.00							
							\$0.00							
GRAND TOTALS			\$0.00	\$0.00	\$0.00	\$10,182,966.94	\$10,182,966.94							
UNIT PRICES			\$0.00	\$0.00	\$0.00	\$10,182,966.94	\$10,182,966.94							
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST		
Administrative/Survey Prep	Survey	7,054	\$90.00	HR	\$634,903.29							\$0.00		
Hydrographic Survey Mob/Demob	Survey	25	\$4,200.00	EA	\$105,817.21							\$0.00		
Hydrographic Survey	Pre-Dredge	235	\$12,000.00	DAY	\$2,821,792.39							\$0.00		
Hydrographic Survey	Post-Dredge	235	\$12,000.00	DAY	\$2,821,792.39							\$0.00		
Hydrographic Survey	Post-Cap/Cap Layer	235	\$12,000.00	DAY	\$2,821,792.39							\$0.00		
Survey Vessel Standby	Survey	0	\$2,250.00	DAY	\$0.00							\$0.00		
Per Diem	Survey	1,461	\$35.00	DAY	\$51,144.99							\$0.00		
Expenses & Fuel	Survey	1	\$925,724.27	bf Total	\$925,724.27							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST	\$10,182,966.94	TOTAL COST	\$10,182,966.94	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00						
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST			
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00							

ESTIMATE WORKSHEET 13

ESTIMATE WORKSHEET 13												
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.
March 7, 2018		Penobscot					Hydrographic Surveys - Orland River - Deep - 500					13
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	1					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
BID UNIT	LS					12	6	5.4	1.25	-	32	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR		TOTAL	Notes		
Hydrographic Surveys - Orland River - Deep - 500	13	\$0.00	\$0.00	\$0.00			\$467,256.91		\$467,256.91			
									\$0.00			
									\$0.00			
									\$0.00			
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$467,256.91		\$467,256.91			
UNIT PRICES		\$0.00	\$0.00	\$0.00			\$467,256.91		\$467,256.91			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Administrative/Survey Prep	Survey	324	\$90.00	HR	\$29,133.25							\$0.00
Hydrographic Survey Mob/Demob	Survey	1	\$4,200.00	EA	\$4,855.54							\$0.00
Hydrographic Survey	Pre-Dredge	11	\$12,000.00	DAY	\$129,481.12							\$0.00
Hydrographic Survey	Post-Dredge	11	\$12,000.00	DAY	\$129,481.12							\$0.00
Hydrographic Survey	Post-Cap/Cap Layer	11	\$12,000.00	DAY	\$129,481.12							\$0.00
Survey Vessel Standby	Survey	0	\$2,250.00	DAY	\$0.00							\$0.00
Per Diem	Survey	67	\$35.00	DAY	\$2,346.85							\$0.00
Expenses & Fuel	Survey	1	\$42,477.90	bf Total (	\$42,477.90							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$467,256.91	TOTAL COST	\$467,256.91	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00				\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00				\$0.00	

ESTIMATE WORKSHEET 14													
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018		Penobscot				Hydrographic Surveys - Orland River - Deep - 300					14		
BID DATA			Bid Data Notes			PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
1	LS				12	6	5.4	1.25	-	32			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes				
	14	\$0.00	\$0.00	\$0.00		\$467,256.91		\$467,256.91					
								\$0.00					
								\$0.00					
								\$0.00					
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$467,256.91		\$467,256.91					
UNIT PRICES		\$0.00	\$0.00	\$0.00		\$467,256.91		\$467,256.91					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
Administrative/Survey Prep	Survey	324	\$90.00	HR	\$29,133.25							\$0.00	
Hydrographic Survey Mob/Demob	Survey	1	\$4,200.00	EA	\$4,855.54							\$0.00	
Hydrographic Survey	Pre-Dredge	11	\$12,000.00	DAY	\$129,481.12							\$0.00	
Hydrographic Survey	Post-Dredge	11	\$12,000.00	DAY	\$129,481.12							\$0.00	
Hydrographic Survey	Post-Cap/Cap Layer	11	\$12,000.00	DAY	\$129,481.12							\$0.00	
Survey Vessel Standby	Survey	0	\$2,250.00	DAY	\$0.00							\$0.00	
Per Diem	Survey	67	\$35.00	DAY	\$2,346.85							\$0.00	
Expenses & Fuel	Survey	1	\$42,477.90	bf Total (	\$42,477.90							\$0.00
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$467,256.91	TOTAL COST	\$467,256.91				BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00		
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00			BARE UNIT COST	\$0.00	TOTAL MATERIAL COST					\$0.00

ESTIMATE WORKSHEET 16

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018		Penobscot				Hydrographic Surveys - Main Channel - Shallow - 300						16
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
1	LS					12	6	31.5	7.27	-	189	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL		Notes		
Hydrographic Surveys - Main Channel - Shallow - 300	16	\$0.00	\$0.00			\$0.00	\$2,727,175.48	\$2,727,175.48				
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$0.00	\$0.00			\$0.00	\$2,727,175.48	\$2,727,175.48				
UNIT PRICES		\$0.00	\$0.00			\$0.00	\$2,727,175.48	\$2,727,175.48				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Administrative/Survey Prep	Survey	1,889	\$90.00	HR	\$170,038.13							\$0.00
Hydrographic Survey Mob/Demob	Survey	7	\$4,200.00	EA	\$28,339.69							\$0.00
Hydrographic Survey	Pre-Dredge	63	\$12,000.00	DAY	\$755,725.03							\$0.00
Hydrographic Survey	Post-Dredge	63	\$12,000.00	DAY	\$755,725.03							\$0.00
Hydrographic Survey	Post-Cap/Cap Layer	63	\$12,000.00	DAY	\$755,725.03							\$0.00
Survey Vessel Standby	Survey	0	\$2,250.00	DAY	\$0.00							\$0.00
Per Diem	Survey	391	\$35.00	DAY	\$13,697.52							\$0.00
Expenses & Fuel	Survey	1	\$247,925.04	bf Total (	\$247,925.04							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$2,727,175.48	TOTAL COST		\$2,727,175.48	BARE UNIT COST		\$0.00	TOTAL RENTED EQUIP		0	\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST			\$0.00

ESTIMATE WORKSHEET 19												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot				Hydrographic Surveys - Mendall Marsh - Shallow - 500					19	
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS				12	6	0.0	0.00	-	0		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
Hydrographic Surveys - Mendall Marsh - Shallow - 500	19	\$0.00	\$0.00	\$0.00		\$0.00		\$0.00				
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$0.00		\$0.00				
UNIT PRICES		\$0.00	\$0.00	\$0.00		\$0.00		\$0.00				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Administrative/Survey Prep	Survey	0	\$90.00	HR	\$0.00							\$0.00
Hydrographic Survey Mob/Demob	Survey	0	\$4,200.00	EA	\$0.00							\$0.00
Hydrographic Survey	Pre-Dredge	0	\$12,000.00	DAY	\$0.00							\$0.00
Hydrographic Survey	Post-Dredge	0	\$12,000.00	DAY	\$0.00							\$0.00
Hydrographic Survey	Post-Cap/Cap Layer	0	\$12,000.00	DAY	\$0.00							\$0.00
Survey Vessel Standby	Survey	0	\$2,250.00	DAY	\$0.00							\$0.00
Per Diem	Survey	0	\$35.00	DAY	\$0.00							\$0.00
Expenses & Fuel	Survey	1	\$0.00	bf Total (\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST	\$0.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00				

ESTIMATE WORKSHEET 20												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot				Hydrographic Surveys - Mendall Marsh - Shallow - 300					20	
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS				12	6	7.0	1.62	-	42		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR		TOTAL	Notes		
Hydrographic Surveys - Mendall Marsh - Shallow - 300	20	\$0.00	\$0.00	\$0.00			\$605,694.58		\$605,694.58			
									\$0.00			
									\$0.00			
									\$0.00			
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$605,694.58		\$605,694.58			
UNIT PRICES		\$0.00	\$0.00	\$0.00			\$605,694.58		\$605,694.58			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Administrative/Survey Prep	Survey	420	\$90.00	HR	\$37,764.78							\$0.00
Hydrographic Survey Mob/Demob	Survey	1	\$4,200.00	EA	\$6,294.13							\$0.00
Hydrographic Survey	Pre-Dredge	14	\$12,000.00	DAY	\$167,843.46							\$0.00
Hydrographic Survey	Post-Dredge	14	\$12,000.00	DAY	\$167,843.46							\$0.00
Hydrographic Survey	Post-Cap/Cap Layer	14	\$12,000.00	DAY	\$167,843.46							\$0.00
Survey Vessel Standby	Survey	0	\$2,250.00	DAY	\$0.00							\$0.00
Per Diem	Survey	87	\$35.00	DAY	\$3,042.16							\$0.00
Expenses & Fuel	Survey	1	\$55,063.14	bf Total (	\$55,063.14							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$605,694.58	TOTAL COST	\$605,694.58	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00				\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00				\$0.00	

ESTIMATE WORKSHEET 21													
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018		Penobscot				Hydrographic Surveys - EMNR - 500					21		
BID DATA			Bid Data Notes			PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
1	LS				12	6	44.3	10.22	-	266			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR	TOTAL	Notes				
	21	\$0.00	\$0.00	\$0.00			\$3,832,756.33	\$3,832,756.33					
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$3,832,756.33	\$3,832,756.33					
UNIT PRICES		\$0.00	\$0.00	\$0.00			\$3,832,756.33	\$3,832,756.33					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
Administrative/Survey Prep	Survey	2,655	\$90.00	HR	\$238,970.59							\$0.00	
Hydrographic Survey Mob/Demob	Survey	9	\$4,200.00	EA	\$39,828.43							\$0.00	
Hydrographic Survey	Pre-Dredge	89	\$12,000.00	DAY	\$1,062,091.50							\$0.00	
Hydrographic Survey	Post-Dredge	89	\$12,000.00	DAY	\$1,062,091.50							\$0.00	
Hydrographic Survey	Post-Cap/Cap Layer	89	\$12,000.00	DAY	\$1,062,091.50							\$0.00	
Survey Vessel Standby	Survey	0	\$2,250.00	DAY	\$0.00							\$0.00	
Per Diem	Survey	550	\$35.00	DAY	\$19,250.41							\$0.00	
Expenses & Fuel	Survey	1	\$348,432.39	bf Total (	\$348,432.39							\$0.00
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$3,832,756.33	TOTAL COST			\$3,832,756.33	BARE UNIT COST		\$0.00	TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL					FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00	Maintenance/Grease	ALL					FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL LABOR COST			\$0.00	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST			\$0.00

ESTIMATE WORKSHEET 22

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018	Penobscot					Hydrographic Surveys - EMNR - 300						22
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
1	LS					12	6	121.4	28.04	-	728	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes		
Hydrographic Surveys - EMNR - 300	22	\$0.00	\$0.00	\$0.00		\$10,515,510.96		\$10,515,510.96				
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$10,515,510.96		\$10,515,510.96				
UNIT PRICES		\$0.00	\$0.00	\$0.00		\$10,515,510.96		\$10,515,510.96				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Administrative/Survey Prep	Survey	7,285	\$90.00	HR	\$655,637.25							\$0.00
Hydrographic Survey Mob/Demob	Survey	26	\$4,200.00	EA	\$109,272.88							\$0.00
Hydrographic Survey	Pre-Dredge	243	\$12,000.00	DAY	\$2,913,943.36							\$0.00
Hydrographic Survey	Post-Dredge	243	\$12,000.00	DAY	\$2,913,943.36							\$0.00
Hydrographic Survey	Post-Cap/Cap Layer	243	\$12,000.00	DAY	\$2,913,943.36							\$0.00
Survey Vessel Standby	Survey	0	\$2,250.00	DAY	\$0.00							\$0.00
Per Diem	Survey	1,509	\$35.00	DAY	\$52,815.22							\$0.00
Expenses & Fuel	Survey	1	\$955,955.54	bf Total	\$955,955.54							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$10,515,510.96	TOTAL COST		\$10,515,510.96	BARE UNIT COST		\$0.00	TOTAL RENTED EQUIP		\$0.00	\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST			\$0.00

ESTIMATE WORKSHEET 23																	
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.						
March 7, 2018		Penobscot				Utilities Surveys					23						
BID DATA			Bid Data Notes				PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL	1					HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	4.2	TOTAL MONTHS	0.96	DAILY UNIT PRODUCTION RATE	-	DAYS REQ. TO COMPLETE	25
BID UNIT	LS					TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR			TOTAL		Notes					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR			TOTAL		Notes					
Utilities Surveys	23	\$0.00	\$0.00			\$0.00	\$360,868.75			\$360,868.75							
										\$0.00							
										\$0.00							
										\$0.00							
GRAND TOTALS		\$0.00	\$0.00			\$0.00	\$360,868.75			\$360,868.75							
UNIT PRICES		\$0.00	\$0.00			\$0.00	\$360,868.75			\$360,868.75							
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST					
Administrative/Survey Prep/Processing	Survey	250	\$90.00	HR	\$22,500.00							\$0.00					
Hydrographic Survey Mob/Demob	Survey	1	\$4,200.00	EA	\$3,750.00							\$0.00					
Hydrographic Survey	SubBottom/Mag	25	\$12,000.00	DAY	\$300,000.00							\$0.00					
Survey Vessel Standby	Survey	0	\$2,250.00	DAY	\$0.00							\$0.00					
Per Diem	Survey	52	\$35.00	DAY	\$1,812.50							\$0.00					
Expenses & Fuel	Survey	1	\$32,806.25	of Total	\$32,806.25							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
BARE UNIT COST	\$360,868.75	TOTAL COST	\$360,868.75			BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00							
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST						
					\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE									
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE									
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00			BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00								

ESTIMATE WORKSHEET 24												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot				Debris Surveys					24	
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	1				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
	LS				12	6	4.2	0.96	-	25		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes		
Debris Surveys	24	\$0.00	\$0.00	\$0.00		\$375,463.00		\$375,463.00				
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$375,463.00		\$375,463.00				
UNIT PRICES		\$0.00	\$0.00	\$0.00		\$375,463.00		\$375,463.00				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Administrative/Survey Prep	Survey	250	\$90.00	HR	\$22,500.00							\$0.00
Hydrographic Survey Mob/Demob	Survey	4	\$4,200.00	EA	\$16,800.00							\$0.00
Hydrographic Survey	SideScan/Mag	25	\$12,000.00	DAY	\$300,000.00							\$0.00
Survey Vessel Standby	Survey	0	\$2,250.00	DAY	\$0.00							\$0.00
Per Diem	Survey	58	\$35.00	DAY	\$2,030.00							\$0.00
Expenses & Fuel	Survey	1	\$34,133.00	of Total	\$34,133.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$375,463.00	TOTAL COST	\$375,463.00				BARE UNIT COST	\$0.00		TOTAL RENTED EQUIP	\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00		BARE UNIT COST	\$0.00		TOTAL MATERIAL COST	\$0.00			

ESTIMATE WORKSHEET 25														
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018		Penobscot					Environmental Monitoring - Main and Orland - 500					25		
BID DATA					PRODUCTION DATA									
Bid Data Notes					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
					12	6	408.3	94.29	2,822	2,450				
ESTIMATE WORKSHEET		ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes						
Environmental Monitoring - Main and Orland - 500		25	\$316,273.17	\$0.00	\$8,366,809.05	\$0.00	\$8,683,082.22	Include Monitoring during all silt producing activities. Initial install and ongoing maintenance included. Assumes 2 laborers for maintenance and demob at 10% of total duration. Additional Maintenance is covered under other water tasks.						
GRAND TOTALS			\$316,273.17	\$0.00	\$8,366,809.05	\$0.00	\$8,683,082.22							
UNIT PRICES			\$316,273.17	\$0.00	\$8,366,809.05	\$0.00	\$8,683,082.22							
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS/MONTHS	UNIT RATE	TOTAL COST	
						\$0.00	Workboat	INSTALL/MAINTAIN		2	5879	\$6.64	\$39,031.55	
						\$0.00	Water Quality Monitoring Buoy	Monitor		30	2829	\$2,944.00	\$8,327,777.50	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
BARE UNIT COST			\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$8,366,809.05	0	TOTAL RENTED EQUIP		\$8,366,809.05	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRRLY RATE	TOTAL COST		MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Laborer	Install	2	5879	\$53.80	\$316,273.17		Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00		Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
BARE UNIT COST		\$316,273.17	TOTAL LABOR COST		\$316,273.17	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST					\$0.00

ESTIMATE WORKSHEET 26													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot					Environmental Monitoring - Main and Orland - 300					26	
BID DATA			Bid Data Notes			PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	1				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
BID UNIT	LS				12	6	1075.3	248.33	2,822	6,452			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes				
Environmental Monitoring - Main and Orland - 300	26	\$832,967.26	\$0.00	\$22,035,628.11		\$0.00		\$22,868,595.36	Include Monitoring during all silt producing activities. Initial install and ongoing maintenance included. Assumes 2 laborers for maintenance and demob at 10% of total duration. Additional Maintenance is covered under other water tasks.				
								\$0.00					
								\$0.00					
								\$0.00					
GRAND TOTALS		\$832,967.26	\$0.00	\$22,035,628.11		\$0.00		\$22,868,595.36					
UNIT PRICES		\$832,967.26	\$0.00	\$22,035,628.11		\$0.00		\$22,868,595.36					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS/MONTHS	UNIT RATE	TOTAL COST	
					\$0.00	Workboat	INSTALL/MAINTAIN		2	15484	\$6.64	\$102,797.23	
					\$0.00	Water Quality Monitoring Buoy (Monitor			30	7450	\$2,944.00	\$21,932,830.88	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST	\$2,035,628.11	0	TOTAL RENTED EQUIP			\$22,035,628.11	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Laborer	Install	2	15484	\$53.80	\$832,967.26	Fuel	ALL					\$0.00	
					\$0.00	Maintenance/Grease	ALL					\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$832,967.26	TOTAL LABOR COST		\$832,967.26	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST			\$0.00	

ESTIMATE WORKSHEET 27

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018		Penobscot				Environmental Monitoring - Mendall - 500						27	
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS					12	6	0.0	0.00	2,822	0		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes						
Environmental Monitoring - Mendall - 500	27	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	Include Monitoring during all silt producing activities. Initial install and ongoing maintenance included. Assumes 2 laborers for maintenance and demob at 10% of total duration. Additional Maintenance is covered under other water tasks.						
GRAND TOTALS		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00							
UNIT PRICES		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00							
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS/MONTHS	UNIT RATE	TOTAL COST	
					\$0.00	Workboat	INSTALL/MAINTAIN		2	0	\$6.64	\$0.00	
					\$0.00	Water Quality Monitoring Buoy	Monitor		10	0	\$2,944.00	\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Laborer	Install	2	0	\$53.80	\$0.00	Fuel	ALL				\$0.00		
					\$0.00	Maintenance/Grease	ALL				\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST		\$0.00		

ESTIMATE WORKSHEET 33

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018		Penobscot				Debris Removal - Main Channel 500						33	
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	16,767	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	3.1	TOTAL MONTHS	0.72	DAILY UNIT PRODUCTION RATE	900	DAYS REQ. TO COMPLETE	19
BID UNIT	CY	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes	
Debris Removal - Main Channel 500	33	\$601,702.35		\$49,612.11		\$511,824.63		\$0.00		\$1,163,139.09			
										\$0.00			
										\$0.00			
										\$0.00			
GRAND TOTALS		\$601,702.35		\$49,612.11		\$511,824.63		\$0.00		\$1,163,139.09			
UNIT PRICES		\$35.89		\$2.96		\$30.53		\$0.00		\$69.37			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	1118	\$103.33	\$115,504.90	
					\$0.00	Cable Arm Hydraulic Clamshell (1)	DREDGE		5	1118	\$31.28	\$34,963.26	
					\$0.00	Dredge Barge	DREDGE BARGE		5	1118	\$41.67	\$46,574.56	
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	2236	\$71.67	\$160,216.48	
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	3353	\$41.67	\$139,723.67	
					\$0.00	Workboat	DREDGE/TRANSPORT		10	2236	\$6.64	\$14,841.76	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$0.00	TOTAL COST	\$0.00	BARE UNIT COST	\$30.53			0	TOTAL RENTED EQUIP	\$511,824.63			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Dredge Operator	DREDGE	5	1118	\$71.24	\$79,627.59	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
Laborer	DREDGE	10	2236	\$53.80	\$120,262.96	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
Deckhand	TRANSPORT	10	2236	\$45.02	\$100,649.82	PPE Level D	ALL	36.57	\$12.00	MTH	\$438.85		
Boat Operator	TRANSPORT	10	2236	\$62.23	\$139,120.07	Per Diem	ALL	950	\$51.00	MD	\$48,456.17		
Tug Operator	TRANSPORT	10	2236	\$42.04	\$93,981.41	Misc Safety Supplies	ALL	0.72	\$1,000.00	MD	\$717.08		
Deckhand	DREDGE	5	1118	\$45.02	\$50,324.91						\$0.00		
Foreman	DREDGE	1	224	\$79.33	\$17,735.59						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST	\$35.89	TOTAL LABOR COST	\$601,702.35	BARE UNIT COST	\$2.96	TOTAL MATERIAL COST	\$49,612.11						

ESTIMATE WORKSHEET 36

BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.
March 7, 2018		Penobscot					Debris Removal - Orland River 300					36
BID DATA		Bid Data Notes					PRODUCTION DATA					
TOTAL QUANTITY ON PROPOSAL	18,137						HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE
BID UNIT	CY						12	6	3.4	0.78	900	20
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes		
Debris Removal - Orland River 300	36	\$650,885.32	\$53,667.39	\$553,661.03		\$0.00		\$1,258,213.74				
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$650,885.32	\$53,667.39	\$553,661.03		\$0.00		\$1,258,213.74				
UNIT PRICES		\$35.89	\$2.96	\$30.53		\$0.00		\$69.37				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	1209	\$103.33	\$124,946.24
					\$0.00	Cable Arm Hydraulic Clamshell (1)	DREDGE		5	1209	\$31.28	\$37,821.15
					\$0.00	Dredge Barge	DREDGE BARGE		5	1209	\$41.67	\$50,381.55
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	2418	\$71.67	\$173,312.53
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	3627	\$41.67	\$151,144.65
					\$0.00	Workboat	DREDGE/TRANSPORT		10	2418	\$6.64	\$16,054.92
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$30.53	0	TOTAL RENTED EQUIP		\$553,661.03
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Dredge Operator	DREDGE	5	1209	\$71.24	\$86,136.33	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	10	2418	\$53.80	\$130,093.22	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Deckhand	TRANSPORT	10	2418	\$45.02	\$108,876.90	PPE Level D	ALL	39.56	\$12.00	MTH	\$474.73	
Boat Operator	TRANSPORT	10	2418	\$62.23	\$150,491.70	Per Diem	ALL	1,028	\$51.00	MD	\$52,416.96	
Tug Operator	TRANSPORT	10	2418	\$42.04	\$101,663.43	Misc Safety Supplies	ALL	0.78	\$1,000.00	MD	\$775.70	
Deckhand	DREDGE	5	1209	\$45.02	\$54,438.45						\$0.00	
Foreman	DREDGE	1	242	\$79.33	\$19,185.29						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$35.89	TOTAL LABOR COST		\$650,885.32	BARE UNIT COST		\$2.96		TOTAL MATERIAL COST		\$53,667.39

ESTIMATE WORKSHEET 37

BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.			
March 7, 2018	Penobscot				Debris Removal - Mendall Marsh 500						37			
BID DATA		Bid Data Notes				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	BID UNIT	HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE							
0	CY	12	6	0.0	0.00	900	0							
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL		Notes					
Debris Removal - Mendall Marsh 500	37	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00							
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$0.00	\$0.00							
UNIT PRICES		\$35.89	\$2.96	\$30.53		\$0.00	\$69.37							
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST		
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	0	\$103.33	\$0.00		
					\$0.00	Cable Arm Hydraulic Clamshell (1)	DREDGE		5	0	\$31.28	\$0.00		
					\$0.00	Dredge Barge	DREDGE BARGE		5	0	\$41.67	\$0.00		
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	0	\$71.67	\$0.00		
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	0	\$41.67	\$0.00		
					\$0.00	Workboat	DREDGE/TRANSPORT		10	0	\$6.64	\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$0.00			TOTAL COST	\$0.00		BARE UNIT COST		\$30.53		0	TOTAL RENTED EQUIP	\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST			
Dredge Operator	DREDGE	5	0	\$71.24	\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
Laborer	DREDGE	10	0	\$53.80	\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
Deckhand	TRANSPORT	10	0	\$45.02	\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH	\$0.00			
Boat Operator	TRANSPORT	10	0	\$62.23	\$0.00	Per Diem	ALL	0	\$51.00	MD	\$0.00			
Tug Operator	TRANSPORT	10	0	\$42.04	\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MD	\$0.00			
Deckhand	DREDGE	5	0	\$45.02	\$0.00						\$0.00			
Foreman	DREDGE	1	0	\$79.33	\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
BARE UNIT COST		\$35.89			TOTAL LABOR COST	\$0.00		BARE UNIT COST		\$2.96		TOTAL MATERIAL COST	\$0.00	

ESTIMATE WORKSHEET 38

BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.		
March 7, 2018	Penobscot				Debris Removal - Mendall Marsh 300						38		
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	5,287	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	2.7	TOTAL MONTHS	0.62	DAILY UNIT PRODUCTION RATE	900	DAYS REQ. TO COMPLETE	16
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes				
Debris Removal - Mendall Marsh 300	38	\$519,739.19	\$42,854.01	\$442,104.51		\$0.00		\$1,004,697.70					
								\$0.00					
								\$0.00					
								\$0.00					
GRAND TOTALS		\$519,739.19	\$42,854.01	\$442,104.51		\$0.00		\$1,004,697.70					
UNIT PRICES		\$98.30	\$8.11	\$83.62		\$0.00		\$190.03					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	966	\$103.33	\$99,770.97	
					\$0.00	Cable Arm Hydraulic Clamshell (1)	DREDGE		5	966	\$31.28	\$30,200.61	
					\$0.00	Dredge Barge	DREDGE BARGE		5	966	\$41.67	\$40,230.23	
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	1931	\$71.67	\$138,391.99	
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	2897	\$41.67	\$120,690.69	
					\$0.00	Workboat	DREDGE/TRANSPORT		10	1931	\$6.64	\$12,820.03	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$83.62	0	TOTAL RENTED EQUIP		\$442,104.51	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Dredge Operator	DREDGE	5	966	\$71.24	\$68,780.82	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Laborer	DREDGE	10	1931	\$53.80	\$103,880.89	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Deckhand	TRANSPORT	10	1931	\$45.02	\$86,939.42	PPE Level D	ALL	31.59	\$12.00	MTH	\$379.07		
Boat Operator	TRANSPORT	10	1931	\$62.23	\$120,169.30	Per Diem	ALL	821	\$51.00	MD	\$41,855.53		
Tug Operator	TRANSPORT	10	1931	\$42.04	\$81,179.38	Misc Safety Supplies	ALL	0.62	\$1,000.00	MD	\$619.40		
Deckhand	DREDGE	5	966	\$45.02	\$43,469.71						\$0.00		
Foreman	DREDGE	1	193	\$79.33	\$15,319.67						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST		\$98.30	TOTAL LABOR COST		\$519,739.19	BARE UNIT COST		\$8.11	TOTAL MATERIAL COST		\$42,854.01		

ESTIMATE WORKSHEET 38A

BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.				
March 7, 2018	Penobscot				Debris Removal - FF Dredge for Draft					38A				
BID DATA		Bid Data Notes				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	2,778	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	0.5	TOTAL MONTHS	0.12	DAILY UNIT PRODUCTION RATE	900	DAYS REQ. TO COMPLETE	3	
BID UNIT	CY													
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes					
Debris Removal - FF Dredge for Draft	38A	\$99,684.58	\$8,219.28	\$84,794.45		\$0.00		\$192,698.31						
								\$0.00						
								\$0.00						
								\$0.00						
GRAND TOTALS		\$99,684.58	\$8,219.28	\$84,794.45		\$0.00		\$192,698.31						
UNIT PRICES		\$35.89	\$2.96	\$30.53		\$0.00		\$69.37						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST		
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	185	\$103.33	\$19,135.80		
					\$0.00	Cable Arm Hydraulic Clamshell (Dredge)	DREDGE		5	185	\$31.28	\$5,792.40		
					\$0.00	Dredge Barge	DREDGE BARGE		5	185	\$41.67	\$7,716.05		
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	370	\$71.67	\$26,543.21		
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	556	\$41.67	\$23,148.15		
					\$0.00	Workboat	DREDGE/TRANSPORT		10	370	\$6.64	\$2,458.85		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$0.00	TOTAL COST			\$0.00	BARE UNIT COST		\$30.53	0	TOTAL RENTED EQUIP			\$84,794.45
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Dredge Operator	DREDGE	5	185	\$71.24	\$13,191.98	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
Laborer	DREDGE	10	370	\$53.80	\$19,924.07	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
Deckhand	TRANSPORT	10	370	\$45.02	\$16,674.75	PPE Level D	ALL	6.06	\$12.00	MTH		\$72.71		
Boat Operator	TRANSPORT	10	370	\$62.23	\$23,048.15	Per Diem	ALL	157	\$51.00	MD		\$8,027.78		
Tug Operator	TRANSPORT	10	370	\$42.04	\$15,569.99	Misc Safety Supplies	ALL	0.12	\$1,000.00	MD		\$118.80		
Deckhand	DREDGE	5	185	\$45.02	\$8,337.37							\$0.00		
Foreman	DREDGE	1	37	\$79.33	\$2,938.27							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$35.89	TOTAL LABOR COST			\$99,684.58	BARE UNIT COST		\$2.96	TOTAL MATERIAL COST				\$8,219.28

ESTIMATE WORKSHEET 39															
BID DATE		PROJECT LOCATION						DESCRIPTION OF ITEM				ITEM NO.			
March 7, 2018		Penobscot						Dredging - Main Channel - Deep - 500				39			
BID DATA				PRODUCTION DATA											
Bid Data Notes							HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
TOTAL QUANTITY ON PROPOSAL							12	6	0.0	0.00	3,150	0			
BID UNIT															
ESTIMATE WORKSHEET							TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
ITEM NO.							TOTAL LABOR		TOTAL MATERIAL						
Dredging - Main Channel - Deep - 500							\$0.00		\$0.00		\$0.00				
											\$0.00				
											\$0.00				
											\$0.00				
GRAND TOTALS							\$0.00		\$0.00		\$0.00				
UNIT PRICES							\$4.41		\$0.36		\$4.01	\$8.78			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST			
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	0	\$158.89	\$0.00			
					\$0.00	Cable Arm Hydraulic Clamshell (10	DREDGE		2	0	\$31.28	\$0.00			
					\$0.00	Dredge Tender (Push Boat)	DREDGE BARGE		4	0	\$71.67	\$0.00			
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		6	0	\$41.67	\$0.00			
					\$0.00	Workboat	DREDGE/TRANSPORT		4	0	\$6.64	\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$4.01		TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST				
Crane Operator	DREDGE	2	0	\$72.40	\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	4	0	\$53.80	\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Deckhand	TRANSPORT	4	0	\$45.02	\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH	\$0.00				
Boat Operator	TRANSPORT	4	0	\$62.23	\$0.00	Per Diem	ALL	0	\$51.00	MD	\$0.00				
Tug Operator	TRANSPORT	4	0	\$42.04	\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MD	\$0.00				
Foreman	DREDGE	1	0	\$79.33	\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
BARE UNIT COST		\$4.41		TOTAL LABOR COST		\$0.00		BARE UNIT COST		\$0.36		TOTAL MATERIAL COST		\$0.00	

ESTIMATE WORKSHEET 40

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.		
March 7, 2018		Penobscot				Dredging - Main Channel - Deep - 300						40		
BID DATA		Bid Data Notes				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	7,964,227	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	470.3	TOTAL MONTHS	108.61	DAILY UNIT PRODUCTION RATE	3,150	DAYS REQ. TO COMPLETE	2,822	
BID UNIT	CY	TOTAL LABOR				TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR			TOTAL	Notes		
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR			TOTAL	Notes		
Dredging - Main Channel - Deep - 300		40		\$35,096,882.20		\$2,867,694.85		\$31,950,293.06		\$0.00			\$69,914,870.11	
GRAND TOTALS		\$35,096,882.20		\$2,867,694.85		\$31,950,293.06		\$0.00			\$69,914,870.11			
UNIT PRICES		\$4.41		\$0.36		\$4.01		\$0.00			\$8.78			
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.S.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
						\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	67723	\$158.89	\$10,760,434.99	
						\$0.00	Cable Arm Hydraulic Clamshell (100)	DREDGE		2	67723	\$31.28	\$2,118,303.87	
						\$0.00	Dredge Tender (Push Boat)	DREDGE BARGE		4	135446	\$71.67	\$9,706,965.83	
						\$0.00	Hopper Barge	DREDGE/TRANSPORT		6	203169	\$41.67	\$8,465,377.18	
						\$0.00	Workboat	DREDGE/TRANSPORT		4	135446	\$6.64	\$899,211.18	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST				\$0.00	BARE UNIT COST		\$4.01	0		TOTAL RENTED EQUIP	\$31,950,293.06
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	67723	\$72.40	\$4,903,372.21	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
Laborer	DREDGE	4	135446	\$53.80	\$7,286,319.45	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
Deckhand	TRANSPORT	4	135446	\$45.02	\$6,098,026.49	PPE Level D	ALL	2,063.67	\$12.00		MTH		\$24,764.00	
Boat Operator	TRANSPORT	4	135446	\$62.23	\$8,428,806.75	Per Diem	ALL	53,614	\$51.00		MD		\$2,734,316.83	
Tug Operator	TRANSPORT	4	135446	\$42.04	\$5,694,010.94	Misc Safety Supplies	ALL	108.61	\$1,000.00		MD		\$108,614.03	
Foreman	DREDGE	1	33862	\$79.33	\$2,686,346.36								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
BARE UNIT COST		\$4.41	TOTAL LABOR COST				\$35,096,882.20	BARE UNIT COST		\$0.36	TOTAL MATERIAL COST		\$2,867,694.85	

ESTIMATE WORKSHEET 41																	
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.					
March 7, 2018		Penobscot					Dredging - Orland River - Deep - 500					41					
BID DATA			Bid Data Notes				PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL	365,448					HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	21.6	TOTAL MONTHS	4.98	DAILY UNIT PRODUCTION RATE	3,150	DAYS REQ. TO COMPLETE	129
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL		TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes									
Dredging - Orland River - Deep - 500	41	\$1,610,459.97	\$131,587.41		\$1,466,075.18	\$0.00	\$3,208,122.55										
GRAND TOTALS		\$1,610,459.97	\$131,587.41		\$1,466,075.18	\$0.00	\$3,208,122.55										
UNIT PRICES		\$4.41	\$0.36		\$4.01	\$0.00	\$8.78										
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST					
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	3108	\$158.89	\$493,754.68					
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	3108	\$31.28	\$97,200.76					
					\$0.00	Dredge Tender (Push Boat)	DREDGE BARGE		4	6215	\$71.67	\$445,415.06					
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		6	9323	\$41.67	\$388,443.37					
					\$0.00	Workboat	DREDGE/TRANSPORT		4	6215	\$6.64	\$41,261.32					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
BARE UNIT COST		\$0.00			TOTAL COST	\$0.00	BARE UNIT COST		\$4.01		0	TOTAL RENTED EQUIP	\$1,466,075.18				
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST						
Crane Operator	DREDGE	2	3108	\$72.40	\$224,996.76	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE									
Laborer	DREDGE	4	6215	\$53.80	\$334,340.97	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE									
Deckhand	TRANSPORT	4	6215	\$45.02	\$279,814.81	PPE Level D	ALL	94.69	\$12.00	MTH	\$1,136.32						
Boat Operator	TRANSPORT	4	6215	\$62.23	\$386,765.29	Per Diem	ALL	2,460	\$51.00	MD	\$125,467.21						
Tug Operator	TRANSPORT	4	6215	\$42.04	\$261,276.10	Misc Safety Supplies	ALL	4.98	\$1,000.00	MD	\$4,983.88						
Foreman	DREDGE	1	1554	\$79.33	\$123,266.03						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
BARE UNIT COST		\$4.41			TOTAL LABOR COST	\$1,610,459.97	BARE UNIT COST		\$0.36		TOTAL MATERIAL COST	\$131,587.41					

ESTIMATE WORKSHEET 42																							
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.											
March 7, 2018		Penobscot					Dredging - Orland River - Deep - 300					42											
BID DATA		Bid Data Notes				PRODUCTION DATA																	
TOTAL QUANTITY ON PROPOSAL		365,448				HOURS PER DAY	12		DAYS PER WEEK	6		TOTAL WEEKS	21.6		TOTAL MONTHS	4.98		DAILY UNIT PRODUCTION RATE	3,150		DAYS REQ. TO COMPLETE	129	
ESTIMATE WORKSHEET		ITEM NO.		TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR		TOTAL		Notes								
Dredging - Orland River - Deep - 300		42		\$1,610,459.97		\$131,587.41		\$1,466,075.18			\$0.00		\$3,208,122.55										
GRAND TOTALS				\$1,610,459.97		\$131,587.41		\$1,466,075.18			\$0.00		\$3,208,122.55										
UNIT PRICES				\$4.41		\$0.36		\$4.01			\$0.00		\$8.78										
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST									
						\$0.00		150 Ton Barge Mounted Crane	DREDGE		2	3108	\$158.89	\$493,754.68									
						\$0.00		Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	3108	\$31.28	\$97,200.76									
						\$0.00		Dredge Tender (Push Boat)	DREDGE BARGE		4	6215	\$71.67	\$445,415.06									
						\$0.00		Hopper Barge	DREDGE/TRANSPORT		6	9323	\$41.67	\$388,443.37									
						\$0.00		Workboat	DREDGE/TRANSPORT		4	6215	\$6.64	\$41,261.32									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
						\$0.00								\$0.00									
BARE UNIT COST		\$0.00			TOTAL COST			\$0.00			BARE UNIT COST		\$4.01			0		TOTAL RENTED EQUIP		\$1,466,075.18			
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST		MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST								
Crane Operator		DREDGE	2	3108	\$72.40	\$224,996.76		Fuel			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE											
Laborer		DREDGE	4	6215	\$53.80	\$334,340.97		Maintenance/Grease			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE											
Deckhand		TRANSPORT	4	6215	\$45.02	\$279,814.81		PPE Level D			ALL	94.69	\$12.00	MTH	\$1,136.32								
Boat Operator		TRANSPORT	4	6215	\$62.23	\$386,765.29		Per Diem			ALL	2,460	\$51.00	MD	\$125,467.21								
Tug Operator		TRANSPORT	4	6215	\$42.04	\$261,276.10		Misc Safety Supplies			ALL	4.98	\$1,000.00	MD	\$4,983.88								
Foreman		DREDGE	1	1554	\$79.33	\$123,266.03									\$0.00								
						\$0.00									\$0.00								
						\$0.00									\$0.00								
						\$0.00									\$0.00								
						\$0.00									\$0.00								
						\$0.00									\$0.00								
						\$0.00									\$0.00								
						\$0.00									\$0.00								
						\$0.00									\$0.00								
BARE UNIT COST		\$4.41			TOTAL LABOR COST			\$1,610,459.97			BARE UNIT COST		\$0.36			TOTAL MATERIAL COST		\$131,587.41					

ESTIMATE WORKSHEET 43																
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.				
March 7, 2018		Penobscot					Dredging - Main Channel - Shallow - 500					43				
BID DATA			Bid Data Notes			PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL	2,255,280				HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	119.3	TOTAL MONTHS	27.56	DAILY UNIT PRODUCTION RATE	2,822	DAYS REQ. TO COMPLETE	716
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL			Notes					
Dredging - Main Channel - Shallow - 500	43	\$23,123,997.00	\$1,906,640.79			\$19,669,910.43	\$0.00	\$44,700,548.22								
GRAND TOTALS		\$23,123,997.00	\$1,906,640.79			\$19,669,910.43	\$0.00	\$44,700,548.22								
UNIT PRICES		\$10.25	\$0.85			\$8.72	\$0.00	\$19.82								
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST				
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	42958	\$103.33	\$4,438,963.96				
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	42958	\$31.28	\$1,343,671.60				
					\$0.00	Dredge Barge	DREDGE BARGE		5	42958	\$41.67	\$1,789,904.82				
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	85915	\$71.67	\$6,157,272.58				
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	128873	\$41.67	\$5,369,714.46				
					\$0.00	Workboat	DREDGE/TRANSPORT		10	85915	\$6.64	\$570,383.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
BARE UNIT COST		\$0.00	TOTAL COST			\$0.00	BARE UNIT COST		\$8.72	0	TOTAL RENTED EQUIP		\$19,669,910.43			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST				
Dredge Operator	DREDGE	5	42958	\$71.24	\$3,060,164.47	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE								
Laborer	DREDGE	10	85915	\$53.80	\$4,621,820.63	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE								
Deckhand	TRANSPORT	10	85915	\$45.02	\$3,868,068.76	PPE Level D	ALL	1,405.47	\$12.00	MTH	\$16,865.62					
Boat Operator	TRANSPORT	10	85915	\$62.23	\$5,346,517.30	Per Diem	ALL	36,514	\$51.00	MD	\$1,862,216.98					
Tug Operator	TRANSPORT	10	85915	\$42.04	\$3,611,795.70	Misc Safety Supplies	ALL	27.56	\$1,000.00	MD	\$27,558.20					
Deckhand	DREDGE	5	42958	\$45.02	\$1,934,034.38							\$0.00				
Foreman	DREDGE	1	8592	\$79.33	\$681,595.76							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
BARE UNIT COST		\$10.25	TOTAL LABOR COST			\$23,123,997.00	BARE UNIT COST		\$0.85	TOTAL MATERIAL COST		\$1,906,640.79				

ESTIMATE WORKSHEET 44													
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018		Penobscot				Dredging - Main Channel - Shallow - 300					44		
BID DATA				Bid Data Notes		PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL		2,380,534				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
BID UNIT		CY				12	6	126.0	29.09	2.822	756		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes			
Dredging - Main Channel - Shallow - 300	44	\$24,408,257.89	\$2,012,531.83	\$20,762,338.20		\$0.00		\$47,183,127.92					
								\$0.00					
								\$0.00					
								\$0.00					
GRAND TOTALS		\$24,408,257.89		\$2,012,531.83		\$20,762,338.20		\$0.00		\$47,183,127.92			
UNIT PRICES		\$10.25		\$0.85		\$8.72		\$0.00		\$19.82			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	45344	\$103.33	\$4,685,495.20	
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	45344	\$31.28	\$1,418,296.46	
					\$0.00	Dredge Barge	DREDGE BARGE		5	45344	\$41.67	\$1,889,312.58	
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	90687	\$71.67	\$6,499,235.28	
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	136031	\$41.67	\$5,667,937.74	
					\$0.00	Workboat	DREDGE/TRANSPORT		10	90687	\$6.64	\$602,060.94	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00			\$0.00	BARE UNIT COST	\$8.72	0		TOTAL RENTED EQUIP		\$20,762,338.20	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Dredge Operator	DREDGE	5	45344	\$71.24	\$3,230,119.93	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	10	90687	\$53.80	\$4,878,507.37	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Deckhand	TRANSPORT	10	90687	\$45.02	\$4,082,893.62	PPE Level D	ALL	1,483.52		\$12.00	MTH	\$17,802.30	
Boat Operator	TRANSPORT	10	90687	\$62.23	\$5,643,452.23	Per Diem	ALL	38,542		\$51.00	MD	\$1,965,640.81	
Tug Operator	TRANSPORT	10	90687	\$42.04	\$3,812,387.66	Misc Safety Supplies	ALL	29.09		\$1,000.00	MD	\$29,088.72	
Deckhand	DREDGE	5	45344	\$45.02	\$2,041,446.81							\$0.00	
Foreman	DREDGE	1	9069	\$79.33	\$719,450.23							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$10.25			\$24,408,257.89	BARE UNIT COST	\$0.85			TOTAL MATERIAL COST		\$2,012,531.83	

ESTIMATE WORKSHEET 45

ESTIMATE WORKSHEET 45												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot				Dredging - Orland River - Shallow - 500					45	
BID DATA				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
1,817,199				12	6	96.1	22.21	2.822	577			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL		Notes			
Dredging - Orland River - Shallow - 500	45	\$18,632,235.46	\$1,536,281.99	\$15,849,094.02		\$0.00	\$36,017,611.47					
						\$0.00						
						\$0.00						
						\$0.00						
						\$0.00						
						\$0.00						
GRAND TOTALS		\$18,632,235.46	\$1,536,281.99	\$15,849,094.02		\$0.00	\$36,017,611.47					
UNIT PRICES		\$10.25	\$0.85	\$8.72		\$0.00	\$19.82					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	34613	\$103.33	\$3,576,709.58
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	34613	\$31.28	\$1,082,667.75
					\$0.00	Dredge Barge	DREDGE BARGE		5	34613	\$41.67	\$1,442,221.60
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	69227	\$71.67	\$4,961,242.32
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	103840	\$41.67	\$4,326,664.81
					\$0.00	Workboat	DREDGE/TRANSPORT		10	69227	\$6.64	\$459,587.95
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST	\$0.00	BARE UNIT COST	\$8.72	0	TOTAL RENTED EQUIP	\$15,849,094.02			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Dredge Operator	DREDGE	5	34613	\$71.24	\$2,465,737.43	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	10	69227	\$53.80	\$3,724,046.94	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Deckhand	TRANSPORT	10	69227	\$45.02	\$3,116,708.93	PPE Level D	ALL	1,132.46	\$12.00	MTH	\$13,589.52	
Boat Operator	TRANSPORT	10	69227	\$62.23	\$4,307,973.62	Per Diem	ALL	29,421	\$51.00	MD	\$1,500,487.36	
Tug Operator	TRANSPORT	10	69227	\$42.04	\$2,910,216.08	Misc Safety Supplies	ALL	22.21	\$1,000.00	MD	\$22,205.11	
Deckhand	DREDGE	5	34613	\$45.02	\$1,558,354.47						\$0.00	
Foreman	DREDGE	1	6923	\$79.33	\$549,197.99						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$10.25	TOTAL LABOR COST	\$18,632,235.46	BARE UNIT COST	\$0.85	TOTAL MATERIAL COST	\$1,536,281.99				

ESTIMATE WORKSHEET 46

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.				
March 7, 2018		Penobscot				Dredging - Orland River - Shallow - 300					46				
BID DATA			Bid Data Notes			PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE					
1,817,199	CY				12	6	96.1	22.21	2.822	577					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL		Notes						
Dredging - Orland River - Shallow - 300	46	\$18,632,235.46	\$1,536,281.99	\$15,849,094.02		\$0.00	\$36,017,611.47								
GRAND TOTALS		\$18,632,235.46	\$1,536,281.99	\$15,849,094.02		\$0.00	\$36,017,611.47								
UNIT PRICES		\$10.25	\$0.85	\$8.72		\$0.00	\$19.82								
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST			
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	34613	\$103.33	\$3,576,709.58			
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	34613	\$31.28	\$1,082,667.75			
					\$0.00	Dredge Barge	DREDGE BARGE		5	34613	\$41.67	\$1,442,221.60			
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	69227	\$71.67	\$4,961,242.32			
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	103840	\$41.67	\$4,326,664.81			
					\$0.00	Workboat	DREDGE/TRANSPORT		10	69227	\$6.64	\$459,587.95			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$8.72		0	TOTAL RENTED EQUIP		\$15,849,094.02
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST			
Dredge Operator	DREDGE	5	34613	\$71.24	\$2,465,737.43	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE							
Laborer	DREDGE	10	69227	\$53.80	\$3,724,046.94	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE							
Deckhand	TRANSPORT	10	69227	\$45.02	\$3,116,708.93	PPE Level D	ALL	1,132.46	\$12.00	MTH		\$13,589.52			
Boat Operator	TRANSPORT	10	69227	\$62.23	\$4,307,973.62	Per Diem	ALL	29,421	\$51.00	MD		\$1,500,487.36			
Tug Operator	TRANSPORT	10	69227	\$42.04	\$2,910,216.08	Misc Safety Supplies	ALL	22.21	\$1,000.00	MD		\$22,205.11			
Deckhand	DREDGE	5	34613	\$45.02	\$1,558,354.47							\$0.00			
Foreman	DREDGE	1	6923	\$79.33	\$549,197.99							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
BARE UNIT COST		\$10.25		TOTAL LABOR COST		\$18,632,235.46		BARE UNIT COST		\$0.85		TOTAL MATERIAL COST	\$1,536,281.99		

ESTIMATE WORKSHEET 47

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.						
March 7, 2018	Penobscot					Dredging - Mendall Marsh - Shallow - 500					47						
BID DATA			Bid Data Notes			PRODUCTION DATA											
TOTAL QUANTITY ON PROPOSAL	BID UNIT		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE									
0	CY		12	6	0.0	0.00	2.822	0									
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes								
Dredging - Mendall Marsh - Shallow - 500	47	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00									
								\$0.00									
								\$0.00									
								\$0.00									
GRAND TOTALS		\$0.00	\$0.00			\$0.00	\$0.00	\$0.00									
UNIT PRICES		\$10.25	\$0.85			\$8.72	\$0.00	\$19.82									
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST					
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	0	\$103.33	\$0.00					
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	0	\$31.28	\$0.00					
					\$0.00	Dredge Barge	DREDGE BARGE		5	0	\$41.67	\$0.00					
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	0	\$71.67	\$0.00					
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	0	\$41.67	\$0.00					
					\$0.00	Workboat	DREDGE/TRANSPORT		10	0	\$6.64	\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$8.72		0		TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST					
Dredge Operator	DREDGE	5	0	\$71.24	\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE									
Laborer	DREDGE	10	0	\$53.80	\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE									
Deckhand	TRANSPORT	10	0	\$45.02	\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00					
Boat Operator	TRANSPORT	10	0	\$62.23	\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00					
Tug Operator	TRANSPORT	10	0	\$42.04	\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00		MD	\$0.00					
Deckhand	DREDGE	5	0	\$45.02	\$0.00							\$0.00					
Foreman	DREDGE	1	0	\$79.33	\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
BARE UNIT COST		\$10.25		TOTAL LABOR COST		\$0.00		BARE UNIT COST		\$0.85		TOTAL MATERIAL COST		\$0.00			

ESTIMATE WORKSHEET 48

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot				Dredging - Mendall Marsh - Shallow - 300					48	
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	528,707					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
BID UNIT	CY					12	6	28.0	6.46	2.822	168	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Dredging - Mendall Marsh - Shallow - 300	48	\$5,420,974.83	\$446,975.14	\$4,611,230.89	\$0.00	\$10,479,180.86						
						\$0.00						
						\$0.00						
						\$0.00						
GRAND TOTALS		\$5,420,974.83	\$446,975.14	\$4,611,230.89	\$0.00	\$10,479,180.86						
UNIT PRICES		\$10.25	\$0.85	\$8.72	\$0.00	\$19.82						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	10071	\$103.33	\$1,040,629.43
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	10071	\$31.28	\$314,997.88
					\$0.00	Dredge Barge	DREDGE BARGE		5	10071	\$41.67	\$419,608.64
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	20141	\$71.67	\$1,443,453.73
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	30212	\$41.67	\$1,258,825.93
					\$0.00	Workboat	DREDGE/TRANSPORT		10	20141	\$6.64	\$133,715.29
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST	\$0.00	\$0.00	BARE UNIT COST	\$8.72	0	TOTAL RENTED EQUIP	\$4,611,230.89		
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Dredge Operator	DREDGE	5	10071	\$71.24	\$717,396.50	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	10	20141	\$53.80	\$1,083,496.65	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Deckhand	TRANSPORT	10	20141	\$45.02	\$906,794.07	PPE Level D	ALL	329.48	\$12.00	MTH	\$3,953.82	
Boat Operator	TRANSPORT	10	20141	\$62.23	\$1,253,387.80	Per Diem	ALL	8,560	\$51.00	MD	\$436,560.83	
Tug Operator	TRANSPORT	10	20141	\$42.04	\$846,715.80	Misc Safety Supplies	ALL	6.46	\$1,000.00	MD	\$6,460.49	
Deckhand	DREDGE	5	10071	\$45.02	\$453,397.04						\$0.00	
Foreman	DREDGE	1	2014	\$79.33	\$159,786.97						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$10.25	TOTAL LABOR COST	\$5,420,974.83	\$0.85	TOTAL MATERIAL COST	\$446,975.14					

ESTIMATE WORKSHEET 48A

BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018	Penobscot				Dredging - FF Dredge for Draft						48A	
BID DATA				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	152,778	Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE	
BID UNIT	CY				12	6	8.1	1.87	2,822		49	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR			TOTAL	Notes	
Dredging - FF Dredge for Draft	48A	\$1,566,471.91	\$129,160.16	\$1,332,484.26			\$0.00			\$3,028,116.33		
										\$0.00		
										\$0.00		
										\$0.00		
										\$0.00		
GRAND TOTALS		\$1,566,471.91	\$129,160.16	\$1,332,484.26			\$0.00			\$3,028,116.33		
UNIT PRICES		\$10.25	\$0.85	\$8.72			\$0.00			\$19.82		
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	2910	\$103.33	\$300,705.47
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	2910	\$31.28	\$91,023.36
					\$0.00	Dredge Barge	DREDGE BARGE		5	2910	\$41.67	\$121,252.20
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	5820	\$71.67	\$417,107.58
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	8730	\$41.67	\$363,756.61
					\$0.00	Workboat	DREDGE/TRANSPORT		10	5820	\$6.64	\$38,639.04
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$8.72	0	TOTAL RENTED EQUIP		\$1,332,484.26
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Dredge Operator	DREDGE	5	2910	\$71.24	\$207,302.47	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	10	5820	\$53.80	\$313,092.59	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Deckhand	TRANSPORT	10	5820	\$45.02	\$262,031.73	PPE Level D	ALL	95.21	\$12.00	MTH		\$1,142.51
Boat Operator	TRANSPORT	10	5820	\$62.23	\$362,185.19	Per Diem	ALL	2,474	\$51.00	MD		\$126,150.79
Tug Operator	TRANSPORT	10	5820	\$42.04	\$244,671.22	Misc Safety Supplies	ALL	1.87	\$1,000.00	MD		\$1,866.85
Deckhand	DREDGE	5	2910	\$45.02	\$131,015.87							\$0.00
Foreman	DREDGE	1	582	\$79.33	\$46,172.84							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$10.25	TOTAL LABOR COST		\$1,566,471.91	BARE UNIT COST		\$0.85	TOTAL MATERIAL COST			\$129,160.16

ESTIMATE WORKSHEET 49													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018		Penobscot					Offloading - Main Channel - Deep - 500						49
BID DATA					PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
0					12	6	0.0	0.00	7,344	0			
ESTIMATE WORKSHEET	BID UNIT	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR			TOTAL	Notes			
	CY												
Offloading - Main Channel - Deep - 500	49	\$0.00	\$0.00	\$0.00		\$0.00			\$0.00				
									\$0.00				
									\$0.00				
									\$0.00				
									\$0.00				
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$0.00			\$0.00				
UNIT PRICES		\$1.30	\$0.10	\$1.62		\$0.00			\$3.02				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	0	\$158.89	\$0.00	
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	0	\$31.28	\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$1.62	0	TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Crane Operator	DREDGE	2	0	\$72.40	\$0.00	Fuel	ALL						FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE
Laborer	DREDGE	3	0	\$53.80	\$0.00	Maintenance/Grease	ALL						FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE
					\$0.00	PPE Level D	ALL	0.00		\$12.00	MTH		\$0.00
					\$0.00	Per Diem	ALL	0		\$51.00	MD		\$0.00
					\$0.00	Misc Safety Supplies	ALL	0.00		\$1,000.00	MD		\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
BARE UNIT COST		\$1.30	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.10		TOTAL MATERIAL COST			\$0.00

ESTIMATE WORKSHEET 50													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018		Penobscot					Offloading - Main Channel - Deep - 300						50
BID DATA					PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
7,964,227					12	6	470.3	108.61	7,344		2,822		
ESTIMATE WORKSHEET		ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
Offloading - Main Channel - Deep - 300		50	\$10,368,111.79	\$834,687.93	\$12,878,738.87		\$0.00		\$24,081,538.59				
GRAND TOTALS			\$10,368,111.79	\$834,687.93	\$12,878,738.87		\$0.00		\$24,081,538.59				
UNIT PRICES			\$1.30	\$0.10	\$1.62		\$0.00		\$3.02				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	67723	\$158.89	\$10,760,434.99	
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	67723	\$31.28	\$2,118,303.87	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST	\$0.00	BARE UNIT COST	\$1.62	0	TOTAL RENTED EQUIP	\$12,878,738.87				
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	67723	\$72.40	\$4,903,372.21	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	3	101585	\$53.80	\$5,464,739.59	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D		ALL	543.07	\$12.00	MTH	\$6,516.84	
					\$0.00	Per Diem		ALL	14,109	\$51.00	MD	\$719,557.06	
					\$0.00	Misc Safety Supplies		ALL	108.61	\$1,000.00	MD	\$108,614.03	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$1.30	TOTAL LABOR COST	\$10,368,111.79	BARE UNIT COST	\$0.10	TOTAL MATERIAL COST	\$834,687.93					

ESTIMATE WORKSHEET 51																		
BID DATE		PROJECT LOCATION						DESCRIPTION OF ITEM					ITEM NO.					
March 7, 2018		Penobscot						Offloading - Orland River - Deep - 500					51					
BID DATA		Bid Data Notes				PRODUCTION DATA												
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE						
365,448	CY					12	6	21.6	4.98	7,344		129						
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes								
Offloading - Orland River - Deep - 500	51	\$475,752.49	\$38,300.60	\$590,955.44		\$0.00		\$1,105,008.52										
GRAND TOTALS		\$475,752.49	\$38,300.60	\$590,955.44		\$0.00		\$1,105,008.52										
UNIT PRICES		\$1.30	\$0.10	\$1.62		\$0.00		\$3.02										
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST						
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	3108	\$158.89	\$493,754.68						
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	3108	\$31.28	\$97,200.76						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
BARE UNIT COST		\$0.00			TOTAL COST			\$0.00			BARE UNIT COST		\$1.62	0		TOTAL RENTED EQUIP		\$590,955.44
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST					
Crane Operator	DREDGE	2	3108	\$72.40	\$224,996.76	Fuel	ALL			FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE								
Laborer	DREDGE	3	4661	\$53.80	\$250,755.73	Maintenance/Grease	ALL			FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE								
					\$0.00	PPE Level D	ALL	24.92	\$12.00	MTH		\$299.03						
					\$0.00	Per Diem	ALL	647	\$51.00	MD		\$33,017.69						
					\$0.00	Misc Safety Supplies	ALL	4.98	\$1,000.00	MD		\$4,983.88						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
BARE UNIT COST		\$1.30			TOTAL LABOR COST			\$475,752.49			BARE UNIT COST		\$0.10	TOTAL MATERIAL COST		\$38,300.60		

ESTIMATE WORKSHEET 52												
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018	Penobscot					Offloading - Orland River - Deep - 300						52
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
365,448	CY					12	6	21.6	4.98	7,344	129	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR			TOTAL	Notes	
Offloading - Orland River - Deep - 300	52	\$475,752.49	\$38,300.60	\$590,955.44			\$0.00			\$1,105,008.52		
GRAND TOTALS		\$475,752.49	\$38,300.60	\$590,955.44			\$0.00			\$1,105,008.52		
UNIT PRICES		\$1.30	\$0.10	\$1.62			\$0.00			\$3.02		
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	3108	\$158.89	\$493,754.68
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	3108	\$31.28	\$97,200.76
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST	\$0.00	BARE UNIT COST		\$1.62	0	TOTAL RENTED EQUIP		\$590,955.44	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	3108	\$72.40	\$224,996.76	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	3	4661	\$53.80	\$250,755.73	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	24.92	\$12.00	MTH	\$299.03	
					\$0.00	Per Diem	ALL	647	\$51.00	MD	\$33,017.69	
					\$0.00	Misc Safety Supplies	ALL	4.98	\$1,000.00	MD	\$4,983.88	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$1.30	TOTAL LABOR COST	\$475,752.49	BARE UNIT COST		\$0.10	TOTAL MATERIAL COST		\$38,300.60		

ESTIMATE WORKSHEET 53														
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.		
March 7, 2018		Penobscot				Offloading - Main Channel - Shallow - 500						53		
BID DATA					PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE			
2,255,280					12	6	119.3	27.56	7,344		716			
ESTIMATE WORKSHEET		ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL		Notes					
Offloading - Main Channel - Shallow - 500		53	\$2,630,658.91	\$211,781.98	\$3,267,670.13	\$0.00	\$6,110,111.02							
GRAND TOTALS			\$2,630,658.91	\$211,781.98	\$3,267,670.13	\$0.00	\$6,110,111.02							
UNIT PRICES			\$1.17	\$0.09	\$1.45	\$0.00	\$2.71							
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
						\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	17183	\$158.89	\$2,730,201.49	
						\$0.00	Cable Arm Hydraulic Clamshell (100	DREDGE		2	17183	\$31.28	\$537,468.64	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST			\$0.00	BARE UNIT COST		\$1.45	0		TOTAL RENTED EQUIP		\$3,267,670.13
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	17183	\$72.40	\$1,244,112.72	Fuel			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	3	25775	\$53.80	\$1,386,546.19	Maintenance/Grease			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D			ALL	137.79	\$12.00	MTH	\$1,653.49	
					\$0.00	Per Diem			ALL	3,580	\$51.00	MD	\$182,570.29	
					\$0.00	Misc Safety Supplies			ALL	27.56	\$1,000.00	MD	\$27,558.20	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
BARE UNIT COST		\$1.17	TOTAL LABOR COST			\$2,630,658.91	BARE UNIT COST		\$0.09	TOTAL MATERIAL COST			\$211,781.98	

ESTIMATE WORKSHEET 54													
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018		Penobscot				Offloading - Main Channel - Shallow - 300					54		
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	2,380,534					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
BID UNIT	CY					12	6	126.0	29.09	7,344	756		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL		Notes			
Offloading - Main Channel - Shallow - 300	54	\$2,776,760.49	\$223,543.93			\$3,449,150.04	\$0.00	\$6,449,454.46					
GRAND TOTALS		\$2,776,760.49	\$223,543.93			\$3,449,150.04	\$0.00	\$6,449,454.46					
UNIT PRICES		\$1.17	\$0.09			\$1.45	\$0.00	\$2.71					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.S.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	18137	\$158.89	\$2,881,831.46	
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	18137	\$31.28	\$567,318.58	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$1.45	0	TOTAL RENTED EQUIP	\$3,449,150.04
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	18137	\$72.40	\$1,313,208.27	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Laborer	DREDGE	3	27206	\$53.80	\$1,463,552.21	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	PPE Level D	ALL	145.44	\$12.00	MTH		\$1,745.32	
					\$0.00	Per Diem	ALL	3,779	\$51.00	MD		\$192,709.88	
					\$0.00	Misc Safety Supplies	ALL	29.09	\$1,000.00	MD		\$29,088.72	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$1.17		TOTAL LABOR COST		\$2,776,760.49		BARE UNIT COST		\$0.09		TOTAL MATERIAL COST	\$223,543.93

ESTIMATE WORKSHEET 55

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018		Penobscot				Offloading - Orland River - Shallow - 500						55	
BID DATA			Bid Data Notes			PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	1,817,199					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
BID UNIT	CY					12	6	96.1	22.21	7,344	577		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL		TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR	TOTAL	Notes			
Offloading - Orland River - Shallow - 500	55	\$2,119,661.94	\$170,644.02		\$2,632,935.79			\$0.00	\$4,923,241.74				
									\$0.00				
									\$0.00				
									\$0.00				
GRAND TOTALS		\$2,119,661.94	\$170,644.02		\$2,632,935.79			\$0.00	\$4,923,241.74				
UNIT PRICES		\$1.17	\$0.09		\$1.45			\$0.00	\$2.71				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	13845	\$158.89	\$2,199,868.69	
					\$0.00	Cable Arm Hydraulic Clamshell (100	DREDGE		2	13845	\$31.28	\$433,067.10	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00		TOTAL COST	\$0.00	BARE UNIT COST		\$1.45		0	TOTAL RENTED EQUIP	\$2,632,935.79	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Crane Operator	DREDGE	2	13845	\$72.40	\$1,002,447.86	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Laborer	DREDGE	3	20768	\$53.80	\$1,117,214.08	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	PPE Level D	ALL	111.03	\$12.00	MTH		\$1,332.31	
					\$0.00	Per Diem	ALL	2,884	\$51.00	MD		\$147,106.60	
					\$0.00	Misc Safety Supplies	ALL	22.21	\$1,000.00	MD		\$22,205.11	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$1.17		TOTAL LABOR COST	\$2,119,661.94	BARE UNIT COST		\$0.09		TOTAL MATERIAL COST	\$170,644.02		

ESTIMATE WORKSHEET 56													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot					Offloading - Orland River - Shallow - 300					56	
BID DATA						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	1,817,199	Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
						12	6	96.1	22.21	7,344	577		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes		
Offloading - Orland River - Shallow - 300	56	\$2,119,661.94	\$170,644.02			\$2,632,935.79		\$0.00		\$4,923,241.74			
										\$0.00			
										\$0.00			
										\$0.00			
GRAND TOTALS		\$2,119,661.94	\$170,644.02			\$2,632,935.79		\$0.00		\$4,923,241.74			
UNIT PRICES		\$1.17	\$0.09			\$1.45		\$0.00		\$2.71			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
												TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	13845	\$158.89	\$2,199,868.69	
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	13845	\$31.28	\$433,067.10	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST			\$0.00	BARE UNIT COST	\$1.45	0	TOTAL RENTED EQUIP			\$2,632,935.79
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Crane Operator	DREDGE	2	13845	\$72.40	\$1,002,447.86	Fuel	ALL			FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
Laborer	DREDGE	3	20768	\$53.80	\$1,117,214.08	Maintenance/Grease	ALL			FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	PPE Level D	ALL	111.03	\$12.00	MTH			\$1,332.31
					\$0.00	Per Diem	ALL	2,884	\$51.00	MD			\$147,106.60
					\$0.00	Misc Safety Supplies	ALL	22.21	\$1,000.00	MD			\$22,205.11
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
BARE UNIT COST		\$1.17	TOTAL LABOR COST			\$2,119,661.94	BARE UNIT COST	\$0.09	TOTAL MATERIAL COST			\$170,644.02	

ESTIMATE WORKSHEET 57														
BID DATE		PROJECT LOCATION						DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot						Offloading - Mendall Marsh - Shallow - 500					57	
BID DATA					PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
0						12	6	0.0	0.00	7,344	0			
ESTIMATE WORKSHEET		ITEM NO.	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes		
Offloading - Mendall Marsh - Shallow - 500		57	\$0.00		\$0.00		\$0.00		\$0.00		\$0.00			
GRAND TOTALS			\$0.00		\$0.00		\$0.00		\$0.00		\$0.00			
UNIT PRICES			\$1.17		\$0.09		\$1.45		\$0.00		\$2.71			
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
						\$0.00	\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	0	\$158.89	\$0.00
						\$0.00	\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	0	\$31.28	\$0.00
						\$0.00	\$0.00							\$0.00
						\$0.00	\$0.00							\$0.00
						\$0.00	\$0.00							\$0.00
						\$0.00	\$0.00							\$0.00
						\$0.00	\$0.00							\$0.00
						\$0.00	\$0.00							\$0.00
						\$0.00	\$0.00							\$0.00
						\$0.00	\$0.00							\$0.00
						\$0.00	\$0.00							\$0.00
						\$0.00	\$0.00							\$0.00
						\$0.00	\$0.00							\$0.00
BARE UNIT COST			\$0.00		TOTAL COST		\$0.00	BARE UNIT COST		\$1.45	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRRLY RATE	TOTAL COST		MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	0	\$72.40	\$0.00		Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Laborer	DREDGE	3	0	\$53.80	\$0.00		Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00		PPE Level D	ALL	0.00	\$12.00	MTH		\$0.00	
					\$0.00		Per Diem	ALL	0	\$51.00	MD		\$0.00	
					\$0.00		Misc Safety Supplies	ALL	0.00	\$1,000.00	MD		\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
BARE UNIT COST		\$1.17		TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.09	TOTAL MATERIAL COST		\$0.00		

ESTIMATE WORKSHEET 58													
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018		Penobscot				Offloading - Mendall Marsh - Shallow - 300						58	
BID DATA					PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
528,707					12	6	28.0	6.46	7,344		168		
ESTIMATE WORKSHEET		ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL		Notes			
Offloading - Mendall Marsh - Shallow - 300		58	\$616,707.21	\$49,648.20	\$766,042.20		\$0.00	\$1,432,397.61					
								\$0.00					
								\$0.00					
								\$0.00					
GRAND TOTALS			\$616,707.21	\$49,648.20	\$766,042.20		\$0.00	\$1,432,397.61					
UNIT PRICES			\$1.17	\$0.09	\$1.45		\$0.00	\$2.71					
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
						\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	4028	\$158.89	\$640,043.05
						\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	4028	\$31.28	\$125,999.15
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
BARE UNIT COST			\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$1.45	0	TOTAL RENTED EQUIP		\$766,042.20
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Crane Operator		DREDGE	2	4028	\$72.40	\$291,658.22	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
Laborer		DREDGE	3	6042	\$53.80	\$325,049.00	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
						\$0.00	PPE Level D		ALL	32.30	\$12.00	MTH	\$387.63
						\$0.00	Per Diem		ALL	839	\$51.00	MD	\$42,800.08
						\$0.00	Misc Safety Supplies		ALL	6.46	\$1,000.00	MD	\$6,460.49
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
BARE UNIT COST			\$1.17	TOTAL LABOR COST		\$616,707.21	BARE UNIT COST		\$0.09		TOTAL MATERIAL COST		\$49,648.20

ESTIMATE WORKSHEET 58A												
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.
March 7, 2018		Penobscot					Offloading - FF Dredge for Draft					58A
BID DATA				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	BID UNIT	Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
152,778	CY					12	6	8.1	1.87	7,344	49	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Offloading - FF Dredge for Draft	58A	\$178,206.79	\$14,346.59	\$221,359.37	\$0.00	\$413,912.75						
						\$0.00						
						\$0.00						
						\$0.00						
GRAND TOTALS		\$178,206.79	\$14,346.59	\$221,359.37	\$0.00	\$413,912.75						
UNIT PRICES		\$1.17	\$0.09	\$1.45	\$0.00	\$2.71						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	1164	\$158.89	\$184,950.03
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	1164	\$31.28	\$36,409.34
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$0.00	TOTAL COST	\$0.00	BARE UNIT COST	\$1.45	0	TOTAL RENTED EQUIP	\$221,359.37				
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	1164	\$72.40	\$84,279.01	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	3	1746	\$53.80	\$93,927.78	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	9.33	\$12.00	MTH	\$112.01	
					\$0.00	Per Diem	ALL	243	\$51.00	MD	\$12,367.72	
					\$0.00	Misc Safety Supplies	ALL	1.87	\$1,000.00	MD	\$1,866.85	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST	\$1.17	TOTAL LABOR COST	\$178,206.79	BARE UNIT COST	\$0.09	TOTAL MATERIAL COST	\$14,346.59					

ESTIMATE WORKSHEET 59												
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018	Penobscot					Processing - Main Channel - Deep - 500					59	
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT	HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE					
0	CY	12	6	0.0	0.00	7,344	0					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL	Notes				
Processing - Main Channel - Deep - 500	59	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00	Includes Residuals.				
							\$0.00					
							\$0.00					
							\$0.00					
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$0.00	\$0.00					
UNIT PRICES		\$1.06	\$11.53	\$0.57		\$0.00	\$13.15					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	WA 320 broom	Clean		1	0	\$5.17	\$0.00
					\$0.00	Wheeled Loaded WA320	Processing		2	0	\$41.72	\$0.00
					\$0.00	John Deer Skidsteer CT332	Processing		2	0	\$22.28	\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$0.00	TOTAL COST	\$0.00	BARE UNIT COST	\$0.57	0	TOTAL RENTED EQUIP	\$0.00				
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Operator 3	Loader	2	0	\$70.43	\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	Processing	2	0	\$53.80	\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH	\$0.00	
					\$0.00	Per Diem	ALL	0	\$51.00	MD	\$0.00	
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MD	\$0.00	
					\$0.00	Portland Cement Type 1	Stabilize	0.00	\$130.00	Ton	\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST	\$1.06	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$11.53	TOTAL MATERIAL COST	\$0.00					

ESTIMATE WORKSHEET 60

ESTIMATE WORKSHEET 60															
BID DATE	PROJECT LOCATION						DESCRIPTION OF ITEM					ITEM NO.			
March 7, 2018	Penobscot						Processing - Main Channel - Deep - 300					60			
BID DATA			Bid Data Notes			PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL	7,964,227	BID UNIT	CY	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	470.3	TOTAL MONTHS	108.61	DAILY UNIT PRODUCTION RATE	7,344	DAYS REQ. TO COMPLETE	2,822
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR			TOTAL	Notes				
Processing - Main Channel - Deep - 300	60	\$8,413,004.71	\$91,800,228.33	\$4,509,224.25			\$0.00			\$104,722,457.29	includes Residuals.				
GRAND TOTALS		<u>\$8,413,004.71</u>	<u>\$91,800,228.33</u>	<u>\$4,509,224.25</u>			<u>\$0.00</u>			<u>\$104,722,457.29</u>					
UNIT PRICES		<u>\$1.06</u>	<u>\$11.53</u>	<u>\$0.57</u>			<u>\$0.00</u>			<u>\$13.15</u>					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST			
					\$0.00	WA 320 broom	Clean		1	33862	\$5.17	\$174,951.13			
					\$0.00	Wheeled Loaded WA320	Processing		2	67723	\$41.72	\$2,825,554.78			
					\$0.00	John Deer Skidsteer CT332	Processing		2	67723	\$22.28	\$1,508,718.33			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$0.57	0	TOTAL RENTED EQUIP		\$4,509,224.25			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST			
Operator 3	Loader	2	67723	\$70.43	\$4,769,844.99	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
Laborer	Processing	2	67723	\$53.80	\$3,643,159.72	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
					\$0.00	PPE Level D		ALL	434.46	\$12.00	MTH	\$5,213.47			
					\$0.00	Per Diem		ALL	11,287	\$51.00	MD	\$575,645.65			
					\$0.00	Misc Safety Supplies		ALL	108.61	\$1,000.00	MD	\$108,614.03			
					\$0.00	Portland Cement Type 1		Stabilize	700,851.96	\$130.00	Ton	\$91,110,755.19			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
BARE UNIT COST		\$1.06	TOTAL LABOR COST		\$8,413,004.71	BARE UNIT COST		\$11.53	TOTAL MATERIAL COST			\$91,800,228.33			

ESTIMATE WORKSHEET 61

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot					Processing - Orland River - Deep - 500					61		
BID DATA		Bid Data Notes			PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	365,448	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	21.6	TOTAL MONTHS	4.98	DAILY UNIT PRODUCTION RATE	7,344	DAYS REQ. TO COMPLETE	129
BID UNIT	CY	TOTAL LABOR			TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR			TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes	
Processing - Orland River - Deep - 500	61	\$386,040.20			\$4,212,356.86		\$206,910.83		\$0.00		\$4,805,307.89	Includes Residuals.	
											\$0.00		
											\$0.00		
											\$0.00		
GRAND TOTALS		\$386,040.20			\$4,212,356.86		\$206,910.83		\$0.00		\$4,805,307.89		
UNIT PRICES		\$1.06			\$11.53		\$0.57		\$0.00		\$13.15		
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	WA 320 broom	Clean		1	1554	\$5.17	\$8,027.83	
					\$0.00	Wheeled Loaded WA320	Processing		2	3108	\$41.72	\$129,653.76	
					\$0.00	John Deer Skidsteer CT332	Processing		2	3108	\$22.28	\$69,229.24	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00			TOTAL COST	\$0.00		BARE UNIT COST	\$0.57		0	TOTAL RENTED EQUIP	\$206,910.83
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Operator 3	Loader	2	3108	\$70.43	\$218,869.71	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Laborer	Processing	2	3108	\$53.80	\$167,170.49	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	PPE Level D	ALL	19.94	\$12.00	MTH	\$239.23		
					\$0.00	Per Diem	ALL	518	\$51.00	MD	\$26,414.15		
					\$0.00	Misc Safety Supplies	ALL	4.98	\$1,000.00	MD	\$4,983.88		
					\$0.00	Portland Cement Type 1	Stabilize	32,159.38	\$130.00	Ton	\$4,180,719.61		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST		\$1.06			TOTAL LABOR COST	\$386,040.20		BARE UNIT COST	\$11.53		TOTAL MATERIAL COST		\$4,212,356.86

ESTIMATE WORKSHEET 62

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.		
March 7, 2018		Penobscot				Processing - Orland River - Deep - 300						62		
BID DATA				Bid Data Notes		PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
365,448	CY					12	6	21.6	4.98	7,344	129			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes				
	62	\$386,040.20	\$4,212,356.86	\$206,910.83		\$0.00		\$4,805,307.89		Includes Residuals.				
GRAND TOTALS		\$386,040.20	\$4,212,356.86	\$206,910.83		\$0.00		\$4,805,307.89						
UNIT PRICES		\$1.06	\$11.53	\$0.57		\$0.00		\$13.15						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST		
					\$0.00	WA 320 broom	Clean		1	1554	\$5.17	\$8,027.83		
					\$0.00	Wheeled Loaded WA320	Processing		2	3108	\$41.72	\$129,653.76		
					\$0.00	John Deer Skidsteer CT332	Processing		2	3108	\$22.28	\$69,229.24		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$0.57		0	TOTAL RENTED EQUIP	\$206,910.83
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST			
Operator 3	Loader	2	3108	\$70.43	\$218,869.71	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
Laborer	Processing	2	3108	\$53.80	\$167,170.49	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
					\$0.00	PPE Level D	ALL	19.94	\$12.00	MTH	\$239.23			
					\$0.00	Per Diem	ALL	518	\$51.00	MD	\$26,414.15			
					\$0.00	Misc Safety Supplies	ALL	4.98	\$1,000.00	MD	\$4,983.88			
					\$0.00	Portland Cement Type 1	Stabilize	32,159.38	\$130.00	Ton	\$4,180,719.61			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
BARE UNIT COST		\$1.06		TOTAL LABOR COST		\$386,040.20		BARE UNIT COST		\$11.53		TOTAL MATERIAL COST	\$4,212,356.86	

ESTIMATE WORKSHEET 63

BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.		
March 7, 2018	Penobscot				Processing - Main Channel - Shallow - 500						63		
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	2,255,280	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	119.3	TOTAL MONTHS	27.56	DAILY UNIT PRODUCTION RATE	7,344	DAYS REQ. TO COMPLETE	716
BID UNIT	CY	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes	
Processing - Main Channel - Shallow - 500	63	\$2,134,597.53		\$25,975,341.27		\$1,144,107.16		\$0.00		\$29,254,045.96		Includes Residuals.	
										\$0.00			
										\$0.00			
										\$0.00			
GRAND TOTALS		\$2,134,597.53		\$25,975,341.27		\$1,144,107.16		\$0.00		\$29,254,045.96			
UNIT PRICES		\$0.95		\$11.52		\$0.51		\$0.00		\$12.97			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	WA 320 broom	Clean		1	8592	\$5.17	\$44,389.64	
					\$0.00	Wheeled Loaded WA320	Processing		2	17183	\$41.72	\$716,916.54	
					\$0.00	John Deer Skidsteer CT332	Processing		2	17183	\$22.28	\$382,800.98	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$0.00	TOTAL COST	\$0.00	BARE UNIT COST	\$0.51	0	TOTAL RENTED EQUIP	\$1,144,107.16					
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Operator 3	Loader	2	17183	\$70.43	\$1,210,233.41	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
Laborer	Processing	2	17183	\$53.80	\$924,364.13	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	PPE Level D	ALL	110.23	\$12.00	MTH	\$1,322.79		
					\$0.00	Per Diem	ALL	2,864	\$51.00	MD	\$146,056.23		
					\$0.00	Misc Safety Supplies	ALL	27.56	\$1,000.00	MD	\$27,558.20		
					\$0.00	Portland Cement Type 1	Stabilize	198,464.65	\$130.00	Ton	\$25,800,404.05		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST	\$0.95	TOTAL LABOR COST	\$2,134,597.53	BARE UNIT COST	\$11.52	TOTAL MATERIAL COST	\$25,975,341.27						

ESTIMATE WORKSHEET 64

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018		Penobscot				Processing - Main Channel - Shallow - 300						64	
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
2,380,534	CY					12	6	126.0	29.09	7,344	756		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes			
Processing - Main Channel - Shallow - 300	64	\$2,253,148.84	\$27,417,960.15	\$1,207,648.60		\$0.00		\$30,878,757.60		includes Residuals.			
								\$0.00					
								\$0.00					
								\$0.00					
GRAND TOTALS		\$2,253,148.84	\$27,417,960.15	\$1,207,648.60		\$0.00		\$30,878,757.60					
UNIT PRICES		\$0.95	\$11.52	\$0.51		\$0.00		\$12.97					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	WA 320 broom	Clean		1	9069	\$5.17	\$46,854.95	
					\$0.00	Wheeled Loaded WA320	Processing		2	18137	\$41.72	\$756,732.67	
					\$0.00	John Deer Skidsteer CT332	Processing		2	18137	\$22.28	\$404,060.98	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST			\$0.00	BARE UNIT COST		\$0.51	0	TOTAL RENTED EQUIP		\$1,207,648.60
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Operator 3	Loader	2	18137	\$70.43	\$1,277,447.37	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	Processing	2	18137	\$53.80	\$975,701.47	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D		ALL	116.35	\$12.00	MTH	\$1,396.26	
					\$0.00	Per Diem		ALL	3,023	\$51.00	MD	\$154,167.91	
					\$0.00	Misc Safety Supplies		ALL	29.09	\$1,000.00	MD	\$29,088.72	
					\$0.00	Portland Cement Type 1		Stabilize	209,486.98	\$130.00	Ton	\$27,233,307.27	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.95	TOTAL LABOR COST			\$2,253,148.84	BARE UNIT COST		\$11.52	TOTAL MATERIAL COST			\$27,417,960.15

ESTIMATE WORKSHEET 65													
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot					Processing - Orland River - Shallow - 500					65		
BID DATA			Bid Data Notes			PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	BID UNIT		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE					
1,817,199	CY		12	6	96.1	22.21	7,344	577					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Processing - Orland River - Shallow - 500	65	\$1,719,958.87	\$20,929,715.34	\$921,868.05		\$0.00	\$23,571,542.26	Includes Residuals.					
GRAND TOTALS		\$1,719,958.87	\$20,929,715.34	\$921,868.05		\$0.00	\$23,571,542.26						
UNIT PRICES		\$0.95	\$11.52	\$0.51		\$0.00	\$12.97						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	WA 320 broom	Clean		1	6923	\$5.17	\$35,767.10	
					\$0.00	Wheeled Loaded WA320	Processing		2	13845	\$41.72	\$577,657.83	
					\$0.00	John Deer Skidsteer CT332	Processing		2	13845	\$22.28	\$308,443.13	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST			\$0.00	BARE UNIT COST		\$0.51	0	TOTAL RENTED EQUIP		\$921,868.05
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Operator 3	Loader	2	13845	\$70.43	\$975,149.48	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	Processing	2	13845	\$53.80	\$744,809.39	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D		ALL	88.82	\$12.00	MTH	\$1,065.85	
					\$0.00	Per Diem		ALL	2,308	\$51.00	MD	\$117,685.28	
					\$0.00	Misc Safety Supplies		ALL	22.21	\$1,000.00	MD	\$22,205.11	
					\$0.00	Portland Cement Type 1		Stabilize	159,913.53	\$130.00	Ton	\$20,788,759.10	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.95	TOTAL LABOR COST			\$1,719,958.87	BARE UNIT COST		\$11.52	TOTAL MATERIAL COST		\$20,929,715.34	

ESTIMATE WORKSHEET 66

BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM							ITEM NO.	
March 7, 2018	Penobscot				Processing - Orland River - Shallow - 300							66	
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	1,817,199	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	96.1	TOTAL MONTHS	22.21	DAILY UNIT PRODUCTION RATE	7,344	DAYS REQ. TO COMPLETE	577
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes			
Processing - Orland River - Shallow - 300	66	\$1,719,958.87	\$20,929,715.34	\$921,868.05		\$0.00		\$23,571,542.26		includes Residuals.			
GRAND TOTALS		\$1,719,958.87	\$20,929,715.34	\$921,868.05		\$0.00		\$23,571,542.26					
UNIT PRICES		\$0.95	\$11.52	\$0.51		\$0.00		\$12.97					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	WA 320 broom	Clean		1	6923	\$5.17	\$35,767.10	
					\$0.00	Wheeled Loaded WA320	Processing		2	13845	\$41.72	\$577,657.83	
					\$0.00	John Deer Skidsteer CT332	Processing		2	13845	\$22.28	\$308,443.13	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$0.51		0	
								TOTAL RENTED EQUIP		\$921,868.05			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Operator 3	Loader	2	13845	\$70.43	\$975,149.48	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Laborer	Processing	2	13845	\$53.80	\$744,809.39	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	PPE Level D	ALL	88.82	\$12.00	MTH	\$1,065.85		
					\$0.00	Per Diem	ALL	2,308	\$51.00	MD	\$117,685.28		
					\$0.00	Misc Safety Supplies	ALL	22.21	\$1,000.00	MD	\$22,205.11		
					\$0.00	Portland Cement Type 1	Stabilize	159,913.53	\$130.00	Ton	\$20,788,759.10		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST		\$0.95		TOTAL LABOR COST		\$1,719,958.87		BARE UNIT COST		\$11.52		TOTAL MATERIAL COST	
												\$20,929,715.34	

ESTIMATE WORKSHEET 67

ESTIMATE WORKSHEET 67														
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018		Penobscot					Processing - Mendall Marsh - Shallow - 500					67		
BID DATA				PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL			Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
0						12	6	0.0	0.00	7,344	0			
ESTIMATE WORKSHEET			TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR		TOTAL	Notes			
ITEM NO.											Includes Residuals.			
Processing - Mendall Marsh - Shallow - 500			67	\$0.00	\$0.00	\$0.00		\$0.00		\$0.00				
										\$0.00				
										\$0.00				
										\$0.00				
GRAND TOTALS			\$0.00	\$0.00	\$0.00		\$0.00		\$0.00	\$12.97				
UNIT PRICES			\$0.95	\$11.52	\$0.51		\$0.00		\$0.00					
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
						\$0.00	WA 320 broom	Clean		1	0	\$5.17	\$0.00	
						\$0.00	Wheeled Loaded WA320	Processing		2	0	\$41.72	\$0.00	
						\$0.00	John Deer Skidsteer CT332	Processing		2	0	\$22.28	\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
BARE UNIT COST			\$0.00	TOTAL COST			\$0.00	BARE UNIT COST	\$0.51	0	TOTAL RENTED EQUIP			\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Operator 3	Loader	2	0	\$70.43	\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
Laborer	Processing	2	0	\$53.80	\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH		\$0.00		
					\$0.00	Per Diem	ALL	0	\$51.00	MD		\$0.00		
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MD		\$0.00		
					\$0.00	Portland Cement Type 1	Stabilize	0.00	\$130.00	Ton		\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST			\$0.95	TOTAL LABOR COST			\$0.00	BARE UNIT COST	\$11.52	TOTAL MATERIAL COST			\$0.00	

ESTIMATE WORKSHEET 68														
BID DATE	PROJECT LOCATION						DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot						Processing - Mendall Marsh - Shallow - 300					68		
BID DATA		Bid Data Notes				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	528,707	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	28.0	TOTAL MONTHS	6.46	DAILY UNIT PRODUCTION RATE	7,344	DAYS REQ. TO COMPLETE	168	
BID UNIT	CY	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes		
Processing - Mendall Marsh - Shallow - 300	68	\$500,415.20		\$6,089,417.46		\$268,213.84		\$0.00		\$6,858,046.50		includes Residuals.		
		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00				
		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00				
GRAND TOTALS		\$500,415.20		\$6,089,417.46		\$268,213.84		\$0.00		\$6,858,046.50				
UNIT PRICES		\$0.95		\$11.52		\$0.51		\$0.00		\$12.97				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST		
					\$0.00	WA 320 broom	Clean		1	2014	\$5.17	\$10,406.29		
					\$0.00	Wheeled Loaded WA320	Processing		2	4028	\$41.72	\$168,067.25		
					\$0.00	John Deer Skidsteer CT332	Processing		2	4028	\$22.28	\$89,740.30		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$0.51		TOTAL RENTED EQUIP		\$268,213.84
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST			
Operator 3	Loader	2	4028	\$70.43	\$283,715.87	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
Laborer	Processing	2	4028	\$53.80	\$216,699.33	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
					\$0.00	PPE Level D	ALL	25.84	\$12.00	MTH	\$310.10			
					\$0.00	Per Diem	ALL	671	\$51.00	MD	\$34,240.07			
					\$0.00	Misc Safety Supplies	ALL	6.46	\$1,000.00	MD	\$6,460.49			
					\$0.00	Portland Cement Type 1	Stabilize	46,526.21	\$130.00	Ton	\$6,048,406.81			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
BARE UNIT COST		\$0.95		TOTAL LABOR COST		\$500,415.20		BARE UNIT COST		\$11.52		TOTAL MATERIAL COST		\$6,089,417.46

ESTIMATE WORKSHEET 68A

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.				
March 7, 2018		Penobscot				Processing - FF Dredge for Draft						68A				
BID DATA		Bid Data Notes				PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE					
152,778	CY					12	6	8.1	1.87	7,344	49					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes									
Processing - FF Dredge for Draft	68A	\$144,602.47	\$1,759,628.42	\$77,504.41	\$0.00	\$1,981,735.30	Includes Residuals.									
						\$0.00										
						\$0.00										
						\$0.00										
GRAND TOTALS		\$144,602.47	\$1,759,628.42	\$77,504.41	\$0.00	\$1,981,735.30										
UNIT PRICES		\$0.95	\$11.52	\$0.51	\$0.00	\$12.97										
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST				
					\$0.00	WA 320 broom	Clean		1	582	\$5.17	\$3,007.05				
					\$0.00	Wheeled Loaded WA320	Processing		2	1164	\$41.72	\$48,565.55				
					\$0.00	John Deer Skidsteer CT332	Processing		2	1164	\$22.28	\$25,931.80				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
BARE UNIT COST		\$0.00			TOTAL COST	\$0.00			BARE UNIT COST		\$0.51		0	TOTAL RENTED EQUIP	\$77,504.41	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST					
Operator 3	Loader	2	1164	\$70.43	\$81,983.95	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE								
Laborer	Processing	2	1164	\$53.80	\$62,618.52	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE								
					\$0.00	PPE Level D	ALL	7.47	\$12.00	MTH	\$89.61					
					\$0.00	Per Diem	ALL	194	\$51.00	MD	\$9,894.18					
					\$0.00	Misc Safety Supplies	ALL	1.87	\$1,000.00	MD	\$1,866.85					
					\$0.00	Portland Cement Type 1	Stabilize	13,444.44	\$130.00	Ton	\$1,747,777.78					
					\$0.00						\$0.00					
					\$0.00						\$0.00					
					\$0.00						\$0.00					
					\$0.00						\$0.00					
					\$0.00						\$0.00					
					\$0.00						\$0.00					
					\$0.00						\$0.00					
BARE UNIT COST		\$0.95			TOTAL LABOR COST	\$144,602.47			BARE UNIT COST		\$11.52		TOTAL MATERIAL COST	\$1,759,628.42		

ESTIMATE WORKSHEET 70

BID DATE		PROJECT LOCATION						DESCRIPTION OF ITEM				ITEM NO.	
March 7, 2018		Penobscot						Material Procurement and Delivery - Main Channel - Deep - 300				70	
BID DATA				Bid Data Notes				PRODUCTION DATA					
TOTAL QUANTITY ON PROPOSAL	BID UNIT			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
12,095,670	Ton			12	6	0.0	0.00	--	0				
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes				
Material Procurement and Delivery - Main Channel Deep - 300	70	\$0.00	\$278,200,399.22	\$0.00		\$0.00		\$278,200,399.22					
								\$0.00					
								\$0.00					
								\$0.00					
GRAND TOTALS		\$0.00	\$278,200,399.22	\$0.00		\$0.00		\$278,200,399.22					
UNIT PRICES		\$0.00	\$23.00	\$0.00		\$0.00		\$23.00					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP			\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MTH	\$0.00		
					\$0.00	Sand Habitat Restoration Material	BACKFILL	12,095,670	\$23.00	TON	\$278,200,399.22		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$23.00	TOTAL MATERIAL COST		\$278,200,399.22		

ESTIMATE WORKSHEET 72

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018		Penobscot				Material Procurement and Delivery - Orland River - Deep - 300						72	
BID DATA				PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL	BID UNIT	Bid Data Notes		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
555,023	Ton			12	6	0.0	0.00	--	0				
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes				
Material Procurement and Delivery - Orland River - Deep - 300	72	\$0.00	\$12,765,538.63	\$0.00		\$0.00		\$12,765,538.63					
								\$0.00					
								\$0.00					
								\$0.00					
GRAND TOTALS		\$0.00	\$12,765,538.63	\$0.00		\$0.00		\$12,765,538.63					
UNIT PRICES		\$0.00	\$23.00	\$0.00		\$0.00		\$23.00					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$0.00		0	
												TOTAL RENTED EQUIP	
												\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MTH	\$0.00		
					\$0.00	Sand Habitat Restoration Material	BACKFILL	555,023	\$23.00	TON	\$12,765,538.63		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST		\$0.00		TOTAL LABOR COST		\$0.00		BARE UNIT COST		\$23.00		TOTAL MATERIAL COST	
												\$12,765,538.63	

ESTIMATE WORKSHEET 73

ESTIMATE WORKSHEET 73														
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.		
March 7, 2018		Penobscot				Material Procurement and Delivery - Main Channel - Shallow - 500						73		
BID DATA		Bid Data Notes				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	2,433,288	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	0.0	TOTAL MONTHS	0.00	DAILY UNIT PRODUCTION RATE	-	DAYS REQ. TO COMPLETE	0	
BID UNIT	Ton													
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes							
Material Procurement and Delivery - Main Channel Shallow - 500	73	\$0.00	\$55,965,618.54	\$0.00	\$0.00	\$55,965,618.54								
						\$0.00								
						\$0.00								
						\$0.00								
GRAND TOTALS		\$0.00	\$55,965,618.54	\$0.00	\$0.00	\$55,965,618.54								
UNIT PRICES		\$0.00	\$23.00	\$0.00	\$0.00	\$23.00								
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$0.00	TOTAL COST			\$0.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP				\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST			
					\$0.00	Fuel	ALL							
					\$0.00	Maintenance/Grease	ALL							
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MTH	\$0.00			
					\$0.00	Sand Habitat Restoration Material	BACKFILL	2,433,288	\$23.00	TON	\$55,965,618.54			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
BARE UNIT COST		\$0.00	TOTAL LABOR COST			\$0.00	BARE UNIT COST	\$23.00	TOTAL MATERIAL COST				\$55,965,618.54	

ESTIMATE WORKSHEET 75

BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot					Material Procurement and Delivery - Orland River - Shallow - 500					75	
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	2,101,828					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE	
	Ton					12	6	0.0	0.00	--		0	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR			TOTAL	Notes		
Material Procurement and Delivery - Orland River - Shallow - 500	75	\$0.00	\$48,342,050.50	\$0.00			\$0.00			\$48,342,050.50			
										\$0.00			
										\$0.00			
										\$0.00			
GRAND TOTALS		\$0.00	\$48,342,050.50	\$0.00			\$0.00			\$48,342,050.50			
UNIT PRICES		\$0.00	\$23.00	\$0.00			\$0.00			\$23.00			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00				TOTAL COST	\$0.00		0			TOTAL RENTED EQUIP	\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MTH	\$0.00		
					\$0.00	Sand Habitat Restoration Material	BACKFILL	2,101,828	\$23.00	TON	\$48,342,050.50		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST		\$0.00				TOTAL LABOR COST	\$0.00		\$23.00			TOTAL MATERIAL COST	\$48,342,050.50

ESTIMATE WORKSHEET 76

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018		Penobscot				Material Procurement and Delivery - Orland River - Shallow - 300						76	
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	2,101,828	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	0.0	TOTAL MONTHS	0.00	DAILY UNIT PRODUCTION RATE	--	DAYS REQ. TO COMPLETE	0
BID UNIT	Ton	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes						
ESTIMATE WORKSHEET	ITEM NO.												
Material Procurement and Delivery - Orland River - Shallow - 300	76	\$0.00	\$48,342,050.50	\$0.00	\$0.00	\$48,342,050.50							
						\$0.00							
						\$0.00							
GRAND TOTALS		\$0.00	\$48,342,050.50	\$0.00	\$0.00	\$48,342,050.50							
UNIT PRICES		\$0.00	\$23.00	\$0.00	\$0.00	\$23.00							
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
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					\$0.00							\$0.00	
					\$0.00							\$0.00	
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					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$0.00	TOTAL COST	\$0.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MTH	\$0.00		
					\$0.00	Sand Habitat Restoration Material	BACKFILL	2,101,828	\$23.00	TON	\$48,342,050.50		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$23.00	TOTAL MATERIAL COST	\$48,342,050.50						

ESTIMATE WORKSHEET 77

BID DATE March 7, 2018		PROJECT LOCATION Penobscot				DESCRIPTION OF ITEM Material Procurement and Delivery - Mendall Marsh - Shallow - 500					ITEM NO. 77			
BID DATA		Bid Data Notes				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL 0	BID UNIT Ton					HOURS PER DAY 12	DAYS PER WEEK 6	TOTAL WEEKS 0.0	TOTAL MONTHS 0.00	DAILY UNIT PRODUCTION RATE --	DAYS REQ. TO COMPLETE 0			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR			TOTAL	Notes			
Material Procurement and Delivery - Mendall Marsh - Shallow - 500	77	\$0.00	\$0.00	\$0.00			\$0.00			\$0.00				
										\$0.00				
										\$0.00				
										\$0.00				
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$0.00			\$0.00				
UNIT PRICES		\$0.00	\$23.00	\$0.00			\$0.00			\$23.00				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$0.00	TOTAL COST			\$0.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP			\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST			
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MTH	\$0.00			
					\$0.00	Sand Habitat Restoration Material	BACKFILL	0	\$23.00	TON	\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
BARE UNIT COST		\$0.00	TOTAL LABOR COST			\$0.00	BARE UNIT COST		\$23.00	TOTAL MATERIAL COST			\$0.00	

ESTIMATE WORKSHEET 79

BID DATE March 7, 2018		PROJECT LOCATION Penobscot						DESCRIPTION OF ITEM Material Procurement and Delivery - EMNR - 500				ITEM NO. 79	
BID DATA		Bid Data Notes				PRODUCTION DATA		DAILY UNIT PRODUCTION RATE				DAYS REQ. TO COMPLETE	
TOTAL QUANTITY ON PROPOSAL	5,265,000					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS			0	
BID UNIT	Ton					12	6	0.0	0.00				
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes	
Material Procurement and Delivery - EMNR - 500	79	\$0.00		\$121,095,000.00		\$0.00		\$0.00		\$121,095,000.00			
										\$0.00			
										\$0.00			
										\$0.00			
GRAND TOTALS		\$0.00		\$121,095,000.00		\$0.00		\$0.00		\$121,095,000.00			
UNIT PRICES		\$0.00		\$23.00		\$0.00		\$0.00		\$23.00			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
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					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$0.00		TOTAL RENTED EQUIP	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Misc Safety Supplies	ALL		0.00	\$1,000.00	MTH	\$0.00	
					\$0.00	Sand Habitat Restoration Material	BACKFILL		5,265,000	\$23.00	TON	\$121,095,000.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00		TOTAL LABOR COST		\$0.00		BARE UNIT COST		\$23.00		TOTAL MATERIAL COST	
												\$121,095,000.00	

ESTIMATE WORKSHEET 80

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.				
March 7, 2018	Penobscot					Material Procurement and Delivery - EMNR - 300					80				
BID DATA		Bid Data Notes				PRODUCTION DATA		DAILY UNIT PRODUCTION RATE			DAYS REQ. TO COMPLETE				
TOTAL QUANTITY ON PROPOSAL	14,445,000					HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	0.0	TOTAL MONTHS	0.00	--	0
BID UNIT	Ton														
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL	Notes							
Material Procurement and Delivery - EMNR - 300	80	\$0.00	\$332,235,000.00	\$0.00		\$0.00	\$332,235,000.00								
							\$0.00								
							\$0.00								
GRAND TOTALS		\$0.00	\$332,235,000.00	\$0.00		\$0.00	\$332,235,000.00								
UNIT PRICES		\$0.00	\$23.00	\$0.00		\$0.00	\$23.00								
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
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					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
					\$0.00							\$0.00			
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST				
					\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE							
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE							
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MTH	\$0.00				
					\$0.00	Sand Habitat Restoration Material	BACKFILL	14,445,000	\$23.00	TON	\$332,235,000.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
					\$0.00						\$0.00				
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$23.00	TOTAL MATERIAL COST		\$332,235,000.00				

ESTIMATE WORKSHEET 81

BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot					Material Procurement and Delivery - TLC - 500					81	
BID DATA			Bid Data Notes			PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	265,166					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
BID UNIT	Ton					12	6	0.0	0.00	--	0		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR		TOTAL	Notes	
Material Procurement and Delivery - TLC - 500	81	\$0.00	\$6,098,815.37			\$0.00			\$0.00		\$6,098,815.37		
											\$0.00		
											\$0.00		
											\$0.00		
GRAND TOTALS		\$0.00	\$6,098,815.37			\$0.00			\$0.00		\$6,098,815.37		
UNIT PRICES		\$0.00	\$23.00			\$0.00			\$0.00		\$23.00		
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00				TOTAL COST		\$0.00		BARE UNIT COST		\$0.00	
\$0.00		\$0.00				\$0.00		0		TOTAL RENTED EQUIP			
\$0.00		\$0.00				\$0.00		0		\$0.00			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
					\$0.00	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MTH	\$0.00		
					\$0.00	Sand Habitat Restoration Material	BACKFILL	265,166	\$23.00	TON	\$6,098,815.37		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST	\$0.00	TOTAL LABOR COST				\$0.00	BARE UNIT COST	\$23.00		TOTAL MATERIAL COST		\$6,098,815.37	
\$0.00	\$0.00	\$0.00				\$0.00	\$23.00	\$0.00		\$6,098,815.37			

ESTIMATE WORKSHEET 82

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.		
March 7, 2018		Penobscot				Material Procurement and Delivery - TLC - 300						82		
BID DATA		Bid Data Notes				PRODUCTION DATA		DAILY UNIT PRODUCTION RATE				DAYS REQ. TO COMPLETE		
TOTAL QUANTITY ON PROPOSAL		265,166				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	--		0		
BID UNIT		Ton				12	6	0.0	0.00					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR	TOTAL		Notes				
Material Procurement and Delivery - TLC - 300	82	\$0.00	\$6,098,815.37	\$0.00			\$0.00	\$6,098,815.37						
								\$0.00						
								\$0.00						
								\$0.00						
GRAND TOTALS		\$0.00	\$6,098,815.37	\$0.00			\$0.00	\$6,098,815.37						
UNIT PRICES		\$0.00	\$23.00	\$0.00			\$0.00	\$23.00						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00	BARE UNIT COST		\$0.00		0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST			
					\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MTH	\$0.00			
					\$0.00	Sand Habitat Restoration Material	BACKFILL	265,166	\$23.00	TON	\$6,098,815.37			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
					\$0.00						\$0.00			
BARE UNIT COST		\$0.00		TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$23.00		TOTAL MATERIAL COST		\$6,098,815.37	

ESTIMATE WORKSHEET 82A

BID DATE	PROJECT LOCATION		DESCRIPTION OF ITEM						ITEM NO.				
March 7, 2018	Penobscot		Material Procurement and Delivery - Amended Cap						82A				
BID DATA		Bid Data Notes			PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
5,174					12	6	0.0	0.00	--	0			
ESTIMATE WORKSHEET		TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes						
ITEM NO.													
Material Procurement and Delivery - Amended Cap		82A	\$0.00	\$17,072,592.29	\$0.00	\$0.00	\$17,072,592.29						
GRAND TOTALS		\$0.00	\$17,072,592.29	\$0.00	\$0.00	\$17,072,592.29							
UNIT PRICES		\$0.00	\$3,300.00	\$0.00	\$0.00	\$3,300.00							
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		TOTAL COST			\$0.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP			\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00		MTH	\$0.00	
					\$0.00	Sedimite	Cap	5,174	\$3,300.00		TON	\$17,072,592.29	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		TOTAL LABOR COST			\$0.00	BARE UNIT COST		\$3,300.00	TOTAL MATERIAL COST			\$17,072,592.29	

ESTIMATE WORKSHEET 83													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018		Penobscot					Loading - Main Channel - Deep - 500						83
BID DATA					PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	BID UNIT	Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
0	CY					12	6	0.0	0.00	7,344	0		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes				
Loading - Main Channel - Deep - 500	83	\$0.00	\$0.00	\$0.00		\$0.00		\$0.00					
								\$0.00					
								\$0.00					
								\$0.00					
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$0.00		\$0.00					
UNIT PRICES		\$1.17	\$0.09	\$1.45		\$0.00		\$2.71					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	0	\$158.89	\$0.00	
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	0	\$31.28	\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST	\$1.45	0	TOTAL RENTED EQUIP			\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	0	\$72.40	\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	3	0	\$53.80	\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00	
					\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00	
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00		MD	\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$1.17	TOTAL LABOR COST		\$0.00	BARE UNIT COST	\$0.09		TOTAL MATERIAL COST			\$0.00	

US District Court – District of Maine
 Alternatives Evaluation Report
 Penobscot River Phase III Engineering Study

ESTIMATE WORKSHEET 84

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM						ITEM NO.					
March 7, 2018	Penobscot					Loading - Main Channel - Deep - 300						84					
BID DATA				Bid Data Notes				PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL	8,959,755					HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	529.1	TOTAL MONTHS	122.19	DAILY UNIT PRODUCTION RATE	7,344	DAYS REQ. TO COMPLETE	3,175
BID UNIT	CY	TOTAL LABOR	TOTAL MATERIAL					TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL		Notes					
ESTIMATE WORKSHEET	ITEM NO.																
Loading - Main Channel - Deep - 300	84	\$11,664,125.77	\$939,023.92				\$14,488,581.23	\$0.00			\$27,091,730.91						
GRAND TOTALS		\$11,664,125.77	\$939,023.92				\$14,488,581.23	\$0.00			\$27,091,730.91						
UNIT PRICES		\$1.30	\$0.10				\$1.62	\$0.00			\$3.02						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST					
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	76188	\$158.89	\$12,105,489.37					
					\$0.00	Cable Arm Hydraulic Clamshell (100	DREDGE		2	76188	\$31.28	\$2,383,091.86					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
BARE UNIT COST		\$0.00			TOTAL COST	\$0.00			BARE UNIT COST	\$1.62	0	TOTAL RENTED EQUIP	\$14,488,581.23				
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST						
Crane Operator	DREDGE	2	76188	\$72.40	\$5,516,293.73	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
Laborer	DREDGE	3	114283	\$53.80	\$6,147,832.03	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						
					\$0.00	PPE Level D	ALL	610.95	\$12.00	MTH	\$7,331.45						
					\$0.00	Per Diem	ALL	15,873	\$51.00	MD	\$809,501.69						
					\$0.00	Misc Safety Supplies	ALL	122.19	\$1,000.00	MD	\$122,190.78						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
BARE UNIT COST		\$1.30			TOTAL LABOR COST	\$11,664,125.77			BARE UNIT COST	\$0.10		TOTAL MATERIAL COST	\$939,023.92				

ESTIMATE WORKSHEET 85

ESTIMATE WORKSHEET 85																		
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.						
March 7, 2018		Penobscot					Loading - Orland River - Deep - 500					85						
BID DATA				Bid Data Notes				PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL	411,128	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	24.3	TOTAL MONTHS	5.61	DAILY UNIT PRODUCTION RATE	7,344	DAYS REQ. TO COMPLETE	146					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes											
Loading - Orland River - Deep - 500	85	\$535,221.55	\$43,088.17	\$664,824.87	\$0.00	\$1,243,134.58												
GRAND TOTALS		\$535,221.55	\$43,088.17	\$664,824.87	\$0.00	\$1,243,134.58												
UNIT PRICES		\$1.30	\$0.10	\$1.62	\$0.00	\$3.02												
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.S.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST						
					\$0.00	150 Ton Barge Mounted Crane	DREDGE			2	3496	\$555,474.01						
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE			2	3496	\$109,350.85						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
BARE UNIT COST		\$0.00			TOTAL COST		\$0.00		BARE UNIT COST			\$1.62	0		TOTAL RENTED EQUIP		\$664,824.87	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST					
Crane Operator	DREDGE	2	3496	\$72.40	\$253,121.35	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE										
Laborer	DREDGE	3	5244	\$53.80	\$282,100.20	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE										
					\$0.00	PPE Level D	ALL	28.03	\$12.00	MTH			\$336.41					
					\$0.00	Per Diem	ALL	728	\$51.00	MD			\$37,144.90					
					\$0.00	Misc Safety Supplies	ALL	5.61	\$1,000.00	MD			\$5,606.86					
					\$0.00								\$0.00					
					\$0.00								\$0.00					
					\$0.00								\$0.00					
					\$0.00								\$0.00					
					\$0.00								\$0.00					
					\$0.00								\$0.00					
					\$0.00								\$0.00					
BARE UNIT COST		\$1.30			TOTAL LABOR COST		\$535,221.55		BARE UNIT COST			\$0.10	TOTAL MATERIAL COST		\$43,088.17			

ESTIMATE WORKSHEET 86													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018		Penobscot					Loading - Orland River - Deep - 300						86
BID DATA		Bid Data Notes					PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	411,128						HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
BID UNIT	CY						12	6	24.3	5.61	7,344	146	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes		
Loading - Orland River - Deep - 300	86	\$535,221.55	\$43,088.17			\$664,824.87		\$0.00		\$1,243,134.58			
GRAND TOTALS		\$535,221.55	\$43,088.17			\$664,824.87		\$0.00		\$1,243,134.58			
UNIT PRICES		\$1.30	\$0.10			\$1.62		\$0.00		\$3.02			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	3496	\$158.89	\$555,474.01	
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	3496	\$31.28	\$109,350.85	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$1.62	0	TOTAL RENTED EQUIP		\$664,824.87	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	3496	\$72.40	\$253,121.35	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	3	5244	\$53.80	\$282,100.20	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	28.03	\$12.00		MTH	\$336.41	
					\$0.00	Per Diem	ALL	728	\$51.00		MD	\$37,144.90	
					\$0.00	Misc Safety Supplies	ALL	5.61	\$1,000.00		MD	\$5,606.86	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$1.30	TOTAL LABOR COST		\$535,221.55	BARE UNIT COST		\$0.10	TOTAL MATERIAL COST				\$43,088.17

ESTIMATE WORKSHEET 87

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018		Penobscot				Loading - Main Channel - Shallow - 500						87	
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	1,802,435	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	95.4	TOTAL MONTHS	22.02	DAILY UNIT PRODUCTION RATE	7,344	DAYS REQ. TO COMPLETE	572
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes						
Loading - Main Channel - Shallow - 500	87	\$2,102,440.74	\$169,257.62	\$2,611,544.49	\$0.00	\$4,883,242.84							
						\$0.00							
						\$0.00							
						\$0.00							
GRAND TOTALS		\$2,102,440.74	\$169,257.62	\$2,611,544.49	\$0.00	\$4,883,242.84							
UNIT PRICES		\$1.17	\$0.09	\$1.45	\$0.00	\$2.71							
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE			2	13733	\$158.89	\$2,181,995.85
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE			2	13733	\$31.28	\$429,548.64
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST	\$0.00	BARE UNIT COST			\$1.45	0	TOTAL RENTED EQUIP	\$2,611,544.49		
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Crane Operator	DREDGE	2	13733	\$72.40	\$994,303.46	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
Laborer	DREDGE	3	20599	\$53.80	\$1,108,137.27	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	PPE Level D	ALL	110.12	\$12.00	MTH	\$1,321.48		
					\$0.00	Per Diem	ALL	2,861	\$51.00	MD	\$145,911.44		
					\$0.00	Misc Safety Supplies	ALL	22.02	\$1,000.00	MD	\$22,024.70		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST		\$1.17	TOTAL LABOR COST	\$2,102,440.74	BARE UNIT COST			\$0.09		TOTAL MATERIAL COST	\$169,257.62		

ESTIMATE WORKSHEET 88														
BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.			
March 7, 2018	Penobscot				Loading - Main Channel - Shallow - 300						88			
BID DATA				PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE					
1,937,083				12	6	102.5	23.67	7,344	615					
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL				
ITEM NO.										Notes				
Loading - Main Channel - Shallow - 300		88		\$2,259,499.93		\$181,901.71		\$2,806,635.39		\$0.00				
										\$5,248,037.03				
										\$0.00				
										\$0.00				
										\$0.00				
GRAND TOTALS		\$2,259,499.93		\$181,901.71		\$2,806,635.39		\$0.00		\$5,248,037.03				
UNIT PRICES		\$1.17		\$0.09		\$1.45		\$0.00		\$2.71				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
						\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	14759	\$158.89	\$2,344,998.06	
						\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	14759	\$31.28	\$461,637.33	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$1.45		0		
												TOTAL RENTED EQUIP		\$2,806,635.39
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator		DREDGE	2	14759	\$72.40	\$1,068,581.18	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer		DREDGE	3	22138	\$53.80	\$1,190,918.75	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
						\$0.00	PPE Level D		ALL	118.35	\$12.00	MTH	\$1,420.20	
						\$0.00	Per Diem		ALL	3,075	\$51.00	MD	\$156,811.50	
						\$0.00	Misc Safety Supplies		ALL	23.67	\$1,000.00	MD	\$23,670.02	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
BARE UNIT COST		\$1.17		TOTAL LABOR COST		\$2,259,499.93		BARE UNIT COST		\$0.09		TOTAL MATERIAL COST		\$181,901.71

ESTIMATE WORKSHEET 89															
BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.				
March 7, 2018	Penobscot				Loading - Orland River - Shallow - 500						89				
BID DATA		Bid Data Notes				PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL	1,556,910	HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE								
BID UNIT	CY	12	6	82.4	19.02	7,344	494								
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes			
Loading - Orland River - Shallow - 500	89	\$1,816,048.83		\$146,201.55		\$2,255,803.10		\$0.00		\$4,218,053.48					
GRAND TOTALS		\$1,816,048.83		\$146,201.55		\$2,255,803.10		\$0.00		\$4,218,053.48					
UNIT PRICES		\$1.17		\$0.09		\$1.45		\$0.00		\$2.71					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST		
					\$0.00		150 Ton Barge Mounted Crane	DREDGE		2	11862	\$158.89	\$1,884,767.04		
					\$0.00		Cable Arm Hydraulic Clamshell (100	DREDGE		2	11862	\$31.28	\$371,036.05		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$1.45		TOTAL RENTED EQUIP		\$2,255,803.10	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST		MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	11862	\$72.40	\$858,860.66		Fuel	ALL							
Laborer	DREDGE	3	17793	\$53.80	\$957,188.17		Maintenance/Grease	ALL							
					\$0.00		PPE Level D	ALL	95.12	\$12.00	MTH		\$1,141.47		
					\$0.00		Per Diem	ALL	2,471	\$51.00	MD		\$126,035.56		
					\$0.00		Misc Safety Supplies	ALL	19.02	\$1,000.00	MD		\$19,024.52		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
BARE UNIT COST		\$1.17		TOTAL LABOR COST		\$1,816,048.83		BARE UNIT COST		\$0.09		TOTAL MATERIAL COST		\$146,201.55	

ESTIMATE WORKSHEET 90																
BID DATE		PROJECT LOCATION						DESCRIPTION OF ITEM					ITEM NO.			
March 7, 2018		Penobscot						Loading - Orland River - Shallow - 300					90			
BID DATA				PRODUCTION DATA					Notes							
TOTAL QUANTITY ON PROPOSAL		1,556,910		HOURS PER DAY		DAYS PER WEEK		TOTAL WEEKS		TOTAL MONTHS		DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
BID UNIT		CY		12		6		82.4		19.02		7,344		494		
ESTIMATE WORKSHEET		ITEM NO.		TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes		
Loading - Orland River - Shallow - 300		90		\$1,816,048.83		\$146,201.55		\$2,255,803.10		\$0.00		\$4,218,053.48				
GRAND TOTALS		\$1,816,048.83		\$146,201.55		\$2,255,803.10		\$0.00		\$4,218,053.48						
UNIT PRICES		\$1.17		\$0.09		\$1.45		\$0.00		\$2.71						
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		RENTAL EQUIP		WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
						\$0.00		150 Ton Barge Mounted Crane		DREDGE		2	11862	\$158.89	\$1,884,767.04	
						\$0.00		Cable Arm Hydraulic Clamshell (10.0		DREDGE		2	11862	\$31.28	\$371,036.05	
						\$0.00									\$0.00	
						\$0.00									\$0.00	
						\$0.00									\$0.00	
						\$0.00									\$0.00	
						\$0.00									\$0.00	
						\$0.00									\$0.00	
						\$0.00									\$0.00	
						\$0.00									\$0.00	
						\$0.00									\$0.00	
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$1.45		0		TOTAL RENTED EQUIP		\$2,255,803.10
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRRLY RATE	TOTAL COST		MATERIAL / SERVICES				WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Crane Operator		DREDGE	2	11862	\$72.40	\$858,860.66		Fuel				ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
Laborer		DREDGE	3	17793	\$53.80	\$957,188.17		Maintenance/Grease				ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
						\$0.00		PPE Level D				ALL	95.12	\$12.00	MTH	\$1,141.47
						\$0.00		Per Diem				ALL	2,471	\$51.00	MD	\$126,035.56
						\$0.00		Misc Safety Supplies				ALL	19.02	\$1,000.00	MD	\$19,024.52
						\$0.00										\$0.00
						\$0.00										\$0.00
						\$0.00										\$0.00
						\$0.00										\$0.00
						\$0.00										\$0.00
						\$0.00										\$0.00
BARE UNIT COST		\$1.17		TOTAL LABOR COST		\$1,816,048.83		BARE UNIT COST		\$0.09		TOTAL MATERIAL COST		\$146,201.55		

ESTIMATE WORKSHEET 91

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.				
March 7, 2018		Penobscot				Loading - Mendall Marsh - Shallow - 500						91				
BID DATA					PRODUCTION DATA											
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE						
0					12	6	0.0	0.00	7,344	0						
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes							
Loading - Mendall Marsh - Shallow - 500	91	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00								
								\$0.00								
								\$0.00								
								\$0.00								
GRAND TOTALS		\$0.00	\$0.00			\$0.00		\$0.00								
UNIT PRICES		\$1.17	\$0.09			\$1.45		\$0.00								
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST				
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	0	\$158.89	\$0.00				
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	0	\$31.28	\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
BARE UNIT COST		\$0.00			TOTAL COST		\$0.00			BARE UNIT COST			\$1.45	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST				
Crane Operator	DREDGE	2	0	\$72.40	\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE							
Laborer	DREDGE	3	0	\$53.80	\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE							
					\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00				
					\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00				
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00		MD	\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
					\$0.00							\$0.00				
BARE UNIT COST		\$1.17			TOTAL LABOR COST		\$0.00			BARE UNIT COST		\$0.09	TOTAL MATERIAL COST		\$0.00	

ESTIMATE WORKSHEET 92

ESTIMATE WORKSHEET 92																					
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM						ITEM NO.									
March 7, 2018	Penobscot					Loading - Mendall Marsh - Shallow - 300						92									
BID DATA			Bid Data Notes			PRODUCTION DATA															
TOTAL QUANTITY ON PROPOSAL	568,360					HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	30.1	TOTAL MONTHS	6.95	DAILY UNIT PRODUCTION RATE	7,344	DAYS REQ. TO COMPLETE	180				
BID UNIT	CY				TOTAL LABOR				TOTAL MATERIAL				TOTAL RENTED EQUIP				TOTAL SUB-CONTRACTOR		TOTAL		Notes
ESTIMATE WORKSHEET	ITEM NO.				TOTAL LABOR				TOTAL MATERIAL				TOTAL RENTED EQUIP				TOTAL SUB-CONTRACTOR		TOTAL		Notes
Loading - Mendall Marsh - Shallow - 300	92				\$662,960.25				\$53,371.81				\$823,495.36				\$0.00	\$1,539,827.43			
GRAND TOTALS					\$662,960.25				\$53,371.81				\$823,495.36				\$0.00	\$1,539,827.43			
UNIT PRICES					\$1.17				\$0.09				\$1.45				\$0.00	\$2.71			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST									
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	4330	\$158.89	\$688,046.28									
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	4330	\$31.28	\$135,449.09									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
BARE UNIT COST		\$0.00			TOTAL COST			\$0.00			BARE UNIT COST		\$1.45			0		TOTAL RENTED EQUIP		\$823,495.36	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST									
Crane Operator	DREDGE	2	4330	\$72.40	\$313,532.58	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE												
Laborer	DREDGE	3	6496	\$53.80	\$349,427.67	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE												
					\$0.00	PPE Level D		ALL	34.73	\$12.00	MTH	\$416.70									
					\$0.00	Per Diem		ALL	902	\$51.00	MD	\$46,010.09									
					\$0.00	Misc Safety Supplies		ALL	6.95	\$1,000.00	MD	\$6,945.02									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
					\$0.00							\$0.00									
BARE UNIT COST		\$1.17			TOTAL LABOR COST			\$662,960.25			BARE UNIT COST		\$0.09			TOTAL MATERIAL COST		\$53,371.81			

ESTIMATE WORKSHEET 93													
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018		Penobscot				Loading - EMNR - 500						93	
BID DATA				PRODUCTION DATA									
Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE			
TOTAL QUANTITY ON PROPOSAL		3,900,000		12	6	177.0	40.88	7,344		1,062			
ESTIMATE WORKSHEET	BID UNIT	TOTAL LABOR				TOTAL MATERIAL				TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes
Item No.													
Loading - EMNR - 500	93	\$3,902,442.81				\$314,167.32				\$4,847,415.12	\$0.00	\$9,064,025.25	
												\$0.00	
												\$0.00	
												\$0.00	
GRAND TOTALS		\$3,902,442.81				\$314,167.32				\$4,847,415.12	\$0.00	\$9,064,025.25	
UNIT PRICES		\$1.00				\$0.08				\$1.24	\$0.00	\$2.32	
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	25490	\$158.89	\$4,050,108.93	
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	25490	\$31.28	\$797,306.19	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
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					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$0.00	TOTAL COST \$0.00				BARE UNIT COST	\$1.24	0	TOTAL RENTED EQUIP \$4,847,415.12				
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Crane Operator	DREDGE	2	25490	\$72.40	\$1,845,575.16	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Laborer	DREDGE	3	38235	\$53.80	\$2,056,867.65	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	PPE Level D	ALL	204.41	\$12.00	MTH	\$2,452.87		
					\$0.00	Per Diem	ALL	5,310	\$51.00	MD	\$270,833.33		
					\$0.00	Misc Safety Supplies	ALL	40.88	\$1,000.00	MD	\$40,881.12		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST	\$1.00	TOTAL LABOR COST \$3,902,442.81				BARE UNIT COST	\$0.08	TOTAL MATERIAL COST \$314,167.32					

ESTIMATE WORKSHEET 94

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot					Loading - EMNR - 300					94		
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	BID UNIT	HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE						
10,700,000	CY	12	6	485.7	112.16	7,344	2,914						
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes						
Loading - EMNR - 300	94	\$10,706,702.07	\$861,946.24	\$13,299,318.42	\$0.00	\$24,867,966.72							
GRAND TOTALS		\$10,706,702.07	\$861,946.24	\$13,299,318.42	\$0.00	\$24,867,966.72							
UNIT PRICES		\$1.00	\$0.08	\$1.24	\$0.00	\$2.32							
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	69935	\$158.89	\$11,111,837.33	
					\$0.00	Cable Arm Hydraulic Clamshell (100	DREDGE		2	69935	\$31.28	\$2,187,481.09	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00				TOTAL COST	\$1.24		0		TOTAL RENTED EQUIP		\$13,299,318.42
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	69935	\$72.40	\$5,063,501.09	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	3	104902	\$53.80	\$5,643,200.98	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	560.81	\$12.00		MTH	\$6,729.66	
					\$0.00	Per Diem	ALL	14,570	\$51.00		MD	\$743,055.56	
					\$0.00	Misc Safety Supplies	ALL	112.16	\$1,000.00		MD	\$112,161.02	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$1.00				TOTAL LABOR COST	\$0.08		TOTAL MATERIAL COST		\$861,946.24		

ESTIMATE WORKSHEET 95

BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot				Loading - TLC - 500					95		
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	196,419					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
BID UNIT	CY					12	6	74.4	17.19	7,344	447	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes	
Loading - TLC - 500	95	\$1,641,258.71		\$132,130.02		\$2,038,687.74		\$0.00		\$3,812,076.47		
										\$0.00		
										\$0.00		
										\$0.00		
GRAND TOTALS		\$1,641,258.71		\$132,130.02		\$2,038,687.74		\$0.00		\$3,812,076.47		
UNIT PRICES		\$8.36		\$0.67		\$10.38		\$0.00		\$19.41		
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	10720	\$158.89	\$1,703,362.97
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	10720	\$31.28	\$335,324.77
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$0.00	TOTAL COST				\$0.00	BARE UNIT COST	\$10.38	0	TOTAL RENTED EQUIP		\$2,038,687.74
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Crane Operator	DREDGE	2	10720	\$72.40	\$776,197.49	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	3	16081	\$53.80	\$865,061.22	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	85.97	\$12.00	MTH		\$1,031.61
					\$0.00	Per Diem	ALL	2,233	\$51.00	MD		\$113,904.95
					\$0.00	Misc Safety Supplies	ALL	17.19	\$1,000.00	MD		\$17,193.46
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$8.36	TOTAL LABOR COST				\$1,641,258.71	BARE UNIT COST	\$0.67	TOTAL MATERIAL COST		\$132,130.02	

ESTIMATE WORKSHEET 96												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot				Loading - TLC - 300					96	
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	196,419	HOURS PER DAY		DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
BID UNIT	CY	12		6	74.4	17.19	7,344	447				
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
Loading - TLC - 300	96	\$1,641,258.71	\$132,130.02	\$2,038,687.74		\$0.00		\$3,812,076.47				
GRAND TOTALS		\$1,641,258.71	\$132,130.02	\$2,038,687.74		\$0.00		\$3,812,076.47				
UNIT PRICES		\$8.36	\$0.67	\$10.38		\$0.00		\$19.41				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	10720	\$158.89	\$1,703,362.97
					\$0.00	Cable Arm Hydraulic Clamshell (100	DREDGE		2	10720	\$31.28	\$335,324.77
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00			\$0.00	BARE UNIT COST		\$10.38	0	TOTAL RENTED EQUIP		\$2,038,687.74
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	10720	\$72.40	\$776,197.49	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	3	16081	\$53.80	\$865,061.22	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	85.97	\$12.00	MTH	\$1,031.61	
					\$0.00	Per Diem	ALL	2,233	\$51.00	MD	\$113,904.95	
					\$0.00	Misc Safety Supplies	ALL	17.19	\$1,000.00	MD	\$17,193.46	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$8.36			\$1,641,258.71	BARE UNIT COST		\$0.67		TOTAL MATERIAL COST		\$132,130.02

ESTIMATE WORKSHEET 96A													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot					Loading - Amended Cap					96A	
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	9,238	HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	10.5	TOTAL MONTHS	2.42	DAILY UNIT PRODUCTION RATE	7,344	DAYS REQ. TO COMPLETE	63
BID UNIT	CY	TOTAL LABOR				TOTAL RENTED EQUIP				TOTAL SUB-CONTRACTOR			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL					TOTAL	Notes				
Loading - Amended Cap	96A	\$230,856.26	\$18,585.15					\$286,757.85	\$0.00	\$536,199.26			
										\$0.00			
										\$0.00			
										\$0.00			
GRAND TOTALS		\$230,856.26	\$18,585.15					\$286,757.85	\$0.00	\$536,199.26			
UNIT PRICES		\$24.99	\$2.01					\$31.04	\$0.00	\$58.04			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE			2	1508	\$158.89	\$239,591.72
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE			2	1508	\$31.28	\$47,166.13
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00			TOTAL COST	\$0.00			BARE UNIT COST	\$31.04		TOTAL RENTED EQUIP	\$286,757.85
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Crane Operator	DREDGE	2	1508	\$72.40	\$109,178.43	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	3	2262	\$53.80	\$121,677.83	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D		ALL	12.09	\$12.00	MTH	\$145.10	
					\$0.00	Per Diem		ALL	314	\$51.00	MD	\$16,021.65	
					\$0.00	Misc Safety Supplies		ALL	2.42	\$1,000.00	MD	\$2,418.40	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$24.99			TOTAL LABOR COST	\$230,856.26			BARE UNIT COST	\$2.01		TOTAL MATERIAL COST	\$18,585.15

ESTIMATE WORKSHEET 97														
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.		
March 7, 2018		Penobscot				Backfilling - Main Channel - Deep - 500						97		
BID DATA			Bid Data Notes			PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL						HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
0						12	6	0.0	0.00	2,822		0		
ESTIMATE WORKSHEET		ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR			TOTAL	Notes		
Backfilling - Main Channel - Deep - 500		97	\$0.00	\$0.00	\$0.00			\$0.00			\$0.00			
GRAND TOTALS			\$0.00	\$0.00	\$0.00			\$0.00			\$0.00			
UNIT PRICES			\$3.95	\$0.32	\$3.59			\$0.00			\$7.87			
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
						\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	0	\$158.89	\$0.00	
						\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	0	\$31.28	\$0.00	
						\$0.00	Dredge Tender (Push Boat)	DREDGE BARGE		4	0	\$71.67	\$0.00	
						\$0.00	Hopper Barge	DREDGE/TRANSPORT		6	0	\$41.67	\$0.00	
						\$0.00	Workboat	DREDGE/TRANSPORT		4	0	\$6.64	\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
BARE UNIT COST			\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$3.59	0	TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Crane Operator	DREDGE		2	0	\$72.40	\$0.00	Fuel	ALL						FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE
Laborer	DREDGE		4	0	\$53.80	\$0.00	Maintenance/Grease	ALL						FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE
Deckhand	TRANSPORT		4	0	\$45.02	\$0.00	PPE Level D	ALL		0.00	\$12.00	MTH	\$0.00	
Boat Operator	TRANSPORT		4	0	\$62.23	\$0.00	Per Diem	ALL		0	\$51.00	MD	\$0.00	
Tug Operator	TRANSPORT		4	0	\$42.04	\$0.00	Misc Safety Supplies	ALL		0.00	\$1,000.00	MD	\$0.00	
Foreman	DREDGE		1	0	\$79.33	\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
BARE UNIT COST			\$3.95	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.32	TOTAL MATERIAL COST			\$0.00	

ESTIMATE WORKSHEET 98

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM							ITEM NO.
March 7, 2018	Penobscot					Backfilling - Main Channel - Deep - 300							98
BID DATA					PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	8,959,755	Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
BID UNIT	CY				12	6	529.1	122.19	2,822	3,175			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL		TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Backfilling - Main Channel - Deep - 300	98	\$39,483,992.47	\$3,226,156.71		\$35,944,079.69	\$0.00	\$78,654,228.87						
							\$0.00						
							\$0.00						
							\$0.00						
GRAND TOTALS		\$39,483,992.47	\$3,226,156.71		\$35,944,079.69	\$0.00	\$78,654,228.87						
UNIT PRICES		\$4.41	\$0.36		\$4.01	\$0.00	\$8.78						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	76188	\$158.89	\$12,105,489.37	
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	76188	\$31.28	\$2,383,091.86	
					\$0.00	Dredge Tender (Push Boat)	DREDGE BARGE		4	152377	\$71.67	\$10,920,336.56	
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		6	228565	\$41.67	\$9,523,549.33	
					\$0.00	Workboat	DREDGE/TRANSPORT		4	152377	\$6.64	\$1,011,612.57	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$4.01	0	TOTAL RENTED EQUIP		\$35,944,079.69	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Crane Operator	DREDGE	2	76188	\$72.40	\$5,516,293.73	Fuel	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
Laborer	DREDGE	4	152377	\$53.80	\$8,197,109.38	Maintenance/Grease	ALL				FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
Deckhand	TRANSPORT	4	152377	\$45.02	\$6,860,279.81	PPE Level D	ALL	2,321.62	\$12.00	MTH	\$27,859.50		
Boat Operator	TRANSPORT	4	152377	\$62.23	\$9,482,407.60	Per Diem	ALL	60,316	\$51.00	MD	\$3,076,106.43		
Tug Operator	TRANSPORT	4	152377	\$42.04	\$6,405,762.31	Misc Safety Supplies	ALL	122.19	\$1,000.00	MD	\$122,190.78		
Foreman	DREDGE	1	38094	\$79.33	\$3,022,139.65						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST		\$4.41	TOTAL LABOR COST		\$39,483,992.47	BARE UNIT COST		\$0.36		TOTAL MATERIAL COST		\$3,226,156.71	

ESTIMATE WORKSHEET 99

BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.
March 7, 2018		Penobscot					Backfilling - Orland River - Deep - 500					99
BID DATA		Bid Data Notes					PRODUCTION DATA					
TOTAL QUANTITY ON PROPOSAL	BID UNIT	HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE					
411,128	CY	12	6	24.3	5.61	2,822	146					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL		Notes			
	99	\$1,811,767.46	\$148,035.83	\$1,649,334.58		\$0.00	\$3,609,137.87					
GRAND TOTALS		\$1,811,767.46	\$148,035.83	\$1,649,334.58		\$0.00	\$3,609,137.87					
UNIT PRICES		\$4.41	\$0.36	\$4.01		\$0.00	\$8.78					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	150 Ton Barge Mounted Crane	DREDGE		2	3496	\$158.89	\$555,474.01
					\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE		2	3496	\$31.28	\$109,350.85
					\$0.00	Dredge Tender (Push Boat)	DREDGE BARGE		4	6992	\$71.67	\$501,091.94
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		6	10488	\$41.67	\$436,998.79
					\$0.00	Workboat	DREDGE/TRANSPORT		4	6992	\$6.64	\$46,418.98
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$4.01	0	TOTAL RENTED EQUIP		\$1,649,334.58
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Crane Operator	DREDGE	2	3496	\$72.40	\$253,121.35	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
Laborer	DREDGE	4	6992	\$53.80	\$376,133.60	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
Deckhand	TRANSPORT	4	6992	\$45.02	\$314,791.66	PPE Level D	ALL	106.53	\$12.00		MTH	\$1,278.36
Boat Operator	TRANSPORT	4	6992	\$62.23	\$435,110.95	Per Diem	ALL	2,768	\$51.00		MD	\$141,150.61
Tug Operator	TRANSPORT	4	6992	\$42.04	\$293,935.62	Misc Safety Supplies	ALL	5.61	\$1,000.00		MD	\$5,606.86
Foreman	DREDGE	1	1748	\$79.33	\$138,674.28							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$4.41	TOTAL LABOR COST		\$1,811,767.46	BARE UNIT COST		\$0.36	TOTAL MATERIAL COST			\$148,035.83

ESTIMATE WORKSHEET 100																
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.				
March 7, 2018		Penobscot					Backfilling - Orland River - Deep - 300					100				
BID DATA				PRODUCTION DATA												
TOTAL QUANTITY ON PROPOSAL	411,128	Bid Data Notes			HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	24.3	TOTAL MONTHS	5.61	DAILY UNIT PRODUCTION RATE	2,822	DAYS REQ. TO COMPLETE	146
BID UNIT	CY	ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes		
Backfilling - Orland River - Deep - 300	100			\$1,811,767.46		\$148,035.83		\$1,649,334.58		\$0.00		\$3,609,137.87				
GRAND TOTALS				\$1,811,767.46		\$148,035.83		\$1,649,334.58		\$0.00		\$3,609,137.87				
UNIT PRICES				\$4.41		\$0.36		\$4.01		\$0.00		\$8.78				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST			
						\$0.00	150 Ton Barge Mounted Crane	DREDGE			2	3496	\$158.89	\$555,474.01		
						\$0.00	Cable Arm Hydraulic Clamshell (10.0	DREDGE			2	3496	\$31.28	\$109,350.85		
						\$0.00	Dredge Tender (Push Boat)	DREDGE BARGE			4	6992	\$71.67	\$501,091.94		
						\$0.00	Hopper Barge	DREDGE/TRANSPORT			6	10488	\$41.67	\$436,998.79		
						\$0.00	Workboat	DREDGE/TRANSPORT			4	6992	\$6.64	\$46,418.98		
						\$0.00							\$0.00			
						\$0.00							\$0.00			
						\$0.00							\$0.00			
						\$0.00							\$0.00			
						\$0.00							\$0.00			
						\$0.00							\$0.00			
						\$0.00							\$0.00			
						\$0.00							\$0.00			
						\$0.00							\$0.00			
						\$0.00							\$0.00			
						\$0.00							\$0.00			
BARE UNIT COST			\$0.00	TOTAL COST			\$0.00	BARE UNIT COST		\$4.01	0	TOTAL RENTED EQUIP		\$1,649,334.58		
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Crane Operator		DREDGE	2	3496	\$72.40	\$253,121.35	Fuel		ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Laborer		DREDGE	4	6992	\$53.80	\$376,133.60	Maintenance/Grease		ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Deckhand		TRANSPORT	4	6992	\$45.02	\$314,791.66	PPE Level D		ALL	106.53	\$12.00	MTH		\$1,278.36		
Boat Operator		TRANSPORT	4	6992	\$62.23	\$435,110.95	Per Diem		ALL	2,768	\$51.00	MD		\$141,150.61		
Tug Operator		TRANSPORT	4	6992	\$42.04	\$293,935.62	Misc Safety Supplies		ALL	5.61	\$1,000.00	MD		\$5,606.86		
Foreman		DREDGE	1	1748	\$79.33	\$138,674.28								\$0.00		
						\$0.00								\$0.00		
						\$0.00								\$0.00		
						\$0.00								\$0.00		
						\$0.00								\$0.00		
						\$0.00								\$0.00		
						\$0.00								\$0.00		
						\$0.00								\$0.00		
						\$0.00								\$0.00		
						\$0.00								\$0.00		
						\$0.00								\$0.00		
BARE UNIT COST			\$4.41	TOTAL LABOR COST			\$1,811,767.46	BARE UNIT COST		\$0.36	TOTAL MATERIAL COST			\$148,035.83		

ESTIMATE WORKSHEET 101

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018		Penobscot				Backfilling - Main Channel - Shallow - 500						101
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	1,802,435					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
BID UNIT	CY					12	6	95.4	22.02	3,150	572	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL		Notes			
Backfilling - Main Channel - Shallow - 500	101	\$18,480,857.79	\$1,523,800.46	\$15,720,327.99	\$0.00	\$35,724,986.23						
						\$0.00						
						\$0.00						
						\$0.00						
GRAND TOTALS		\$18,480,857.79	\$1,523,800.46	\$15,720,327.99	\$0.00	\$35,724,986.23						
UNIT PRICES		\$10.25	\$0.85	\$8.72	\$0.00	\$19.82						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	34332	\$103.33	\$3,547,650.59
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	34332	\$31.28	\$1,073,871.61
					\$0.00	Dredge Barge	DREDGE BARGE		5	34332	\$41.67	\$1,430,504.27
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	68664	\$71.67	\$4,920,934.69
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	102996	\$41.67	\$4,291,512.81
					\$0.00	Workboat	DREDGE/TRANSPORT		10	68664	\$6.64	\$455,854.03
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$8.72	0	TOTAL RENTED EQUIP		\$15,720,327.99
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Dredge Operator	DREDGE	5	34332	\$71.24	\$2,445,704.54	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
Laborer	DREDGE	10	68664	\$53.80	\$3,693,790.90	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
Deckhand	TRANSPORT	10	68664	\$45.02	\$3,091,387.22	PPE Level D	ALL	1,123.26	\$12.00	MTH		\$13,479.12
Boat Operator	TRANSPORT	10	68664	\$62.23	\$4,272,973.47	Per Diem	ALL	29,182	\$51.00	MD		\$1,488,296.64
Tug Operator	TRANSPORT	10	68664	\$42.04	\$2,886,572.02	Misc Safety Supplies	ALL	22.02	\$1,000.00	MD		\$22,024.70
Deckhand	DREDGE	5	34332	\$45.02	\$1,545,693.61							\$0.00
Foreman	DREDGE	1	6866	\$79.33	\$544,736.03							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$10.25	TOTAL LABOR COST		\$18,480,857.79	BARE UNIT COST		\$0.85	TOTAL MATERIAL COST			\$1,523,800.46

ESTIMATE WORKSHEET 102

BID DATE	PROJECT LOCATION	DESCRIPTION OF ITEM					ITEM NO.					
March 7, 2018	Penobscot	Backfilling - Main Channel - Shallow - 300					102					
BID DATA		PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL	BID UNIT	Bid Data Notes		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
1,937,083	CY			12	6	102.5	23.67	3,150	615			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes					
	102	\$19,861,438.24	\$1,637,633.33	\$16,894,687.85	\$0.00	\$38,393,759.41						
						\$0.00						
						\$0.00						
						\$0.00						
						\$0.00						
						\$0.00						
GRAND TOTALS		\$19,861,438.24	\$1,637,633.33	\$16,894,687.85	\$0.00	\$38,393,759.41						
UNIT PRICES		\$10.25	\$0.85	\$8.72	\$0.00	\$19.82						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	36897	\$103.33	\$3,812,671.68
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	36897	\$31.28	\$1,154,093.33
					\$0.00	Dredge Barge	DREDGE BARGE		5	36897	\$41.67	\$1,537,367.61
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	73794	\$71.67	\$5,288,544.58
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	110690	\$41.67	\$4,612,102.84
					\$0.00	Workboat	DREDGE/TRANSPORT		10	73794	\$6.64	\$489,907.81
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$8.72	0	TOTAL RENTED EQUIP		\$16,894,687.85
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Dredge Operator	DREDGE	5	36897	\$71.24	\$2,628,406.68	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	10	73794	\$53.80	\$3,969,729.15	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Deckhand	TRANSPORT	10	73794	\$45.02	\$3,322,323.94	PPE Level D	ALL	1,207.17	\$12.00	MTH	\$14,486.05	
Boat Operator	TRANSPORT	10	73794	\$62.23	\$4,592,178.53	Per Diem	ALL	31,362	\$51.00	MD	\$1,599,477.26	
Tug Operator	TRANSPORT	10	73794	\$42.04	\$3,102,208.38	Misc Safety Supplies	ALL	23.67	\$1,000.00	MD	\$23,670.02	
Deckhand	DREDGE	5	36897	\$45.02	\$1,661,161.97						\$0.00	
Foreman	DREDGE	1	7379	\$79.33	\$585,429.59						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$10.25	TOTAL LABOR COST		\$19,861,438.24	BARE UNIT COST		\$0.85	TOTAL MATERIAL COST		\$1,637,633.33	

ESTIMATE WORKSHEET 103

BID DATE March 7, 2018		PROJECT LOCATION Penobscot				DESCRIPTION OF ITEM Backfilling - Orland River - Shallow - 500					ITEM NO. 103	
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL 1,556,910 CY						HOURS PER DAY 12	DAYS PER WEEK 6	TOTAL WEEKS 82.4	TOTAL MONTHS 19.02	DAILY UNIT PRODUCTION RATE 3,150	DAYS REQ. TO COMPLETE 494	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Backfilling - Orland River - Shallow - 500	103	\$15,963,417.96	\$1,316,230.23	\$13,578,924.16	\$0.00	\$30,858,572.35						
						\$0.00						
						\$0.00						
						\$0.00						
GRAND TOTALS		\$15,963,417.96	\$1,316,230.23	\$13,578,924.16	\$0.00	\$30,858,572.35						
UNIT PRICES		\$10.25	\$0.85	\$8.72	\$0.00	\$19.82						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	29655	\$103.33	\$3,064,393.97
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	29655	\$31.28	\$927,590.13
					\$0.00	Dredge Barge	DREDGE BARGE		5	29655	\$41.67	\$1,235,642.73
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	59311	\$71.67	\$4,250,610.99
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	88966	\$41.67	\$3,706,928.19
					\$0.00	Workboat	DREDGE/TRANSPORT		10	59311	\$6.64	\$393,758.15
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST	\$0.00	\$0.00	BARE UNIT COST	\$8.72	0	TOTAL RENTED EQUIP	\$13,578,924.16		
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Dredge Operator	DREDGE	5	29655	\$71.24	\$2,112,553.66	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	10	59311	\$53.80	\$3,190,627.23	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Deckhand	TRANSPORT	10	59311	\$45.02	\$2,670,282.23	PPE Level D	ALL	970.25	\$12.00	MTH	\$11,643.01	
Boat Operator	TRANSPORT	10	59311	\$62.23	\$3,690,914.26	Per Diem	ALL	25,207	\$51.00	MD	\$1,285,562.70	
Tug Operator	TRANSPORT	10	59311	\$42.04	\$2,493,366.71	Misc Safety Supplies	ALL	19.02	\$1,000.00	MD	\$19,024.52	
Deckhand	DREDGE	5	29655	\$45.02	\$1,335,141.12						\$0.00	
Foreman	DREDGE	1	5931	\$79.33	\$470,532.75						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$10.25	TOTAL LABOR COST	\$15,963,417.96	\$0.85	TOTAL MATERIAL COST	\$1,316,230.23					

ESTIMATE WORKSHEET 104												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018		Penobscot				Backfilling - Orland River - Shallow - 300						104
BID DATA				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1,556,910					12	6	82.4	19.02	3,150	494		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Backfilling - Orland River - Shallow - 300	104	\$15,963,417.96	\$1,316,230.23	\$13,578,924.16	\$0.00	\$30,858,572.35						
						\$0.00						
						\$0.00						
						\$0.00						
						\$0.00						
GRAND TOTALS		\$15,963,417.96	\$1,316,230.23	\$13,578,924.16	\$0.00	\$30,858,572.35						
UNIT PRICES		\$10.25	\$0.85	\$8.72	\$0.00	\$19.82						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	29655	\$103.33	\$3,064,393.97
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	29655	\$31.28	\$927,590.13
					\$0.00	Dredge Barge	DREDGE BARGE		5	29655	\$41.67	\$1,235,642.73
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	59311	\$71.67	\$4,250,610.99
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	88966	\$41.67	\$3,706,928.19
					\$0.00	Workboat	DREDGE/TRANSPORT		10	59311	\$6.64	\$393,758.15
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	\$0.00	\$0.00	\$0.00	BARE UNIT COST		\$8.72	0	\$0.00	TOTAL RENTED EQUIP	\$13,578,924.16
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Dredge Operator	DREDGE	5	29655	\$71.24	\$2,112,553.68	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	10	59311	\$53.80	\$3,190,627.23	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Deckhand	TRANSPORT	10	59311	\$45.02	\$2,670,282.23	PPE Level D	ALL	970.25	\$12.00	MTH	\$11,643.01	
Boat Operator	TRANSPORT	10	59311	\$62.23	\$3,690,914.28	Per Diem	ALL	25,207	\$51.00	MD	\$1,285,562.70	
Tug Operator	TRANSPORT	10	59311	\$42.04	\$2,493,366.71	Misc Safety Supplies	ALL	19.02	\$1,000.00	MD	\$19,024.52	
Deckhand	DREDGE	5	29655	\$45.02	\$1,335,141.12						\$0.00	
Foreman	DREDGE	1	5931	\$79.33	\$470,532.75						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$10.25	TOTAL LABOR COST	\$15,963,417.96	BARE UNIT COST	\$0.85	TOTAL MATERIAL COST	\$1,316,230.23				

ESTIMATE WORKSHEET 105

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM				ITEM NO.				
March 7, 2018		Penobscot				Backfilling - Mendall Marsh - Shallow - 500				105				
BID DATA			Bid Data Notes			PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL						HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
0						12	6	0.0	0.00	3.150	0			
ESTIMATE WORKSHEET		ITEM NO.	TOTAL LABOR		TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
Backfilling - Mendall Marsh - Shallow - 500		105	\$0.00		\$0.00	\$0.00		\$0.00		\$0.00				
										\$0.00				
										\$0.00				
										\$0.00				
										\$0.00				
GRAND TOTALS			\$0.00		\$0.00	\$0.00		\$0.00		\$0.00				
UNIT PRICES			\$10.25		\$0.85	\$8.72		\$0.00		\$19.82				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP		WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
						\$0.00	HD Long Reach Excavator (Dredge)		DREDGE		5	0	\$103.33	\$0.00
						\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)		DREDGE		5	0	\$31.28	\$0.00
						\$0.00	Dredge Barge		DREDGE BARGE		5	0	\$41.67	\$0.00
						\$0.00	Dredge Tender (Push Boat)		DREDGE/TRANSPORT		10	0	\$71.67	\$0.00
						\$0.00	Hopper Barge		DREDGE/TRANSPORT		15	0	\$41.67	\$0.00
						\$0.00	Workboat		DREDGE/TRANSPORT		10	0	\$6.64	\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
BARE UNIT COST			\$0.00			\$0.00	BARE UNIT COST		\$8.72		0		TOTAL RENTED EQUIP	\$0.00
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Dredge Operator		DREDGE	5	0	\$71.24	\$0.00	Fuel			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
Laborer		DREDGE	10	0	\$53.80	\$0.00	Maintenance/Grease			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
Deckhand		TRANSPORT	10	0	\$45.02	\$0.00	PPE Level D			ALL	0.00	\$12.00	MTH	\$0.00
Boat Operator		TRANSPORT	10	0	\$62.23	\$0.00	Per Diem			ALL	0	\$51.00	MD	\$0.00
Tug Operator		TRANSPORT	10	0	\$42.04	\$0.00	Misc Safety Supplies			ALL	0.00	\$1,000.00	MD	\$0.00
Deckhand		DREDGE	5	0	\$45.02	\$0.00								\$0.00
Foreman		DREDGE	1	0	\$79.33	\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
BARE UNIT COST			\$10.25			\$0.00	BARE UNIT COST		\$0.85				TOTAL MATERIAL COST	\$0.00

ESTIMATE WORKSHEET 106

BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM				ITEM NO.			
March 7, 2018	Penobscot				Backfilling - Mendall Marsh - Shallow - 300				106			
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	568,360					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
BID UNIT	CY					12	6	30.1	6.95	3,150	180	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Backfilling - Mendall Marsh - Shallow - 300	106	\$5,827,547.94	\$480,498.27	\$4,957,073.21	\$0.00	\$11,265,119.42						
GRAND TOTALS		\$5,827,547.94	\$480,498.27	\$4,957,073.21	\$0.00	\$11,265,119.42						
UNIT PRICES		\$10.25	\$0.85	\$8.72	\$0.00	\$19.82						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
					\$0.00	HD Long Reach Excavator (Dredge)	DREDGE		5	10826	\$103.33	\$1,118,676.64
					\$0.00	Cable Arm Hydraulic Clamshell (10.0 CY)	DREDGE		5	10826	\$31.28	\$338,622.72
					\$0.00	Dredge Barge	DREDGE BARGE		5	10826	\$41.67	\$451,079.29
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		10	21652	\$71.67	\$1,551,712.76
					\$0.00	Hopper Barge	DREDGE/TRANSPORT		15	32478	\$41.67	\$1,353,237.87
					\$0.00	Workboat	DREDGE/TRANSPORT		10	21652	\$6.64	\$143,743.93
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST	\$0.00	\$0.00	BARE UNIT COST	\$8.72	0	TOTAL RENTED EQUIP	\$4,957,073.21		
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Dredge Operator	DREDGE	5	10826	\$71.24	\$771,201.24	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	DREDGE	10	21652	\$53.80	\$1,164,758.90	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Deckhand	TRANSPORT	10	21652	\$45.02	\$974,803.63	PPE Level D	ALL	354.20	\$12.00	MTH	\$4,250.35	
Boat Operator	TRANSPORT	10	21652	\$62.23	\$1,347,391.88	Per Diem	ALL	9,202	\$51.00	MD	\$469,302.89	
Tug Operator	TRANSPORT	10	21652	\$42.04	\$910,219.48	Misc Safety Supplies	ALL	6.95	\$1,000.00	MD	\$6,945.02	
Deckhand	DREDGE	5	10826	\$45.02	\$487,401.81						\$0.00	
Foreman	DREDGE	1	2165	\$79.33	\$171,770.99						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$10.25	TOTAL LABOR COST	\$5,827,547.94	\$0.85	BARE UNIT COST	\$0.85	TOTAL MATERIAL COST	\$480,498.27			

ESTIMATE WORKSHEET 107

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.						
March 7, 2018	Penobscot					Backfilling - EMNR - 500					107						
BID DATA			Bid Data Notes				PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL	3,900,000					HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	177.0	TOTAL MONTHS	40.88	DAILY UNIT PRODUCTION RATE	3,672	DAYS REQ. TO COMPLETE	1,062
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes							
Backfilling - EMNR - 500	107	\$12,666,168.30	\$1,188,683.16	\$10,415,223.31		\$0.00		\$24,270,074.77									
								\$0.00									
								\$0.00									
								\$0.00									
								\$0.00									
								\$0.00									
								\$0.00									
GRAND TOTALS		\$12,666,168.30	\$1,188,683.16	\$10,415,223.31		\$0.00		\$24,270,074.77									
UNIT PRICES		\$3.25	\$0.30	\$2.67		\$0.00		\$6.22									
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST					
					\$0.00	Dump Scow (2000yard)	Backfilling		3	38235	\$141.89	\$5,425,163.40					
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		5	63725	\$71.67	\$4,566,993.46					
					\$0.00	Workboat	DREDGE/TRANSPORT		5	63725	\$6.64	\$423,066.45					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
BARE UNIT COST		\$0.00	TOTAL COST	\$0.00	\$0.00	BARE UNIT COST	\$2.67	0	TOTAL RENTED EQUIP	\$10,415,223.31							
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST					
Tug Operator	DREDGE	5	63725	\$42.04	\$2,678,953.57	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE									
Laborer	DREDGE	5	63725	\$53.80	\$3,428,112.75	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE									
Deckhand	TRANSPORT	5	63725	\$45.02	\$2,869,037.31	PPE Level D	ALL	858.50	\$12.00	MTH		\$10,302.04					
Foreman	TRANSPORT	1	12745	\$79.33	\$1,011,111.11	Per Diem	ALL	22,304	\$51.00	MD		\$1,137,500.00					
Tug Operator	TRANSPORT	5	63725	\$42.04	\$2,678,953.57	Misc Safety Supplies	ALL	40.88	\$1,000.00	MD		\$40,881.12					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
BARE UNIT COST		\$3.25	TOTAL LABOR COST	\$12,666,168.30	\$0.30	BARE UNIT COST	\$0.30	TOTAL MATERIAL COST	\$1,188,683.16								

ESTIMATE WORKSHEET 108

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot					Backfilling - EMNR - 300					108		
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	10,700,000					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
BID UNIT	CY					12	6	485.7	112.16	3,672	2,914		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR			TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL	Notes			
Backfilling - EMNR - 300	108	\$35,079,414.06			\$2,811,387.80	\$28,575,099.85		\$0.00	\$66,465,901.72				
								\$0.00	\$0.00				
								\$0.00	\$0.00				
								\$0.00	\$0.00				
GRAND TOTALS		\$35,079,414.06			\$2,811,387.80	\$28,575,099.85		\$0.00	\$66,465,901.72				
UNIT PRICES		\$3.28			\$0.26	\$2.67		\$0.00	\$6.21				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	Dump Scow (2000yard)	Backfilling		3	104902	\$141.89	\$14,884,422.66	
					\$0.00	Dredge Tender (Push Boat)	DREDGE/TRANSPORT		5	174837	\$71.67	\$12,529,956.43	
					\$0.00	Workboat	DREDGE/TRANSPORT		5	174837	\$6.64	\$1,160,720.77	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00			TOTAL COST				0	TOTAL RENTED EQUIP		\$28,575,099.85	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Operator 1	Backfill	3	104902	\$71.82	\$7,534,058.82	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Laborer	Backfill	6	209804	\$53.80	\$11,286,401.96	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
Deckhand	Backfill	3	104902	\$45.02	\$4,722,876.80	PPE Level D		ALL	2,018.90	\$12.00	MTH	\$24,226.78	
Boat Operator	Backfill	2	69935	\$62.23	\$4,352,032.68	Per Diem		ALL	52,451	\$51.00	MD	\$2,675,000.00	
Foreman	Backfill	1	34967	\$79.33	\$2,774,074.07	Misc Safety Supplies		ALL	112.16	\$1,000.00	MD	\$112,161.02	
Tug Operator	Backfill	3	104902	\$42.04	\$4,409,969.72							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$3.28	TOTAL LABOR COST	\$35,079,414.06	BARE UNIT COST	\$0.26	TOTAL MATERIAL COST	\$2,811,387.80					

ESTIMATE WORKSHEET 109

BID DATE March 7, 2018		PROJECT LOCATION Penobscot				DESCRIPTION OF ITEM Backfilling - TLC - 500				ITEM NO. 109							
BID DATA					PRODUCTION DATA												
		Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE							
TOTAL QUANTITY ON PROPOSAL BID UNIT CY	196,419				12	6	74.4	17.19	440	447							
ESTIMATE WORKSHEET ITEM NO.		TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR	TOTAL	Notes								
Backfilling - TLC - 500 109		\$5,377,416.27	\$430,965.08	\$8,195,238.08			\$0.00	\$14,003,619.43									
GRAND TOTALS		\$5,377,416.27	\$430,965.08	\$8,195,238.08			\$0.00	\$14,003,619.43									
UNIT PRICES		\$27.38	\$2.19	\$41.72			\$0.00	\$71.29									
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST					
					\$0.00	DREDGE BOOSTER PUMP - 12"	Backfilling		1	5360	\$140.00	\$750,432.64					
					\$0.00	DREDGE PIPE - 8"-12" (PER FT)	Backfill/Transport		20000	107204662	\$0.02	\$2,144,093.25					
					\$0.00	Workboat	Backfill/Transport		2	10720	\$6.64	\$71,171.98					
					\$0.00	HD Long Reach Excavator (Dredge)	Backfill		3	16081	\$103.33	\$1,661,672.27					
					\$0.00	Hydraulic Booster Pump	Backfill/Transport		3	16081	\$11.32	\$181,987.36					
					\$0.00	Dredge Tender (Push Boat)	Backfill/Transport		3	16081	\$71.67	\$1,152,450.12					
					\$0.00	Hopper Barge (2000 cy)			3	16081	\$138.89	\$2,233,430.46					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
BARE UNIT COST		\$0.00			TOTAL COST			\$0.00			BARE UNIT COST		\$41.72	TOTAL RENTED EQUIP			\$8,195,238.08
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST						
Operator 1	Backfill	3	16081	\$71.82	\$1,154,915.83	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE									
Laborer	Backfill	6	32161	\$53.80	\$1,730,122.44	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE									
Deckhand	Backfill	3	16081	\$45.02	\$723,982.29	PPE Level D	ALL	309.48	\$12.00	MTH	\$3,713.79						
Boat Operator	Backfill	2	10720	\$62.23	\$667,134.61	Per Diem	ALL	8,040	\$51.00	MD	\$410,057.83						
Foreman	Backfill	1	5360	\$79.33	\$425,245.16	Misc Safety Supplies	ALL	17.19	\$1,000.00	MD	\$17,193.46						
Tug Operator	Backfill	3	16081	\$42.04	\$676,015.94						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
					\$0.00						\$0.00						
BARE UNIT COST		\$27.38	TOTAL LABOR COST		\$5,377,416.27	BARE UNIT COST		\$2.19	TOTAL MATERIAL COST		\$430,965.08						

ESTIMATE WORKSHEET 110

ESTIMATE WORKSHEET 110																	
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.					
March 7, 2018		Penobscot					Backfilling - TLC - 300					110					
BID DATA				PRODUCTION DATA													
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE							
196,419				12	6	74.4	17.19	440		447							
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes						
Backfilling - TLC - 300	110	\$5,377,416.27		\$430,965.08		\$8,195,238.08		\$0.00		\$14,003,619.43							
										\$0.00							
										\$0.00							
										\$0.00							
GRAND TOTALS		\$5,377,416.27		\$430,965.08		\$8,195,238.08		\$0.00		\$14,003,619.43							
UNIT PRICES		\$27.38		\$2.19		\$41.72		\$0.00		\$71.29							
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST					
					\$0.00	DREDGE BOOSTER PUMP - 12"	Backfilling		1	5360	\$140.00	\$750,432.64					
					\$0.00	DREDGE PIPE - 8"-12" (PER FT)	Backfill/Transport		20000	107204662	\$0.02	\$2,144,093.25					
					\$0.00	Workboat	Backfill/Transport		2	10720	\$6.64	\$71,171.98					
					\$0.00	HD Long Reach Excavator (Dredge)	Backfill		3	16081	\$103.33	\$1,661,672.27					
					\$0.00	Hydraulic Booster Pump	Backfill/Transport		3	16081	\$11.32	\$181,987.36					
					\$0.00	Dredge Tender (Push Boat)	Backfill/Transport		3	16081	\$71.67	\$1,152,450.12					
					\$0.00	Hopper Barge (2000 cy)			3	16081	\$138.89	\$2,233,430.46					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		\$41.72		0		TOTAL RENTED EQUIP		\$8,195,238.08	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST					
Operator 1	Backfill	3	16081	\$71.82	\$1,154,915.83	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE								
Laborer	Backfill	6	32161	\$53.80	\$1,730,122.44	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE								
Deckhand	Backfill	3	16081	\$45.02	\$723,982.29	PPE Level D	ALL	309.48	\$12.00	MTH		\$3,713.79					
Boat Operator	Backfill	2	10720	\$62.23	\$667,134.61	Per Diem	ALL	8,040	\$51.00	MD		\$410,057.83					
Foreman	Backfill	1	5360	\$79.33	\$425,245.16	Misc Safety Supplies	ALL	17.19	\$1,000.00	MD		\$17,193.46					
Tug Operator	Backfill	3	16081	\$42.04	\$676,015.94							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
					\$0.00							\$0.00					
BARE UNIT COST		\$27.38		TOTAL LABOR COST		\$5,377,416.27		BARE UNIT COST		\$2.19		TOTAL MATERIAL COST		\$430,965.08			

ESTIMATE WORKSHEET 110A													
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot					Backfilling - Amended Cap					110A		
BID DATA			Bid Data Notes			PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	BID UNIT			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
20,432,315	SQFT			12	6	10.5	2.42	325,200	63				
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Backfilling - Amended Cap	110A	\$675,258.36	\$54,152.01	\$835,597.07		\$0.00	\$1,565,007.44						
							\$0.00						
							\$0.00						
							\$0.00						
							\$0.00						
GRAND TOTALS		\$675,258.36	\$54,152.01	\$835,597.07		\$0.00	\$1,565,007.44						
UNIT PRICES		\$0.03	\$0.00	\$0.04		\$0.00	\$0.08						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
					\$0.00	LGP Tracked Truck with Broadcast Spread	Cap		2	1508	\$150.00	\$226,187.99	
					\$0.00	Hopper Barge	Cap/Transport		3	2262	\$41.67	\$94,245.00	
					\$0.00	Workboat	Cap/Transport		2	1508	\$6.64	\$10,010.91	
					\$0.00	100 Ton Barge Mounted Crane	Load		3	2262	\$117.22	\$265,142.59	
					\$0.00	Dredge Tender (Push Boat)	Backfill/Transport		3	2262	\$71.67	\$162,101.39	
					\$0.00	HD Long Reach Excavator (Dredge)	Assist		1	754	\$103.33	\$77,909.20	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.03			\$0.00	BARE UNIT COST		\$0.04	0			TOTAL RENTED EQUIP	\$835,597.07
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Operator 1	Backfill	3	2262	\$71.82	\$162,448.21	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Laborer	Backfill	4	3016	\$53.80	\$162,237.10	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
Deckhand	Backfill	3	2262	\$45.02	\$101,833.94	PPE Level D	ALL	38.69		\$12.00	MTH	\$464.33	
Boat Operator	Backfill	2	1508	\$62.23	\$93,837.86	Per Diem	ALL	1,005		\$51.00	MD	\$51,269.28	
Foreman	Backfill	1	754	\$79.33	\$59,814.16	Misc Safety Supplies	ALL	2.42		\$1,000.00	MD	\$2,418.40	
Tug Operator	Backfill	3	2262	\$42.04	\$95,087.09							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.03			\$675,258.36	BARE UNIT COST		\$0.00				TOTAL MATERIAL COST	\$54,152.01

ESTIMATE WORKSHEET 111													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot					T&D - Main Channel - Deep - 500					111	
BID DATA				PRODUCTION DATA									
		Bid Data Notes		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
TOTAL QUANTITY ON PROPOSAL				12	6	0.0	0.00	-	0				
BID UNIT		Ton											
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR	TOTAL	Notes				
T&D - Main Channel - Deep - 500	111	\$0.00	\$0.00	\$0.00			\$0.00	\$0.00	Assumes one test per 500 tons. Loading cost covered under processing.				
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$0.00	\$0.00					
UNIT PRICES		\$0.00	\$0.01	\$0.00			\$82.80	\$82.81					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
Total Analytical Testing	Test	0	1400	Ea	\$0.00							\$0.00	
Non-TSCA Transportation for Disposal	Transport	0	20	Ton	\$0.00							\$0.00	
Non-TSCA Disposal	Disposal	0	60	Ton	\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$82.80	TOTAL COST	\$0.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00					
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
					\$0.00	Fuel	ALL						
					\$0.00	Maintenance/Grease	ALL						
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH	\$0.00		
					\$0.00	Per Diem	ALL	0	\$51.00	MD	\$0.00		
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MD	\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.01	TOTAL MATERIAL COST	\$0.00						

ESTIMATE WORKSHEET 113														
BID DATE		PROJECT LOCATION						DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot						T&D - Orland River - Deep - 500					113	
BID DATA			Bid Data Notes			PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	BID UNIT	HOURS PER DAY		DAYS PER WEEK		TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE				
434,152	Ton	12		6		18.8	4.35	-		113				
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
T&D - Orland River - Deep - 500	113	\$0.00		\$4,351.82		\$0.00		\$35,947,756.79		\$35,952,108.61	Assumes one test per 500 tons. Loading cost covered under processing.			
										\$0.00				
										\$0.00				
										\$0.00				
GRAND TOTALS		\$0.00		\$4,351.82		\$0.00		\$35,947,756.79		\$35,952,108.61				
UNIT PRICES		\$0.00		\$0.01		\$0.00		\$82.80		\$82.81				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST		
Total Analytical Testing	Test	868	1400	Ea	\$1,215,624.63							\$0.00		
Non-TSCA Transportation for Disposal	Transport	434,152	20	Ton	\$8,683,033.04							\$0.00		
Non-TSCA Disposal	Disposal	434,152	60	Ton	\$26,049,099.12							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$82.80		TOTAL COST		\$35,947,756.79		BARE UNIT COST		\$0.00		TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH		\$0.00		
					\$0.00	Per Diem	ALL	0	\$51.00	MD		\$0.00		
					\$0.00	Misc Safety Supplies	ALL	4.35	\$1,000.00	MD		\$4,351.82		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$0.00		TOTAL LABOR COST		\$0.00		BARE UNIT COST		\$0.01		TOTAL MATERIAL COST		\$4,351.82

ESTIMATE WORKSHEET 114															
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.			
March 7, 2018		Penobscot					T&D - Orland River - Deep - 300					114			
BID DATA				PRODUCTION DATA											
TOTAL QUANTITY ON PROPOSAL			Bid Data Notes	HOURS PER DAY		DAYS PER WEEK		TOTAL WEEKS		TOTAL MONTHS		DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
434,152				12		6		18.8		4.35		-	113		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes			
T&D - Orland River - Deep - 300	114	\$0.00		\$4,351.82		\$0.00		\$35,947,756.79		\$35,952,108.61		Assumes one test per 500 tons. Loading cost covered under processing.			
GRAND TOTALS		\$0.00		\$4,351.82		\$0.00		\$35,947,756.79		\$35,952,108.61					
UNIT PRICES		\$0.00		\$0.01		\$0.00		\$82.80		\$82.81					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		RENTAL EQUIP		WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
Total Analytical Testing	Test	868	1400	Ea	\$1,215,624.63									\$0.00	
Non-TSCA Transportation for Disposal	Transport	434,152	20	Ton	\$8,683,033.04									\$0.00	
Non-TSCA Disposal	Disposal	434,152	60	Ton	\$26,049,099.12									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
BARE UNIT COST		\$82.80		TOTAL COST		\$35,947,756.79		BARE UNIT COST		\$0.00		TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST		MATERIAL / SERVICES				WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00		Fuel				ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00		Maintenance/Grease				ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00		PPE Level D				ALL	0.00	\$12.00	MTH	\$0.00
					\$0.00		Per Diem				ALL	0	\$51.00	MD	\$0.00
					\$0.00		Misc Safety Supplies				ALL	4.35	\$1,000.00	MD	\$4,351.82
					\$0.00										\$0.00
					\$0.00										\$0.00
					\$0.00										\$0.00
					\$0.00										\$0.00
					\$0.00										\$0.00
					\$0.00										\$0.00
					\$0.00										\$0.00
					\$0.00										\$0.00
BARE UNIT COST		\$0.00		TOTAL LABOR COST		\$0.00		BARE UNIT COST		\$0.01		TOTAL MATERIAL COST		\$4,351.82	

ESTIMATE WORKSHEET 115													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot					T&D - Main Channel - Shallow - 500					115	
BID DATA				PRODUCTION DATA									
Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE			
TOTAL QUANTITY ON PROPOSAL		2,679,273		12	6	116.3	26.86			698			
BID UNIT		Ton											
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR	TOTAL	Notes				
T&D - Main Channel - Shallow - 500	115	\$0.00	\$26,856.32	\$0.00			\$221,843,781.88	\$221,870,638.20	Assumes one test per 500 tons. Loading cost covered under processing.				
								\$0.00					
								\$0.00					
								\$0.00					
GRAND TOTALS		\$0.00	\$26,856.32	\$0.00			\$221,843,781.88	\$221,870,638.20					
UNIT PRICES		\$0.00	\$0.01	\$0.00			\$82.80	\$82.81					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
Total Analytical Testing	Test	5,359	1400	Ea	\$7,501,963.64							\$0.00	
Non-TSCA Transportation for Disposal	Transport	2,679,273	20	Ton	\$53,585,454.56							\$0.00	
Non-TSCA Disposal	Disposal	2,679,273	60	Ton	\$160,756,363.68							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$82.80	TOTAL COST	\$21,843,781.88		BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
					\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH	\$0.00		
					\$0.00	Per Diem	ALL	0	\$51.00	MD	\$0.00		
					\$0.00	Misc Safety Supplies	ALL	26.86	\$1,000.00	MD	\$26,856.32		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
					\$0.00						\$0.00		
BARE UNIT COST		\$0.00	TOTAL LABOR COST	\$0.00		BARE UNIT COST	\$0.01	TOTAL MATERIAL COST	\$26,856.32				

ESTIMATE WORKSHEET 117

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018	Penobscot					T&D - Orland River - Shallow - 500					117	
BID DATA				PRODUCTION DATA								
		Bid Data Notes		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
TOTAL QUANTITY ON PROPOSAL	2,158,833			12	6	93.7	21.64	-	562			
BID UNIT	Ton											
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR	TOTAL	Notes			
T&D - Orland River - Shallow - 500	117	\$0.00	\$21,639.57	\$0.00			\$178,751,345.57	\$178,772,985.14	Assumes one test per 500 tons. Loading cost covered under processing.			
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$0.00	\$21,639.57	\$0.00			\$178,751,345.57	\$178,772,985.14				
UNIT PRICES		\$0.00	\$0.01	\$0.00			\$82.80	\$82.81				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Total Analytical Testing	Test	4,318	1400	Ea	\$6,044,731.49							\$0.00
Non-TSCA Transportation for Disposal	Transport	2,158,833	20	Ton	\$43,176,653.52							\$0.00
Non-TSCA Disposal	Disposal	2,158,833	60	Ton	\$129,529,960.56							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$82.80	TOTAL COST		\$178,751,345.57	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	PPE Level D	ALL	0.00		\$12.00	MTH	\$0.00
					\$0.00	Per Diem	ALL	0		\$51.00	MD	\$0.00
					\$0.00	Misc Safety Supplies	ALL	21.64		\$1,000.00	MD	\$21,639.57
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.01	TOTAL MATERIAL COST			\$21,639.57

ESTIMATE WORKSHEET 118

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot				T&D - Orland River - Shallow - 300					118	
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	2,158,833					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
BID UNIT	Ton					12	6	93.7	21.64	-	562	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes					
T&D - Orland River - Shallow - 300	118	\$0.00	\$21,639.57	\$0.00	\$178,751,345.57	\$178,772,985.14	Assumes one test per 500 tons. Loading cost covered under processing.					
						\$0.00						
						\$0.00						
						\$0.00						
GRAND TOTALS		\$0.00	\$21,639.57	\$0.00	\$178,751,345.57	\$178,772,985.14						
UNIT PRICES		\$0.00	\$0.01	\$0.00	\$82.80	\$82.81						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Total Analytical Testing	Test	4,318	1400	Ea	\$6,044,731.49							\$0.00
Non-TSCA Transportation for Disposal	Transport	2,158,833	20	Ton	\$43,176,653.52							\$0.00
Non-TSCA Disposal	Disposal	2,158,833	60	Ton	\$129,529,960.56							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$82.80	TOTAL COST	\$178,751,345.57	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH	\$0.00	
					\$0.00	Per Diem	ALL	0	\$51.00	MD	\$0.00	
					\$0.00	Misc Safety Supplies	ALL	21.64	\$1,000.00	MD	\$21,639.57	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.01	TOTAL MATERIAL COST	\$21,639.57					

ESTIMATE WORKSHEET 119

BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018	Penobscot				T&D - Mendall Marsh - Shallow - 500						119	
BID DATA				Bid Data Notes		PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
0					12	6	0.0	0.00	-	0		
BID UNIT	Ton											
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes			
T&D - Mendall Marsh - Shallow - 500	119	\$0.00	\$0.00			\$0.00	\$0.00	\$0.00	Assumes one test per 500 tons. Loading cost covered under processing.			
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$0.00	\$0.00			\$0.00	\$0.00	\$0.00				
UNIT PRICES		\$0.00	\$0.01			\$0.00	\$82.80	\$82.81				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Total Analytical Testing	Test	0	1400	Ea	\$0.00							\$0.00
Non-TSCA Transportation for Disposal	Transport	0	20	Ton	\$0.00							\$0.00
Non-TSCA Disposal	Disposal	0	60	Ton	\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$82.80	TOTAL COST	\$0.00			BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00		
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				\$0.00
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				\$0.00
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH		\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00	MD		\$0.00
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MD		\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00			BARE UNIT COST	\$0.01	TOTAL MATERIAL COST	\$0.00			

ESTIMATE WORKSHEET 120												
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.
March 7, 2018		Penobscot					T&D - Mendall Marsh - Shallow - 300					120
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	628,104				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
BID UNIT	Ton				12	6	27.3	6.30	3,840	164		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes		
T&D - Mendall Marsh - Shallow - 300	120	\$0.00	\$6,295.95		\$0.00		\$52,006,993.32		\$52,013,289.26	Assumes one test per 500 tons. Loading cost covered under processing.		
									\$0.00			
									\$0.00			
									\$0.00			
GRAND TOTALS		\$0.00	\$6,295.95		\$0.00		\$52,006,993.32		\$52,013,289.26			
UNIT PRICES		\$0.00	\$0.01		\$0.00		\$82.80		\$82.81			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Total Analytical Testing	Test	1,256	1400	Ea	\$1,758,690.60							\$0.00
Non-TSCA Transportation for Disposal	Transport	628,104	20	Ton	\$12,562,075.68							\$0.00
Non-TSCA Disposal	Disposal	628,104	60	Ton	\$37,686,227.04							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$82.80	TOTAL COST		\$52,006,993.32	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00
					\$0.00	Misc Safety Supplies	ALL	6.30	\$1,000.00		MD	\$6,295.95
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.01	TOTAL MATERIAL COST		\$6,295.95	

ESTIMATE WORKSHEET 120A

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot					T&D - FF Dredge for Draft					120A		
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	181,500					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
BID UNIT	Ton					12	6	7.9	1.82	3,840	47		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes		
T&D - FF Dredge for Draft	120A	\$0.00	\$1,819.31			\$0.00		\$15,028,200.00		\$15,030,019.31	Assumes one test per 500 tons. Loading cost covered under processing.		
										\$0.00			
										\$0.00			
										\$0.00			
GRAND TOTALS		\$0.00	\$1,819.31			\$0.00		\$15,028,200.00		\$15,030,019.31			
UNIT PRICES		\$0.00	\$0.01			\$0.00		\$82.80		\$82.81			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
Total Analytical Testing	Test	363	1400	Ea	\$508,200.00							\$0.00	
Non-TSCA Transportation for Disposal	Transport	181,500	20	Ton	\$3,630,000.00							\$0.00	
Non-TSCA Disposal	Disposal	181,500	60	Ton	\$10,890,000.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$82.80	TOTAL COST			\$15,028,200.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP			\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH		\$0.00	
					\$0.00	Per Diem	ALL	0	\$51.00	MD		\$0.00	
					\$0.00	Misc Safety Supplies	ALL	1.82	\$1,000.00	MD		\$1,819.31	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST			\$0.00	BARE UNIT COST	\$0.01	TOTAL MATERIAL COST					\$1,819.31

ESTIMATE WORKSHEET 121

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot					T&D Ben - Main Channel - Deep - 500					121		
BID DATA			Bid Data Notes			PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	BID UNIT		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE					
0	Ton		12	6	0.0	0.00	3,840	0					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes				
T&D Ben - Main Channel - Deep - 500	121	\$0.00	\$0.00	\$0.00		\$0.00		\$0.00	Assumes one test per 500 tons. Loading cost covered under processing.				
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$0.00		\$0.00					
UNIT PRICES		\$0.00	\$0.01	\$0.00		\$32.80		\$32.81					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GAL.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
Total Analytical Testing	Test	0	1400	Ea	\$0.00							\$0.00	
Transportation for Beneficial Reuse	Transport	0	20	Ton	\$0.00							\$0.00	
Beneficial Reuse	Disposal	0	10	Ton	\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$32.80	TOTAL COST		\$0.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH			\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00	MD			\$0.00
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MD			\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.01	TOTAL MATERIAL COST				\$0.00

ESTIMATE WORKSHEET 122

ESTIMATE WORKSHEET 122												
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018	Penobscot					T&D Ben - Main Channel - Deep - 300					122	
BID DATA						PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	9,461,502	Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
BID UNIT	Ton					12	6	410.7	94.84	3,840	2,464	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes	
T&D Ben - Main Channel - Deep - 300	122	\$0.00	\$94,839.60			\$0.00		\$310,337,249.20		\$310,432,088.80	Assumes one test per 500 tons. Loading cost covered under processing.	
										\$0.00		
										\$0.00		
										\$0.00		
GRAND TOTALS		\$0.00	\$94,839.60			\$0.00		\$310,337,249.20		\$310,432,088.80		
UNIT PRICES		\$0.00	\$0.01			\$0.00		\$32.80		\$32.81		
Sub-Contractor	Work to Perform	Quantity Units	Unit Cost	Unit of Meas.	Total Cost	Rental Equip	Work to Perform	Fuel Gals.	Total Units	Total Hours	Unit Rate	Total Cost
Total Analytical Testing	Test	18,923	1400	Ea	\$26,492,204.20							\$0.00
Transportation for Beneficial Reuse	Transport	9,461,502	20	Ton	\$189,230,030.00							\$0.00
Beneficial Reuse	Disposal	9,461,502	10	Ton	\$94,615,015.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$32.80	TOTAL COST			\$310,337,249.20	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP		\$0.00
Labor Classification	Work to Perform	Total Men	Total Hours	Hrly Rate	Total Cost	Material / Services		Work to Perform	Quantity Units	Unit Cost	Unit of Meas.	Total Cost
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00
					\$0.00	Misc Safety Supplies	ALL	94.84	\$1,000.00		MD	\$94,839.60
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST			\$0.00	BARE UNIT COST	\$0.01	TOTAL MATERIAL COST			\$94,839.60

ESTIMATE WORKSHEET 123													
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot					T&D Ben - Orland River - Deep - 500					123		
BID DATA						PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
434,152						12	6	18.8	4.35	3,840	113		
ESTIMATE WORKSHEET		TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes			
T&D Ben - Orland River - Deep - 500		\$0.00	\$4,351.82	\$0.00		\$14,240,174.19		\$14,244,526.01		Assumes one test per 500 tons. Loading cost covered under processing.			
GRAND TOTALS		\$0.00	\$4,351.82	\$0.00		\$14,240,174.19		\$14,244,526.01					
UNIT PRICES		\$0.00	\$0.01	\$0.00		\$32.80		\$32.81					
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Total Analytical Testing		Test	868	1400	Ea	\$1,215,624.63							\$0.00
Transportation for Beneficial Reuse		Transport	434,152	20	Ton	\$8,683,033.04							\$0.00
Beneficial Reuse		Disposal	434,152	10	Ton	\$4,341,516.52							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
BARE UNIT COST		\$32.80			TOTAL COST	\$14,240,174.19	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00		
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
						\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
						\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
						\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00
						\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00
						\$0.00	Misc Safety Supplies	ALL	4.35	\$1,000.00		MD	\$4,351.82
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.01	TOTAL MATERIAL COST	\$4,351.82					

ESTIMATE WORKSHEET 124

ESTIMATE WORKSHEET 124													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot					T&D Ben - Orland River - Deep - 300					124	
BID DATA				PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
434,152				12	6	18.8	4.35	3,840	113				
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes				
T&D Ben - Orland River - Deep - 300	124	\$0.00	\$4,351.82	\$0.00		\$14,240,174.19		\$14,244,526.01	Assumes one test per 500 tons. Loading cost covered under processing.				
								\$0.00					
								\$0.00					
								\$0.00					
GRAND TOTALS		\$0.00	\$4,351.82	\$0.00		\$14,240,174.19		\$14,244,526.01					
UNIT PRICES		\$0.00	\$0.01	\$0.00		\$32.80		\$32.81					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
Total Analytical Testing	Test	868	1400	Ea	\$1,215,624.63							\$0.00	
Transportation for Beneficial Reuse	Transport	434,152	20	Ton	\$8,683,033.04							\$0.00	
Beneficial Reuse	Disposal	434,152	10	Ton	\$4,341,516.52							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$32.80		TOTAL COST		\$14,240,174.19		BARE UNIT COST		\$0.00		0	
TOTAL RENTED EQUIP								\$0.00					
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00	
					\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00	
					\$0.00	Misc Safety Supplies	ALL	4.35	\$1,000.00		MD	\$4,351.82	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST	\$0.01		TOTAL MATERIAL COST		\$4,351.82			

ESTIMATE WORKSHEET 125																									
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.													
March 7, 2018		Penobscot				T&D Ben - Main Channel - Shallow - 500						125													
BID DATA				PRODUCTION DATA																					
Bid Data Notes				HOURS PER DAY		DAYS PER WEEK		TOTAL WEEKS		TOTAL MONTHS		DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE											
TOTAL QUANTITY ON PROPOSAL		2,679,273		12		6		116.3		26.86		3,840		698											
BID UNIT		Ton																							
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes													
T&D Ben - Main Channel - Shallow - 500		\$0.00		\$26,856.32		\$0.00		\$87,880,145.48		\$87,907,001.80		Assumes one test per 500 tons. Loading cost covered under processing.													
GRAND TOTALS		\$0.00		\$26,856.32		\$0.00		\$87,880,145.48		\$87,907,001.80															
UNIT PRICES		\$0.00		\$0.01		\$0.00		\$32.80		\$32.81															
SUB-CONTRACTOR		WORK TO PERFORM		QUANTITY UNITS		UNIT COST		UNIT OF MEAS.		TOTAL COST		RENTAL EQUIP		WORK TO PERFORM		FUEL GALS.		TOTAL UNITS		TOTAL HOURS		UNIT RATE		TOTAL COST	
Total Analytical Testing		Test		5,359		1400		Ea		\$7,501,963.64														\$0.00	
Transportation for Beneficial Reuse		Transport		2,679,273		20		Ton		\$53,585,454.56														\$0.00	
Beneficial Reuse		Disposal		2,679,273		10		Ton		\$26,792,727.28														\$0.00	
				\$0.00						\$0.00														\$0.00	
				\$0.00						\$0.00														\$0.00	
				\$0.00						\$0.00														\$0.00	
				\$0.00						\$0.00														\$0.00	
				\$0.00						\$0.00														\$0.00	
				\$0.00						\$0.00														\$0.00	
				\$0.00						\$0.00														\$0.00	
BARE UNIT COST		\$32.80		TOTAL COST		\$87,880,145.48		BARE UNIT COST		\$0.00		0		TOTAL RENTED EQUIP		\$0.00									
LABOR CLASSIFICATION		WORK TO PERFORM		TOTAL MEN		TOTAL HOURS		HRLY RATE		TOTAL COST		MATERIAL / SERVICES				WORK TO PERFORM		QUANTITY UNITS		UNIT COST		UNIT OF MEAS.		TOTAL COST	
										\$0.00		Fuel				ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						\$0.00	
										\$0.00		Maintenance/Grease				ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE						\$0.00	
										\$0.00		PPE Level D				ALL		0.00		\$12.00		MTH		\$0.00	
										\$0.00		Per Diem				ALL		0		\$51.00		MD		\$0.00	
										\$0.00		Misc Safety Supplies				ALL		26.86		\$1,000.00		MD		\$26,856.32	
										\$0.00														\$0.00	
										\$0.00														\$0.00	
										\$0.00														\$0.00	
										\$0.00														\$0.00	
										\$0.00														\$0.00	
BARE UNIT COST		\$0.00		TOTAL LABOR COST		\$0.00		BARE UNIT COST		\$0.01		TOTAL MATERIAL COST				\$26,856.32									

ESTIMATE WORKSHEET 126															
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.				
March 7, 2018		Penobscot				T&D Ben - Main Channel - Shallow - 300					126				
BID DATA				PRODUCTION DATA											
Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE						
TOTAL QUANTITY ON PROPOSAL		2,828,074		12	6	122.7	28.35	3,840	736						
BID UNIT		Ton		TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR			Notes					
ESTIMATE WORKSHEET		ITEM NO.		TOTAL LABOR			TOTAL MATERIAL			Assumes one test per 500 tons. Loading cost covered under processing.					
T&D Ben - Main Channel - Shallow - 300		126		\$0.00			\$28,347.87								
GRAND TOTALS				\$0.00			\$28,347.87								
UNIT PRICES				\$0.00			\$0.01								
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	TOTAL COST			
Total Analytical Testing		Test	5,656	1400	Ea	\$7,918,607.80						\$0.00			
Transportation for Beneficial Reuse		Transport	2,828,074	20	Ton	\$56,561,484.32						\$0.00			
Beneficial Reuse		Disposal	2,828,074	10	Ton	\$28,280,742.16						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
						\$0.00						\$0.00			
BARE UNIT COST		\$32.80		TOTAL COST			\$92,760,834.28			BARE UNIT COST		\$0.00			
										0		TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
						\$0.00	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
						\$0.00	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
						\$0.00	PPE Level D		ALL	0.00	\$12.00	MTH	\$0.00		
						\$0.00	Per Diem		ALL	0	\$51.00	MD	\$0.00		
						\$0.00	Misc Safety Supplies		ALL	28.35	\$1,000.00	MD	\$28,347.87		
						\$0.00							\$0.00		
						\$0.00							\$0.00		
						\$0.00							\$0.00		
						\$0.00							\$0.00		
						\$0.00							\$0.00		
						\$0.00							\$0.00		
						\$0.00							\$0.00		
BARE UNIT COST		\$0.00		TOTAL LABOR COST			\$0.00			BARE UNIT COST		\$0.01			
										TOTAL MATERIAL COST		\$28,347.87			

ESTIMATE WORKSHEET 127														
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018		Penobscot					T&D Ben - Orland River - Shallow - 500					127		
BID DATA				PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE					
2,158,833				12	6	93.7	21.64	3,840	562					
ESTIMATE WORKSHEET		TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR			Notes				
T&D Ben - Orland River - Shallow - 500		\$0.00	\$21,639.57			\$0.00	\$70,809,711.77			Assumes one test per 500 tons. Loading cost covered under processing.				
GRAND TOTALS		\$0.00	\$21,639.57			\$0.00	\$70,809,711.77							
UNIT PRICES		\$0.00	\$0.01			\$0.00	\$32.80							
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST	
Total Analytical Testing		Test	4,318	1400	Ea	\$6,044,731.49							\$0.00	
Transportation for Beneficial Reuse		Transport	2,158,833	20	Ton	\$43,176,653.52							\$0.00	
Beneficial Reuse		Disposal	2,158,833	10	Ton	\$21,588,326.76							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
BARE UNIT COST		\$32.80		TOTAL COST		\$70,809,711.77	BARE UNIT COST		\$0.00		0		TOTAL RENTED EQUIP	\$0.00
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
						\$0.00	Fuel			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
						\$0.00	Maintenance/Grease			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
						\$0.00	PPE Level D			ALL	0.00	\$12.00	MTH	\$0.00
						\$0.00	Per Diem			ALL	0	\$51.00	MD	\$0.00
						\$0.00	Misc Safety Supplies			ALL	21.64	\$1,000.00	MD	\$21,639.57
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
BARE UNIT COST		\$0.00		TOTAL LABOR COST		\$0.00	BARE UNIT COST			\$0.01		TOTAL MATERIAL COST		\$21,639.57

ESTIMATE WORKSHEET 128													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot					T&D Ben - Orland River - Shallow - 300					128	
BID DATA				PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
2,158,833					12	6	93.7	21.64	3,840	562			
ESTIMATE WORKSHEET		TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR			Notes			
T&D Ben - Orland River - Shallow - 300		\$0.00	\$21,639.57			\$0.00	\$70,809,711.77			Assumes one test per 500 tons. Loading cost covered under processing.			
										\$0.00			
										\$0.00			
										\$0.00			
GRAND TOTALS		\$0.00	\$21,639.57			\$0.00	\$70,809,711.77			\$70,831,351.34			
UNIT PRICES		\$0.00	\$0.01			\$0.00	\$32.80			\$32.81			
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Total Analytical Testing		Test	4,318	1400	Ea	\$6,044,731.49							\$0.00
Transportation for Beneficial Reuse		Transport	2,158,833	20	Ton	\$43,176,653.52							\$0.00
Beneficial Reuse		Disposal	2,158,833	10	Ton	\$21,588,326.76							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
BARE UNIT COST		\$32.80	TOTAL COST			\$70,809,711.77	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP			\$0.00
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
						\$0.00	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
						\$0.00	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
						\$0.00	PPE Level D		ALL	0.00	\$12.00	MTH	\$0.00
						\$0.00	Per Diem		ALL	0	\$51.00	MD	\$0.00
						\$0.00	Misc Safety Supplies		ALL	21.64	\$1,000.00	MD	\$21,639.57
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
						\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST			\$0.00	BARE UNIT COST	\$0.01	TOTAL MATERIAL COST			\$21,639.57	

ESTIMATE WORKSHEET 129												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.
March 7, 2018		Penobscot				T&D Ben - Mendall Marsh - Shallow - 500						129
BID DATA					PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
0					12	6	0.0	0.00	3,840	0		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL		TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR		TOTAL	Notes			
T&D Ben - Mendall Marsh - Shallow - 500	129	\$0.00	\$0.00		\$0.00	\$0.00		\$0.00	Assumes one test per 500 tons. Loading cost covered under processing.			
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$0.00	\$0.00		\$0.00	\$0.00		\$0.00				
UNIT PRICES		\$0.00	\$0.01		\$0.00	\$32.80		\$32.81				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Total Analytical Testing	Test	0	1400	Ea	\$0.00							\$0.00
Transportation for Beneficial Reuse	Transport	0	20	Ton	\$0.00							\$0.00
Beneficial Reuse	Disposal	0	10	Ton	\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$32.80	TOTAL COST	\$0.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00				
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00		MD	\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.01	TOTAL MATERIAL COST	\$0.00					

ESTIMATE WORKSHEET 130

BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.
March 7, 2018		Penobscot					T&D Ben - Mendall Marsh - Shallow - 300					130
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
628,104	Ton				12	6	27.3	6.30	3,840	164		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
T&D Ben - Mendall Marsh - Shallow - 300	130	\$0.00	\$6,295.95	\$0.00		\$20,601,804.12		\$20,608,100.06	Assumes one test per 500 tons. Loading cost covered under processing.			
GRAND TOTALS		\$0.00	\$6,295.95	\$0.00		\$20,601,804.12		\$20,608,100.06				
UNIT PRICES		\$0.00	\$0.01	\$0.00		\$32.80		\$32.81				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Total Analytical Testing	Test	1,256	1400	Ea	\$1,758,690.60							\$0.00
Transportation for Beneficial Reuse	Transport	628,104	20	Ton	\$12,562,075.68							\$0.00
Beneficial Reuse	Disposal	628,104	10	Ton	\$6,281,037.84							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$32.80	TOTAL COST	\$20,601,804.12	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00				
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH	\$0.00	
					\$0.00	Per Diem	ALL	0	\$51.00	MD	\$0.00	
					\$0.00	Misc Safety Supplies	ALL	6.30	\$1,000.00	MD	\$6,295.95	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.01	TOTAL MATERIAL COST	\$6,295.95					

ESTIMATE WORKSHEET 130A												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot				T&D Ben - FF Dredge for Draft					130A	
BID DATA				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL		Bid Data Notes		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
181,500				12	6	7.9	1.82	3,840	47			
ESTIMATE WORKSHEET		TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes		
T&D Ben - FF Dredge for Draft		\$0.00	\$1,819.31	\$0.00		\$5,953,200.00		\$5,955,019.31		Assumes one test per 500 tons. Loading cost covered under processing.		
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$0.00	\$1,819.31	\$0.00		\$5,953,200.00		\$5,955,019.31				
UNIT PRICES		\$0.00	\$0.01	\$0.00		\$32.80		\$32.81				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL HOURS	UNIT RATE	TOTAL COST
Total Analytical Testing	Test	363	1400	Ea	\$508,200.00							\$0.00
Transportation for Beneficial Reuse	Transport	181,500	20	Ton	\$3,630,000.00							\$0.00
Beneficial Reuse	Disposal	181,500	10	Ton	\$1,815,000.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$32.80			TOTAL COST		\$5,953,200.00		BARE UNIT COST		\$0.00	
							0		TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00
					\$0.00	Misc Safety Supplies	ALL	1.82	\$1,000.00		MD	\$1,819.31
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00			TOTAL LABOR COST		\$0.00		BARE UNIT COST		\$0.01	
									TOTAL MATERIAL COST		\$1,819.31	

ESTIMATE WORKSHEET 131												
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.
March 7, 2018		Penobscot					Water Treatment - Main Channel - Deep - 500					131
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
1	LS					12	6	0.0	0.00	-	0	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes		
Water Treatment - Main Channel - Deep - 500	131	\$0.00	\$0.00	\$0.00		\$225,000.00		\$225,000.00		Assumes Replacement filter media and bags as 15% of equipment total		
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$225,000.00		\$225,000.00				
UNIT PRICES		\$0.00	\$0.00	\$0.00		\$225,000.00		\$225,000.00				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Mobilization (1000GPM)	Water Treatment	1	\$150,000.00	LS	\$150,000.00							\$0.00
Monthly Rental w/PH Adjustment (1000GPM)	Water Treatment	1	\$50,000.00	Month	\$50,000.00							\$0.00
Demobilization (1000GPM)	Water Treatment	1	\$20,000.00	LS	\$20,000.00							\$0.00
Consumables (1000GPM)	Water Treatment	1	\$5,000.00	Month	\$5,000.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$225,000.00	TOTAL COST	\$225,000.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00				\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Water Treatment Operator Blended Rate	Water Treatment	1	0	\$103.06	\$0.00	Fuel	ALL					
					\$0.00	Maintenance/Grease	ALL					
					\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00		MD	\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00					\$0.00

ESTIMATE WORKSHEET 132

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot					Water Treatment - Main Channel - Deep - 300					132		
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS					12	6	470.3	108.61	-	2,822		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes				
Water Treatment - Main Channel - Deep - 300	132	\$3,489,616.59	\$253,828.81	\$0.00		\$6,165,000.00		\$9,908,445.40	Assumes Replacement filter media and bags as 15% of equipment total				
GRAND TOTALS		\$3,489,616.59	\$253,828.81	\$0.00		\$6,165,000.00		\$9,908,445.40					
UNIT PRICES		\$3,489,616.59	\$253,828.81	\$0.00		\$6,165,000.00		\$9,908,445.40					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST	
Mobilization (1000GPM)	Water Treatment	1	\$150,000.00	LS	\$150,000.00							\$0.00	
Monthly Rental w/PH Adjustment (1000GPM)	Water Treatment	109	\$50,000.00	Month	\$5,450,000.00							\$0.00	
Demobilization (1000GPM)	Water Treatment	1	\$20,000.00	LS	\$20,000.00							\$0.00	
Consumables (1000GPM)	Water Treatment	109	\$5,000.00	Month	\$545,000.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$6,165,000.00	TOTAL COST	\$6,165,000.00		BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00				
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Water Treatment Operator Blended Rate	Water Treatment	1	33862	\$103.06	\$3,489,616.59	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	PPE Level D	ALL	108.61	\$12.00	MTH		\$1,303.37	
					\$0.00	Per Diem	ALL	2,822	\$51.00	MD		\$143,911.41	
					\$0.00	Misc Safety Supplies	ALL	108.61	\$1,000.00	MD		\$108,614.03	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST	\$3,489,616.59	TOTAL LABOR COST	\$3,489,616.59		BARE UNIT COST	\$253,828.81	TOTAL MATERIAL COST	\$253,828.81					

ESTIMATE WORKSHEET 133

BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot				Water Treatment - Orland River - Deep - 500					133	
BID DATA				Bid Data Notes		PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS				12	6	21.6	4.98	-	129		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Water Treatment - Orland River - Deep - 500	133	\$160,124.99	\$11,647.22	\$0.00	\$445,000.00	\$616,772.21	Assumes Replacement filter media and bags as 15% of equipment total					
						\$0.00						
						\$0.00						
						\$0.00						
GRAND TOTALS		\$160,124.99	\$11,647.22	\$0.00	\$445,000.00	\$616,772.21						
UNIT PRICES		\$160,124.99	\$11,647.22	\$0.00	\$445,000.00	\$616,772.21						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Mobilization (1000GPM)	Water Treatment	1	\$150,000.00	LS	\$150,000.00							\$0.00
Monthly Rental w/PH Adjustment (1000GPM)	Water Treatment	5	\$50,000.00	Month	\$250,000.00							\$0.00
Demobilization (1000GPM)	Water Treatment	1	\$20,000.00	LS	\$20,000.00							\$0.00
Consumables (1000GPM)	Water Treatment	5	\$5,000.00	Month	\$25,000.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$445,000.00	TOTAL COST		\$445,000.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Water Treatment Operator Blended Rate	Water Treatment	1	1554	\$103.06	\$160,124.99	Fuel	ALL					
					\$0.00	Maintenance/Grease	ALL					
					\$0.00	PPE Level D	ALL	4.98	\$12.00	MTH	\$59.81	
					\$0.00	Per Diem	ALL	129	\$51.00	MD	\$6,603.54	
					\$0.00	Misc Safety Supplies	ALL	4.98	\$1,000.00	MD	\$4,983.88	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$160,124.99	TOTAL LABOR COST		\$160,124.99	BARE UNIT COST		\$11,647.22	TOTAL MATERIAL COST		\$11,647.22	

ESTIMATE WORKSHEET 134												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot				Water Treatment - Orland River - Deep - 300					134	
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
1	LS					12	6	21.6	4.98	-	129	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
Water Treatment - Orland River - Deep - 300	134	\$160,124.99	\$11,647.22	\$0.00		\$445,000.00		\$616,772.21	Assumes Replacement filter media and bags as 15% of equipment total			
GRAND TOTALS		\$160,124.99	\$11,647.22	\$0.00		\$445,000.00		\$616,772.21				
UNIT PRICES		\$160,124.99	\$11,647.22	\$0.00		\$445,000.00		\$616,772.21				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Mobilization (1000GPM)	Water Treatment	1	\$150,000.00	LS	\$150,000.00							\$0.00
Monthly Rental w/PH Adjustment (1000GPM)	Water Treatment	5	\$50,000.00	Month	\$250,000.00							\$0.00
Demobilization (1000GPM)	Water Treatment	1	\$20,000.00	LS	\$20,000.00							\$0.00
Consumables (1000GPM)	Water Treatment	5	\$5,000.00	Month	\$25,000.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$445,000.00	TOTAL COST		\$445,000.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP			\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Water Treatment Operator Blended Rate	Water Treatment	1	1554	\$103.06	\$160,124.99	Fuel	ALL					
					\$0.00	Maintenance/Grease	ALL					
					\$0.00	PPE Level D	ALL	4.98	\$12.00		MTH	\$59.81
					\$0.00	Per Diem	ALL	129	\$51.00		MD	\$6,603.54
					\$0.00	Misc Safety Supplies	ALL	4.98	\$1,000.00		MD	\$4,983.88
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$160,124.99	TOTAL LABOR COST		\$160,124.99	BARE UNIT COST	\$11,647.22	TOTAL MATERIAL COST				\$11,647.22

ESTIMATE WORKSHEET 135												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot				Water Treatment - Main Channel - Shallow - 500					135	
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS				12	6	119.3	27.56	-	716		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		
Water Treatment - Main Channel - Shallow - 500	135	\$885,406.25	\$64,402.95			\$0.00		\$1,710,000.00		\$2,659,809.20		
GRAND TOTALS		\$885,406.25	\$64,402.95			\$0.00		\$1,710,000.00		\$2,659,809.20		
UNIT PRICES		\$885,406.25	\$64,402.95			\$0.00		\$1,710,000.00		\$2,659,809.20		
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Mobilization (1000GPM)	Water Treatment	1	\$150,000.00	LS	\$150,000.00							\$0.00
Monthly Rental w/PH Adjustment (1000GPM)	Water Treatment	28	\$50,000.00	Month	\$1,400,000.00							\$0.00
Demobilization (1000GPM)	Water Treatment	1	\$20,000.00	LS	\$20,000.00							\$0.00
Consumables (1000GPM)	Water Treatment	28	\$5,000.00	Month	\$140,000.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$1,710,000.00	TOTAL COST		\$1,710,000.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Water Treatment Operator Blended Rate	Water Treatment	1	8592	\$103.06	\$885,406.25	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL		27.56	\$12.00	MTH	\$330.70
					\$0.00	Per Diem	ALL		716	\$51.00	MD	\$36,514.06
					\$0.00	Misc Safety Supplies	ALL		27.56	\$1,000.00	MD	\$27,558.20
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$885,406.25	TOTAL LABOR COST		\$885,406.25	BARE UNIT COST		\$64,402.95	TOTAL MATERIAL COST			\$64,402.95

ESTIMATE WORKSHEET 136

BID DATE	PROJECT LOCATION	DESCRIPTION OF ITEM	ITEM NO.									
March 7, 2018	Penobscot	Water Treatment - Main Channel - Shallow - 300	136									
BID DATA		PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL	BID UNIT	HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE					
1	LS	12	6	126.0	29.09	-	756					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP	TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Water Treatment - Main Channel - Shallow - 300	136	\$934,579.96	\$67,979.76	\$0.00	\$1,820,000.00	\$2,822,559.72	Assumes Replacement filter media and bags as 15% of equipment total					
						\$0.00						
						\$0.00						
						\$0.00						
GRAND TOTALS		\$934,579.96	\$67,979.76	\$0.00	\$1,820,000.00	\$2,822,559.72						
UNIT PRICES		\$934,579.96	\$67,979.76	\$0.00	\$1,820,000.00	\$2,822,559.72						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Mobilization (1000GPM)	Water Treatment	1	\$150,000.00	LS	\$150,000.00							\$0.00
Monthly Rental w/PH Adjustment (1000GPM)	Water Treatment	30	\$50,000.00	Month	\$1,500,000.00							\$0.00
Demobilization (1000GPM)	Water Treatment	1	\$20,000.00	LS	\$20,000.00							\$0.00
Consumables (1000GPM)	Water Treatment	30	\$5,000.00	Month	\$150,000.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$1,820,000.00		TOTAL COST	\$1,820,000.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Water Treatment Operator Blended Rate	Water Treatment	1	9069	\$103.06	\$934,579.96	Fuel	ALL			FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	Maintenance/Grease	ALL			FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE		
					\$0.00	PPE Level D	ALL	29.09	\$12.00	MTH	\$349.06	
					\$0.00	Per Diem	ALL	756	\$51.00	MD	\$38,541.98	
					\$0.00	Misc Safety Supplies	ALL	29.09	\$1,000.00	MD	\$29,088.72	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$934,579.96	TOTAL LABOR COST		\$934,579.96	BARE UNIT COST		\$67,979.76	TOTAL MATERIAL COST		\$67,979.76	

ESTIMATE WORKSHEET 137													
BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM				ITEM NO.				
March 7, 2018	Penobscot				Water Treatment - Orland River - Shallow - 500				137				
BID DATA				PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL	BID UNIT	Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
		1	LS			12	6	96.1	22.21	-	577		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR			TOTAL	Notes		
Water Treatment - Orland River - Shallow - 500	137	\$713,418.95	\$51,892.89	\$0.00			\$1,435,000.00			\$2,200,311.84	Assumes Replacement filter media and bags as 15% of equipment total		
										\$0.00			
										\$0.00			
										\$0.00			
GRAND TOTALS		\$713,418.95	\$51,892.89	\$0.00			\$1,435,000.00			\$2,200,311.84			
UNIT PRICES		\$713,418.95	\$51,892.89	\$0.00			\$1,435,000.00			\$2,200,311.84			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST	
Mobilization (1000GPM)	Water Treatment	1	\$150,000.00	LS	\$150,000.00							\$0.00	
Monthly Rental w/PH Adjustment (1000GPM)	Water Treatment	23	\$50,000.00	Month	\$1,150,000.00							\$0.00	
Demobilization (1000GPM)	Water Treatment	1	\$20,000.00	LS	\$20,000.00							\$0.00	
Consumables (1000GPM)	Water Treatment	23	\$5,000.00	Month	\$115,000.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$1,435,000.00	TOTAL COST			\$1,435,000.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
Water Treatment Operator Blended Rate	Water Treatment	1	6923	\$103.06	\$713,418.95	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	PPE Level D	ALL		22.21	\$12.00	MTH	\$266.46	
					\$0.00	Per Diem	ALL		577	\$51.00	MD	\$29,421.32	
					\$0.00	Misc Safety Supplies	ALL		22.21	\$1,000.00	MD	\$22,205.11	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$713,418.95	TOTAL LABOR COST			\$713,418.95	BARE UNIT COST		\$51,892.89	TOTAL MATERIAL COST			\$51,892.89

ESTIMATE WORKSHEET 138

ESTIMATE WORKSHEET 138																		
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.						
March 7, 2018		Penobscot					Water Treatment - Orland River - Shallow - 300					138						
BID DATA			Bid Data Notes					PRODUCTION DATA										
TOTAL QUANTITY ON PROPOSAL	1						HOURS PER DAY	12	DAYS PER WEEK	6	TOTAL WEEKS	96.1	TOTAL MONTHS	22.21	DAILY UNIT PRODUCTION RATE	-	DAYS REQ. TO COMPLETE	577
BID UNIT	LS						TOTAL RENTED EQUIP			\$0.00	TOTAL SUB-CONTRACTOR			\$1,435,000.00	TOTAL		\$2,200,311.84	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	\$713,418.95	TOTAL MATERIAL	\$51,892.89									Notes			Assumes Replacement filter media and bags as 15% of equipment total	
GRAND TOTALS			\$713,418.95		\$51,892.89				\$0.00			\$1,435,000.00		\$2,200,311.84				
UNIT PRICES			\$713,418.95		\$51,892.89				\$0.00			\$1,435,000.00		\$2,200,311.84				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP			WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST				
Mobilization (1000GPM)	Water Treatment	1	\$150,000.00	LS	\$150,000.00									\$0.00				
Monthly Rental w/PH Adjustment (1000GPM)	Water Treatment	23	\$50,000.00	Month	\$1,150,000.00									\$0.00				
Demobilization (1000GPM)	Water Treatment	1	\$20,000.00	LS	\$20,000.00									\$0.00				
Consumables (1000GPM)	Water Treatment	23	\$5,000.00	Month	\$115,000.00									\$0.00				
					\$0.00									\$0.00				
					\$0.00									\$0.00				
					\$0.00									\$0.00				
					\$0.00									\$0.00				
					\$0.00									\$0.00				
					\$0.00									\$0.00				
					\$0.00									\$0.00				
					\$0.00									\$0.00				
					\$0.00									\$0.00				
					\$0.00									\$0.00				
BARE UNIT COST		\$1,435,000.00			\$1,435,000.00	BARE UNIT COST		\$0.00		0				TOTAL RENTED EQUIP	\$0.00			
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HLRY RATE	TOTAL COST	MATERIAL / SERVICES					WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST			
Water Treatment Operator Blended Rate	Water Treatment	1	6923	\$103.06	\$713,418.95	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE										
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE										
					\$0.00	PPE Level D	ALL	22.21	\$12.00	MTH		\$266.46						
					\$0.00	Per Diem	ALL	577	\$51.00	MD		\$29,421.32						
					\$0.00	Misc Safety Supplies	ALL	22.21	\$1,000.00	MD		\$22,205.11						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
					\$0.00							\$0.00						
BARE UNIT COST		\$713,418.95	TOTAL LABOR COST	\$713,418.95		BARE UNIT COST		\$51,892.89	TOTAL MATERIAL COST	\$51,892.89								

ESTIMATE WORKSHEET 139														
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.			
March 7, 2018		Penobscot				Water Treatment - Mendall Marsh - Shallow - 500					139			
BID DATA		Bid Data Notes				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL		TOTAL LABOR		TOTAL MATERIAL		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
1						12	6	0.0	0.00	-	0			
ESTIMATE WORKSHEET		ITEM NO.				TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
Water Treatment - Mendall Marsh - Shallow - 500		139				\$0.00		\$225,000.00		\$225,000.00	Assumes Replacement filter media and bags as 15% of equipment total			
										\$0.00				
										\$0.00				
										\$0.00				
GRAND TOTALS						\$0.00		\$225,000.00		\$225,000.00				
UNIT PRICES						\$0.00		\$225,000.00		\$225,000.00				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP		WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Mobilization (1000GPM)		Water Treatment	1	\$150,000.00	LS	\$150,000.00								\$0.00
Monthly Rental w/PH Adjustment (1000GPM)		Water Treatment	1	\$50,000.00	Month	\$50,000.00								\$0.00
Demobilization (1000GPM)		Water Treatment	1	\$20,000.00	LS	\$20,000.00								\$0.00
Consumables (1000GPM)		Water Treatment	1	\$5,000.00	Month	\$5,000.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
BARE UNIT COST			\$225,000.00	TOTAL COST		\$225,000.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HLRY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
Water Treatment Operator Blended Rate	Water Treatment	1	0	\$103.06	\$0.00	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	PPE Level D		ALL	0.00	\$12.00	MTH	\$0.00		
					\$0.00	Per Diem		ALL	0	\$51.00	MD	\$0.00		
					\$0.00	Misc Safety Supplies		ALL	0.00	\$1,000.00	MD	\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST		\$0.00			

ESTIMATE WORKSHEET 140

ESTIMATE WORKSHEET 140												
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM				ITEM NO.		
March 7, 2018		Penobscot				Water Treatment - Mendall Marsh - Shallow - 300				140		
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS				12	6	28.0	6.46	-	168		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes		
Water Treatment - Mendall Marsh - Shallow - 300	140	\$207,566.41	\$15,098.03		\$0.00		\$555,000.00		\$777,664.44	Assumes Replacement filter media and bags as 15% of equipment total		
									\$0.00			
									\$0.00			
									\$0.00			
GRAND TOTALS		\$207,566.41	\$15,098.03		\$0.00		\$555,000.00		\$777,664.44			
UNIT PRICES		\$207,566.41	\$15,098.03		\$0.00		\$555,000.00		\$777,664.44			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Mobilization (1000GPM)	Water Treatment	1	\$150,000.00	LS	\$150,000.00							\$0.00
Monthly Rental w/PH Adjustment (1000GPM)	Water Treatment	7	\$50,000.00	Month	\$350,000.00							\$0.00
Demobilization (1000GPM)	Water Treatment	1	\$20,000.00	LS	\$20,000.00							\$0.00
Consumables (1000GPM)	Water Treatment	7	\$5,000.00	Month	\$35,000.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$555,000.00	TOTAL COST		\$555,000.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Water Treatment Operator Blended Rate	Water Treatment	1	2014	\$103.06	\$207,566.41	Fuel	ALL					
					\$0.00	Maintenance/Grease	ALL					
					\$0.00	PPE Level D	ALL	6.46	\$12.00		MTH	\$77.53
					\$0.00	Per Diem	ALL	168	\$51.00		MD	\$8,560.02
					\$0.00	Misc Safety Supplies	ALL	6.46	\$1,000.00		MD	\$6,460.49
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$207,566.41	TOTAL LABOR COST		\$207,566.41	BARE UNIT COST		\$15,098.03	TOTAL MATERIAL COST			\$15,098.03

ESTIMATE WORKSHEET 140A

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018	Penobscot					Water Treatment - FF Dredge for Draft					140A	
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
1	LS					12	6	8.1	1.87	-	49	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL		Notes			
Water Treatment - FF Dredge for Draft	140A	\$59,979.42	\$4,362.80	\$0.00		\$280,000.00	\$344,342.23		Assumes Replacement filter media and bags as 15% of equipment total			
							\$0.00					
							\$0.00					
							\$0.00					
GRAND TOTALS		\$59,979.42	\$4,362.80	\$0.00		\$280,000.00	\$344,342.23					
UNIT PRICES		\$59,979.42	\$4,362.80	\$0.00		\$280,000.00	\$344,342.23					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Mobilization (1000GPM)	Water Treatment	1	\$150,000.00	LS	\$150,000.00							\$0.00
Monthly Rental w/PH Adjustment (1000GPM)	Water Treatment	2	\$50,000.00	Month	\$100,000.00							\$0.00
Demobilization (1000GPM)	Water Treatment	1	\$20,000.00	LS	\$20,000.00							\$0.00
Consumables (1000GPM)	Water Treatment	2	\$5,000.00	Month	\$10,000.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$280,000.00	TOTAL COST		\$280,000.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP			\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
Water Treatment Operator Blended Rate	Water Treatment	1	582	\$103.06	\$59,979.42	Fuel	ALL					
					\$0.00	Maintenance/Grease	ALL					
					\$0.00	PPE Level D	ALL	1.87	\$12.00		MTH	\$22.40
					\$0.00	Per Diem	ALL	49	\$51.00		MD	\$2,473.54
					\$0.00	Misc Safety Supplies	ALL	1.87	\$1,000.00		MD	\$1,866.85
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$59,979.42	TOTAL LABOR COST		\$59,979.42	BARE UNIT COST	\$4,362.80	TOTAL MATERIAL COST				\$4,362.80

ESTIMATE WORKSHEET 141

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018	Penobscot					Monitoring Program - MNR - 500					141	
BID DATA			Bid Data Notes				PRODUCTION DATA					
TOTAL QUANTITY ON PROPOSAL	BID UNIT	HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE					
1	LS	12	6	0.0	0.00	-	0					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL	Notes				
Monitoring Program - MNR - 500	141	\$0.00	\$0.00	\$0.00		\$15,000,000.00	\$15,000,000.00					
							\$0.00					
							\$0.00					
							\$0.00					
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$15,000,000.00	\$15,000,000.00					
UNIT PRICES		\$0.00	\$0.00	\$0.00		\$15,000,000.00	\$15,000,000.00					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Monitored Natural Recover		15	\$1,000,000.00	LS	\$15,000,000.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$15,000,000.00	TOTAL COST	\$15,000,000.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00				
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel		ALL				
					\$0.00	Maintenance/Grease		ALL				
					\$0.00	PPE Level D		ALL	0.00	\$12.00	MTH	\$0.00
					\$0.00	Per Diem		ALL	0	\$51.00	MD	\$0.00
					\$0.00	Misc Safety Supplies		ALL	0.00	\$1,000.00	MD	\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00					

ESTIMATE WORKSHEET 142												
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018	Penobscot					Monitoring Program - MNR - 300					142	
BID DATA		Bid Data Notes				PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE	
1	LS					12	6	0.0	0.00	-	0	
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR		TOTAL	Notes		
Monitoring Program - MNR - 300	142	\$0.00	\$0.00	\$0.00			\$15,000,000.00		\$15,000,000.00			
									\$0.00			
									\$0.00			
									\$0.00			
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$15,000,000.00		\$15,000,000.00			
UNIT PRICES		\$0.00	\$0.00	\$0.00			\$15,000,000.00		\$15,000,000.00			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Monitored Natural Recover		15	\$1,000,000.00	LS	\$15,000,000.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$15,000,000.00	TOTAL COST		\$15,000,000.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL					\$0.00
					\$0.00	Maintenance/Grease	ALL					\$0.00
					\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00		MD	\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST			\$0.00

ESTIMATE WORKSHEET 143														
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.			
March 7, 2018		Penobscot				Monitoring Program - EMNR - 500					143			
BID DATA			Bid Data Notes			PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
1	LS				12	6	0.0	0.00	-	0				
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR	TOTAL	Notes					
Monitoring Program - EMNR - 500	143	\$0.00	\$0.00	\$0.00			\$16,598,090.01	\$16,598,090.01						
								\$0.00						
								\$0.00						
								\$0.00						
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$16,598,090.01	\$16,598,090.01						
UNIT PRICES		\$0.00	\$0.00	\$0.00			\$16,598,090.01	\$16,598,090.01						
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST		
Monitored Natural Recover	Monitoring	15	\$1,000,000.00	Each	\$15,000,000.00							\$0.00		
Post Construction Bathy Survey	Survey	3	\$100,000.00	Each	\$300,000.00							\$0.00		
Post Construction Sampling (Boat)	Sample	1,298	\$1,000.00	Each	\$1,298,090.01							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$16,598,090.01	TOTAL COST			\$16,598,090.01	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP			\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HLRY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE					
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH		\$0.00		
					\$0.00	Per Diem	ALL	0	\$51.00	MD		\$0.00		
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MD		\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
					\$0.00							\$0.00		
BARE UNIT COST		\$0.00	TOTAL LABOR COST			\$0.00	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST				\$0.00

ESTIMATE WORKSHEET 144												
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018	Penobscot					Monitoring Program - EMNR - 300					144	
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS				12	6	0.0	0.00	-	0		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR	TOTAL	Notes			
Monitoring Program - EMNR - 300	144	\$0.00	\$0.00	\$0.00			\$19,606,574.55	\$19,606,574.55				
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$19,606,574.55	\$19,606,574.55				
UNIT PRICES		\$0.00	\$0.00	\$0.00			\$19,606,574.55	\$19,606,574.55				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Monitored Natural Recover	Monitoring	15	\$1,000,000.00	Each	\$15,000,000.00							\$0.00
Post Construction Bathy Survey	Survey	3	\$100,000.00	Each	\$300,000.00							\$0.00
Post Construction Sampling (Boat)	Sample	4,307	\$1,000.00	Each	\$4,306,574.55							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST	\$19,606,574.55	TOTAL COST	\$19,606,574.55	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00				
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH	\$0.00	
					\$0.00	Per Diem	ALL	0	\$51.00	MD	\$0.00	
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MD	\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST	\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00					

ESTIMATE WORKSHEET 144A												
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018	Penobscot					Monitoring Program - Dredge and Backfill - MC&O - 500					144A	
BID DATA				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	Bid Data Notes			HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
1				12	6	0.0	0.00	-	0			
BID UNIT				TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR			Notes		
LS												
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR			Notes		
Monitoring Program - Dredge and Backfill - MC&O - 500	144A	\$0.00	\$0.00	\$0.00			\$11,298,090.01			\$11,298,090.01		
										\$0.00		
										\$0.00		
										\$0.00		
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$11,298,090.01			\$11,298,090.01		
UNIT PRICES		\$0.00	\$0.00	\$0.00			\$11,298,090.01			\$11,298,090.01		
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Monitored Natural Recover	Monitoring	10	\$1,000,000.00	Each	\$10,000,000.00							\$0.00
Post Construction Bathy Survey	Survey	0	\$100,000.00	Each	\$0.00							\$0.00
Post Construction Sampling (Boat)	Sample	1,298	\$1,000.00	Each	\$1,298,090.01							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$11,298,090.01	TOTAL COST		\$11,298,090.01	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00		MD	\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST			\$0.00

ESTIMATE WORKSHEET 144B															
BID DATE		PROJECT LOCATION				DESCRIPTION OF ITEM					ITEM NO.				
March 7, 2018		Penobscot				Monitoring Program - Dredge and Backfill - MC&O - 300					144B				
BID DATA		Bid Data Notes				PRODUCTION DATA									
TOTAL QUANTITY ON PROPOSAL						HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
1						12	6	0.0	0.00	-	0				
ESTIMATE WORKSHEET		TOTAL LABOR	TOTAL MATERIAL		TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR		TOTAL	Notes				
Monitoring Program - Dredge and Backfill - MC&O - 300		\$0.00	\$0.00		\$0.00			\$14,306,574.55		\$14,306,574.55					
								\$0.00		\$0.00					
								\$0.00		\$0.00					
								\$0.00		\$0.00					
GRAND TOTALS		\$0.00	\$0.00		\$0.00			\$14,306,574.55		\$14,306,574.55					
UNIT PRICES		\$0.00	\$0.00		\$0.00			\$14,306,574.55		\$14,306,574.55					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP		WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST		
Monitored Natural Recover	Monitoring	10	\$1,000,000.00	Each	\$10,000,000.00								\$0.00		
Post Construction Bathy Survey	Survey	0	\$100,000.00	Each	\$0.00								\$0.00		
Post Construction Sampling (Boat)	Sample	4,307	\$1,000.00	Each	\$4,306,574.55								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
					\$0.00								\$0.00		
BARE UNIT COST		\$14,306,574.55	TOTAL COST		\$14,306,574.55	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP			\$0.00		
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES				WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel				ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease				ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	PPE Level D				ALL	0.00	\$12.00	MTH	\$0.00	
					\$0.00	Per Diem				ALL	0	\$51.00	MD	\$0.00	
					\$0.00	Misc Safety Supplies				ALL	0.00	\$1,000.00	MD	\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
					\$0.00									\$0.00	
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST				\$0.00	TOTAL MATERIAL COST				\$0.00

ESTIMATE WORKSHEET 144C												
BID DATE	PROJECT LOCATION				DESCRIPTION OF ITEM						ITEM NO.	
March 7, 2018	Penobscot				Monitoring Program - Dredge and Backfill - MM - 300						144C	
BID DATA				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	BID UNIT	Bid Data Notes		HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
1	LS			12	6	0.0	0.00	-	0			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR	TOTAL	Notes			
Monitoring Program - Dredge and Backfill - MM - 300	144C	\$0.00	\$0.00	\$0.00			\$10,196,626.53	\$10,196,626.53				
							\$0.00					
							\$0.00					
							\$0.00					
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$10,196,626.53	\$10,196,626.53				
UNIT PRICES		\$0.00	\$0.00	\$0.00			\$10,196,626.53	\$10,196,626.53				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Monitored Natural Recover	Monitoring	10	\$1,000,000.00	Each	\$10,000,000.00							\$0.00
Post Construction Bathy Survey	Survey	0	\$100,000.00	Each	\$0.00							\$0.00
Post Construction Sampling (Boat)	Sample	197	\$1,000.00	Each	\$196,626.53							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$10,196,626.53	TOTAL COST		\$10,196,626.53	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL					\$0.00
					\$0.00	Maintenance/Grease	ALL					\$0.00
					\$0.00	PPE Level D	ALL	0.00	\$12.00		MTH	\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00		MD	\$0.00
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00		MD	\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST			\$0.00

ESTIMATE WORKSHEET 144D												
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018	Penobscot					Monitoring Program - TLC					144D	
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT	HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE					
1	LS	12	6	0.0	0.00	-	0					
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR	TOTAL	Notes				
Monitoring Program - TLC	144D	\$0.00	\$0.00	\$0.00		\$5,356,333.92	\$5,356,333.92					
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$5,356,333.92	\$5,356,333.92					
UNIT PRICES		\$0.00	\$0.00	\$0.00		\$5,356,333.92	\$5,356,333.92					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Monitored Natural Recover (Limited)	Monitoring	10	\$500,000.00	Each	\$5,000,000.00							\$0.00
Post Construction Bathy Survey	Survey	0	\$100,000.00	Each	\$0.00							\$0.00
Post Construction Sampling (Land)	Sample	713	\$500.00	Each	\$356,333.92							\$0.00
BARE UNIT COST → \$5,356,333.92 TOTAL COST → \$5,356,333.92 BARE UNIT COST → \$0.00 0 TOTAL RENTED EQUIP → \$0.00												
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HLRY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				\$0.00
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				\$0.00
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH		\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00	MD		\$0.00
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MD		\$0.00
BARE UNIT COST → \$0.00 TOTAL LABOR COST → \$0.00 BARE UNIT COST → \$0.00 TOTAL MATERIAL COST → \$0.00												

ESTIMATE WORKSHEET 144E													
BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018	Penobscot					Monitoring Program - Amended Cap					144E		
BID DATA			Bid Data Notes			PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
1	LS				12	6	0.0	0.00	-	0			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR	TOTAL	Notes				
Monitoring Program - Amended Cap	144E	\$0.00	\$0.00	\$0.00			\$5,703,592.11	\$5,703,592.11					
							\$0.00	\$0.00					
							\$0.00	\$0.00					
							\$0.00	\$0.00					
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$5,703,592.11	\$5,703,592.11					
UNIT PRICES		\$0.00	\$0.00	\$0.00			\$5,703,592.11	\$5,703,592.11					
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST	
Monitored Natural Recover (Limited)	Monitoring	10	\$500,000.00	Each	\$5,000,000.00							\$0.00	
Post Construction Bathy Survey	Survey	0	\$100,000.00	Each	\$0.00							\$0.00	
Post Construction Sampling (Land)	Sample	1,407	\$500.00	Each	\$703,592.11							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$5,703,592.11	TOTAL COST		\$5,703,592.11	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL			FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	Maintenance/Grease	ALL			FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			
					\$0.00	PPE Level D	ALL	0.00	\$12.00	MTH			\$0.00
					\$0.00	Per Diem	ALL	0	\$51.00	MD			\$0.00
					\$0.00	Misc Safety Supplies	ALL	0.00	\$1,000.00	MD			\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
					\$0.00								\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.00		TOTAL MATERIAL COST			\$0.00

ESTIMATE WORKSHEET 145												
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.
March 7, 2018		Penobscot					Restoration Plantings and Access Agreements- Main Channel - Deep - 500					145
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS				12	6	0.0	0.00	-	0		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
Restoration Plantings and Access Agreements- Main Channel - Deep - 500	145	\$0.00	\$0.00	\$0.00		\$0.00		\$0.00				
								\$0.00				
								\$0.00				
								\$0.00				
GRAND TOTALS		\$0.00	\$0.00	\$0.00		\$0.00		\$0.00				
UNIT PRICES		\$0.00	\$0.00	\$0.00		\$0.00		\$0.00				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Restoration Planting	Restore	0	\$5,000.00	Acre	\$0.00							\$0.00
Access Agreements	Access	0	\$25,000.00	Each	\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST	\$0.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP	\$0.00			\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL				\$0.00	
					\$0.00	Maintenance/Grease	ALL				\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
					\$0.00						\$0.00	
BARE UNIT COST		\$0.00	TOTAL LABOR COST	\$0.00	BARE UNIT COST	\$0.00	TOTAL MATERIAL COST	\$0.00			\$0.00	

ESTIMATE WORKSHEET 146													
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.	
March 7, 2018		Penobscot					Restoration Plantings and Access Agreements- Main Channel - Deep - 300					146	
BID DATA		Bid Data Notes				PRODUCTION DATA							
TOTAL QUANTITY ON PROPOSAL						HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1						12	6	0.0	0.00	-	0		
ESTIMATE WORKSHEET		TOTAL LABOR	TOTAL MATERIAL			TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes		
Restoration Plantings and Access Agreements- Main Channel - Deep - 300		\$0.00	\$0.00			\$0.00		\$0.00		\$0.00			
										\$0.00			
										\$0.00			
										\$0.00			
GRAND TOTALS		\$0.00	\$0.00			\$0.00		\$0.00		\$0.00			
UNIT PRICES		\$0.00	\$0.00			\$0.00		\$0.00		\$0.00			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST	
Restoration Planting	Restore	0	\$5,000.00	Acre	\$0.00							\$0.00	
Access Agreements	Access	0	\$25,000.00	Each	\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST			\$0.00	BARE UNIT COST	\$0.00	0	TOTAL RENTED EQUIP			\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease	ALL		FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
					\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL LABOR COST			\$0.00	BARE UNIT COST	\$0.00	TOTAL MATERIAL COST				\$0.00

ESTIMATE WORKSHEET 147

BID DATE	PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.			
March 7, 2018	Penobscot					Restoration Plantings and Access Agreements- Orland River - Deep - 500					147			
BID DATA		Bid Data Notes				PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL	BID UNIT					HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
1	LS					12	6	0.0	0.00	-	0			
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR			TOTAL	Notes			
Restoration Plantings and Access Agreements-Orland River - Deep - 500	147	\$0.00	\$0.00	\$0.00			\$0.00			\$0.00				
										\$0.00				
										\$0.00				
										\$0.00				
										\$0.00				
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$0.00			\$0.00				
UNIT PRICES		\$0.00	\$0.00	\$0.00			\$0.00			\$0.00				
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP		WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST	
Restoration Planting	Restore	0	\$5,000.00	Acre	\$0.00								\$0.00	
Access Agreements	Access	0	\$25,000.00	Each	\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
BARE UNIT COST		\$0.00	TOTAL COST			\$0.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP			\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel	ALL						\$0.00	
					\$0.00	Maintenance/Grease	ALL						\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
BARE UNIT COST		\$0.00	TOTAL LABOR COST			\$0.00	BARE UNIT COST			\$0.00	TOTAL MATERIAL COST			\$0.00

ESTIMATE WORKSHEET 148														
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018		Penobscot					Restoration Plantings and Access Agreements- Orland River - Deep - 300					148		
BID DATA				PRODUCTION DATA										
		Bid Data Notes				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE		DAYS REQ. TO COMPLETE		
TOTAL QUANTITY ON PROPOSAL						12	6	0.0	0.00	-		0		
BID UNIT														
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
ITEM NO.														
148		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00				
										\$0.00				
										\$0.00				
										\$0.00				
GRAND TOTALS		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00				
UNIT PRICES		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP		WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Restoration Planting		Restore	0	\$5,000.00	Acre	\$0.00								\$0.00
Access Agreements		Access	0	\$25,000.00	Each	\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
BARE UNIT COST		\$0.00		TOTAL COST		\$0.00		BARE UNIT COST		0		TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
					\$0.00	Fuel			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00	Maintenance/Grease			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
					\$0.00								\$0.00	
BARE UNIT COST		\$0.00		TOTAL LABOR COST		\$0.00		BARE UNIT COST		\$0.00		TOTAL MATERIAL COST		\$0.00

ESTIMATE WORKSHEET 149														
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.		
March 7, 2018		Penobscot					Restoration Plantings and Access Agreements- Main Channel - Shallow - 500					149		
BID DATA			Bid Data Notes			PRODUCTION DATA								
TOTAL QUANTITY ON PROPOSAL		1				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE			
BID UNIT		LS				12	6	25.4	5.87	-	153			
ESTIMATE WORKSHEET		ITEM NO.	TOTAL LABOR		TOTAL MATERIAL	TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL	Notes			
Restoration Plantings and Access Agreements- Main Channel - Shallow - 500		149	\$0.00		\$0.00	\$0.00		\$20,625,250.80		\$20,625,250.80				
GRAND TOTALS			\$0.00		\$0.00	\$0.00		\$20,625,250.80		\$20,625,250.80				
UNIT PRICES			\$0.00		\$0.00	\$0.00		\$20,625,250.80		\$20,625,250.80				
SUB-CONTRACTOR		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP		WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Restoration Planting		Restore	305	\$5,000.00	Acre	\$1,525,250.80								\$0.00
Access Agreements		Access	764	\$25,000.00	Each	\$19,100,000.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
						\$0.00								\$0.00
BARE UNIT COST		\$20,625,250.80	TOTAL COST		\$20,625,250.80	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00		
LABOR CLASSIFICATION		WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
						\$0.00	Fuel		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			\$0.00	
						\$0.00	Maintenance/Grease		ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE			\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
						\$0.00							\$0.00	
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.00		TOTAL MATERIAL COST		\$0.00		

ESTIMATE WORKSHEET 150																	
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.					
March 7, 2018		Penobscot					Restoration Plantings and Access Agreements- Main Channel - Shallow - 300					150					
BID DATA			Bid Data Notes			PRODUCTION DATA											
TOTAL QUANTITY ON PROPOSAL				HOURS PER DAY		DAYS PER WEEK		TOTAL WEEKS		TOTAL MONTHS		DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE				
1				12		6		25.4		5.87		-	153				
ESTIMATE WORKSHEET		TOTAL LABOR		TOTAL MATERIAL		TOTAL RENTED EQUIP		TOTAL SUB-CONTRACTOR		TOTAL		Notes					
Restoration Plantings and Access Agreements- Main Channel - Shallow - 300		\$0.00		\$0.00		\$0.00		\$62,025,250.80		\$62,025,250.80							
GRAND TOTALS		\$0.00		\$0.00		\$0.00		\$62,025,250.80		\$62,025,250.80							
UNIT PRICES		\$0.00		\$0.00		\$0.00		\$62,025,250.80		\$62,025,250.80							
SUB-CONTRACTOR		WORK TO PERFORM		QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST		RENTAL EQUIP		WORK TO PERFORM		FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Restoration Planting		Restore		305	\$5,000.00	Acre	\$1,525,250.80										\$0.00
Access Agreements		Access		2,420	\$25,000.00	Each	\$60,500,000.00										\$0.00
							\$0.00										\$0.00
							\$0.00										\$0.00
							\$0.00										\$0.00
							\$0.00										\$0.00
							\$0.00										\$0.00
							\$0.00										\$0.00
							\$0.00										\$0.00
							\$0.00										\$0.00
							\$0.00										\$0.00
							\$0.00										\$0.00
							\$0.00										\$0.00
BARE UNIT COST		\$62,025,250.80		TOTAL COST		\$62,025,250.80		BARE UNIT COST		\$0.00		0		TOTAL RENTED EQUIP		\$0.00	
LABOR CLASSIFICATION		WORK TO PERFORM		TOTAL MEN	TOTAL HOURS	HRLY RATE	TOTAL COST		MATERIAL / SERVICES			WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	
							\$0.00		Fuel			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
							\$0.00		Maintenance/Grease			ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				
							\$0.00									\$0.00	
							\$0.00									\$0.00	
							\$0.00									\$0.00	
							\$0.00									\$0.00	
							\$0.00									\$0.00	
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							\$0.00									\$0.00	
							\$0.00									\$0.00	
							\$0.00									\$0.00	
							\$0.00									\$0.00	
							\$0.00									\$0.00	
BARE UNIT COST		\$0.00		TOTAL LABOR COST		\$0.00		BARE UNIT COST		\$0.00		TOTAL MATERIAL COST		\$0.00			

ESTIMATE WORKSHEET 157												
BID DATE		PROJECT LOCATION					DESCRIPTION OF ITEM					ITEM NO.
March 7, 2018		Penobscot					Restoration Plantings and Access Agreements- TLC - 500					157
BID DATA			Bid Data Notes			PRODUCTION DATA						
TOTAL QUANTITY ON PROPOSAL	BID UNIT				HOURS PER DAY	DAYS PER WEEK	TOTAL WEEKS	TOTAL MONTHS	DAILY UNIT PRODUCTION RATE	DAYS REQ. TO COMPLETE		
1	LS				12	6	0.0	0.00	-	0		
ESTIMATE WORKSHEET	ITEM NO.	TOTAL LABOR	TOTAL MATERIAL	TOTAL RENTED EQUIP			TOTAL SUB-CONTRACTOR		TOTAL	Notes		
Restoration Plantings and Access Agreements- TLC - 500	157	\$0.00	\$0.00	\$0.00			\$0.00		\$0.00			
									\$0.00			
									\$0.00			
									\$0.00			
									\$0.00			
GRAND TOTALS		\$0.00	\$0.00	\$0.00			\$0.00		\$0.00			
UNIT PRICES		\$0.00	\$0.00	\$0.00			\$0.00		\$0.00			
SUB-CONTRACTOR	WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST	RENTAL EQUIP	WORK TO PERFORM	FUEL GALS.	TOTAL UNITS	TOTAL DAYS	UNIT RATE	TOTAL COST
Restoration Planting	Restore	0	\$5,000.00	Acre	\$0.00							\$0.00
Access Agreements	Access	0	\$25,000.00	Each	\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL COST		\$0.00	BARE UNIT COST		\$0.00	0	TOTAL RENTED EQUIP		\$0.00
LABOR CLASSIFICATION	WORK TO PERFORM	TOTAL MEN	TOTAL HOURS	HLRY RATE	TOTAL COST	MATERIAL / SERVICES		WORK TO PERFORM	QUANTITY UNITS	UNIT COST	UNIT OF MEAS.	TOTAL COST
					\$0.00	Fuel	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				\$0.00
					\$0.00	Maintenance/Grease	ALL	FUEL AND LUBE INCLUDED IN EQUIPMENT HOURLY RATES ABOVE				\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
					\$0.00							\$0.00
BARE UNIT COST		\$0.00	TOTAL LABOR COST		\$0.00	BARE UNIT COST		\$0.00	TOTAL MATERIAL COST			\$0.00

AER Cost Estimate Supporting Documentation

Project: Penobscot
 Date Due: 3/7/2018
 Prepared by: Jason Raimondi

CONTROL SHEET		
Density Conversion for Sediment/Soil (ton/cy)	1.10	ton/cy
Density Conversion for Stabilization Agent (ton/cy)	1.50	ton/cy
Density Conversion for GGA (ton/cy)	1.40	ton/cy
Density Conversion for Carbon Sand Amendment (ton/cy)	1.30	ton/cy
Density Conversion for Carbon (ton/cy)	0.37	ton/cy
Density Conversion for Habitat Layer (ton/cy)	1.35	ton/cy
Density Conversion for Residual Layer (ton/cy)	1.35	ton/cy
Density Conversion for Asphalt (ton/cy)	1.55	ton/cy
Density Conversion for Sediment (ton/cy)	0.56	ton/cy
Density for Timber Piles (ton/lf)	0.03	ton/lf
Bulking Factor	0	%
Stabilization Agent Dosage by weight	8%	%
Side Slope % of total (Nearshore)	0%	%
Side Slope % of total (All others)	0%	%
Water Generation (gal/cy)	20	gal/cy
Number of Piles to be Removed	400.0	each
Unidentified Debris % of Total Dredge Volume	2%	%

BURDEN RATES	
Office Personnel	0%
Field Personnel	0%
Overtime	0%
Overhead (T&D Not Included)	12%
Overhead (Subcontractors ONLY)	5%
Profit	5%
T&D Markup	0%
Contingency	20%
Project Management	5%
Remedial Design	5%
Construction Management	6%
Performance and Payment Bond	1.5%
Mobilization / Demobilization	5.0%
Sales Tax (Maine State)	5.5%

Schedule		
Mob/Demob/SMA/Site Prep/Env. Controls/Demo/Debris/Surveys	6	days/wk
	12	hr/day
	1	shifts/day
Utilities/Operations Maintenance Equipment	6	days/wk
	12	hr/day
	1	shifts/day
Mechanical Dredging/Backfill Placement	6	days/wk
	12	hr/day
	1	shifts/day
Sediment Unloading/Processing	6	days/wk
	12	hr/day
	1	shifts/day
Sediment Loading/Offsite T&D	6	days/wk
	12	hr/day
	6	days/wk
Water Treatment	12	hr/day
	1	shifts/day

Project Management (5%)
Remedial Design (5%)
Construction Management (6%)

CELLS ARE USED IN DROPDOWN MENUS IN WORKSHEET ESTIMATES AND SUMMARY			Duration Calculations
WORKSHEET NO.	ITEM NO.	DESCRIPTION	
ESTIMATE WORKSHEET 1	1	Performance and Payment Bond	0 Days
ESTIMATE WORKSHEET 2	2	Work Plans and Submittals	0 Days
ESTIMATE WORKSHEET 3	3	Mobilization	45 Days
ESTIMATE WORKSHEET 4	4	Temporary Construction - Main FF Processing	45 Days
ESTIMATE WORKSHEET 4A	4A	Temporary Construction - Main NE Coal Processing	30 Days
ESTIMATE WORKSHEET 5	5	Temporary Construction - FF Storage 1	25 Days
ESTIMATE WORKSHEET 6	6	Temporary Construction - FF Storage 2	30 Days
ESTIMATE WORKSHEET 7	7	Conditions Surveys	10 Days
ESTIMATE WORKSHEET 8	8	Topographic Surveys - Dredge	25 Days
ESTIMATE WORKSHEET 8A	8A	Topographic Surveys - Dredge - NE Coal	8 Days
ESTIMATE WORKSHEET 9	9	Topographic Surveys - TLC - 500	119 Days
ESTIMATE WORKSHEET 10	10	Topographic Surveys - TLC - 300	119 Days
ESTIMATE WORKSHEET 10A	10A	Topographic Surveys - Ammended	23 Days
ESTIMATE WORKSHEET 11	11	Hydrographic Surveys - Main Channel - Deep - 500	0 Days
ESTIMATE WORKSHEET 12	12	Hydrographic Surveys - Main Channel - Deep - 300	705 Days
ESTIMATE WORKSHEET 13	13	Hydrographic Surveys - Orland River - Deep - 500	32 Days
ESTIMATE WORKSHEET 14	14	Hydrographic Surveys - Orland River - Deep - 300	32 Days
ESTIMATE WORKSHEET 15	15	Hydrographic Surveys - Main Channel - Shallow - 500	179 Days
ESTIMATE WORKSHEET 16	16	Hydrographic Surveys - Main Channel - Shallow - 300	189 Days
ESTIMATE WORKSHEET 17	17	Hydrographic Surveys - Orland River - Shallow - 500	144 Days
ESTIMATE WORKSHEET 18	18	Hydrographic Surveys - Orland River - Shallow - 300	144 Days
ESTIMATE WORKSHEET 19	19	Hydrographic Surveys - Mendall Marsh - Shallow - 500	0 Days
ESTIMATE WORKSHEET 20	20	Hydrographic Surveys - Mendall Marsh - Shallow - 300	42 Days
ESTIMATE WORKSHEET 21	21	Hydrographic Surveys - EMNR - 500	266 Days
ESTIMATE WORKSHEET 22	22	Hydrographic Surveys - EMNR - 300	728 Days
ESTIMATE WORKSHEET 23	23	Utilities Surveys	25 Days
ESTIMATE WORKSHEET 24	24	Debris Surveys	25 Days
ESTIMATE WORKSHEET 25	25	Environmental Monitoring - Main and Orland - 500	2450 Days
ESTIMATE WORKSHEET 26	26	Environmental Monitoring - Main and Orland - 300	6452 Days
ESTIMATE WORKSHEET 27	27	Environmental Monitoring - Mendall - 500	0 Days
ESTIMATE WORKSHEET 28	28	Environmental Monitoring - Mendall - 300	364 Days
ESTIMATE WORKSHEET 29	29	Environmental Monitoring - Mendall - TLC - 500	447 Days
ESTIMATE WORKSHEET 30	30	Environmental Monitoring - Mendall - TLC - 300	447 Days
ESTIMATE WORKSHEET 31	31	Environmental Monitoring - EMNR - 500	1062 Days
ESTIMATE WORKSHEET 32	32	Environmental Monitoring - EMNR - 300	2914 Days
ESTIMATE WORKSHEET 33	33	Debris Removal - Main Channel 500	19 Days
ESTIMATE WORKSHEET 34	34	Debris Removal - Main Channel 300	109 Days
ESTIMATE WORKSHEET 35	35	Debris Removal - Orland River 500	20 Days
ESTIMATE WORKSHEET 36	36	Debris Removal - Orland River 300	20 Days
ESTIMATE WORKSHEET 37	37	Debris Removal - Mendall Marsh 500	0 Days
ESTIMATE WORKSHEET 38	38	Debris Removal - Mendall Marsh 300	16 Days
ESTIMATE WORKSHEET 38A	38A	Debris Removal - FF Dredge for Draft	3 Days
ESTIMATE WORKSHEET 39	39	Dredging - Main Channel - Deep - 500	0 Days
ESTIMATE WORKSHEET 40	40	Dredging - Main Channel - Deep - 300	2822 Days
ESTIMATE WORKSHEET 41	41	Dredging - Orland River - Deep - 500	129 Days
ESTIMATE WORKSHEET 42	42	Dredging - Orland River - Deep - 300	129 Days
ESTIMATE WORKSHEET 43	43	Dredging - Main Channel - Shallow - 500	716 Days
ESTIMATE WORKSHEET 44	44	Dredging - Main Channel - Shallow - 300	756 Days
ESTIMATE WORKSHEET 45	45	Dredging - Orland River - Shallow - 500	577 Days
ESTIMATE WORKSHEET 46	46	Dredging - Orland River - Shallow - 300	577 Days
ESTIMATE WORKSHEET 47	47	Dredging - Mendall Marsh - Shallow - 500	0 Days
ESTIMATE WORKSHEET 48	48	Dredging - Mendall Marsh - Shallow - 300	168 Days
ESTIMATE WORKSHEET 48A	48A	Dredging - FF Dredge for Draft	49 Days
ESTIMATE WORKSHEET 49	49	Offloading - Main Channel - Deep - 500	0 Days
ESTIMATE WORKSHEET 50	50	Offloading - Main Channel - Deep - 300	2822 Days
ESTIMATE WORKSHEET 51	51	Offloading - Orland River - Deep - 500	129 Days
ESTIMATE WORKSHEET 52	52	Offloading - Orland River - Deep - 300	129 Days
ESTIMATE WORKSHEET 53	53	Offloading - Main Channel - Shallow - 500	716 Days
ESTIMATE WORKSHEET 54	54	Offloading - Main Channel - Shallow - 300	756 Days
ESTIMATE WORKSHEET 55	55	Offloading - Orland River - Shallow - 500	577 Days
ESTIMATE WORKSHEET 56	56	Offloading - Orland River - Shallow - 300	577 Days
ESTIMATE WORKSHEET 57	57	Offloading - Mendall Marsh - Shallow - 500	0 Days
ESTIMATE WORKSHEET 58	58	Offloading - Mendall Marsh - Shallow - 300	168 Days
ESTIMATE WORKSHEET 58A	58A	Offloading - FF Dredge for Draft	49
ESTIMATE WORKSHEET 59	59	Processing - Main Channel - Deep - 500	0 Days
ESTIMATE WORKSHEET 60	60	Processing - Main Channel - Deep - 300	2822 Days
ESTIMATE WORKSHEET 61	61	Processing - Orland River - Deep - 500	129 Days
ESTIMATE WORKSHEET 62	62	Processing - Orland River - Deep - 300	129 Days
ESTIMATE WORKSHEET 63	63	Processing - Main Channel - Shallow - 500	716 Days
ESTIMATE WORKSHEET 64	64	Processing - Main Channel - Shallow - 300	756 Days
ESTIMATE WORKSHEET 65	65	Processing - Orland River - Shallow - 500	577 Days
ESTIMATE WORKSHEET 66	66	Processing - Orland River - Shallow - 300	577 Days
ESTIMATE WORKSHEET 67	67	Processing - Mendall Marsh - Shallow - 500	0 Days
ESTIMATE WORKSHEET 68	68	Processing - Mendall Marsh - Shallow - 300	168 Days
ESTIMATE WORKSHEET 68A	68A	Processing - FF Dredge for Draft	49
ESTIMATE WORKSHEET 69	69	Material Procurement and Delivery - Main Channel - Deep - 500	0 Days
ESTIMATE WORKSHEET 70	70	Material Procurement and Delivery - Main Channel - Deep - 300	0 Days
ESTIMATE WORKSHEET 71	71	Material Procurement and Delivery - Orland River - Deep - 500	0 Days
ESTIMATE WORKSHEET 72	72	Material Procurement and Delivery - Orland River - Deep - 300	0 Days

ESTIMATE WORKSHEET 73	73	Material Procurement and Delivery - Main Channel - Shallow - 500	0 Days	
ESTIMATE WORKSHEET 74	74	Material Procurement and Delivery - Main Channel - Shallow - 300	0 Days	
ESTIMATE WORKSHEET 75	75	Material Procurement and Delivery - Orland River - Shallow - 500	0 Days	
ESTIMATE WORKSHEET 76	76	Material Procurement and Delivery - Orland River - Shallow - 300	0 Days	
ESTIMATE WORKSHEET 77	77	Material Procurement and Delivery - Mendall Marsh - Shallow - 500	0 Days	
ESTIMATE WORKSHEET 78	78	Material Procurement and Delivery - Mendall Marsh - Shallow - 300	0 Days	
ESTIMATE WORKSHEET 79	79	Material Procurement and Delivery - EMNR - 500	0 Days	
ESTIMATE WORKSHEET 80	80	Material Procurement and Delivery - EMNR - 300	0 Days	
ESTIMATE WORKSHEET 81	81	Material Procurement and Delivery - TLC - 500	0 Days	
ESTIMATE WORKSHEET 82	82	Material Procurement and Delivery - TLC - 300	0 Days	
ESTIMATE WORKSHEET 82A	82A	Material Procurement and Delivery - Amended Cap	0 Days	
ESTIMATE WORKSHEET 83	83	Loading - Main Channel - Deep - 500	0 Days	
ESTIMATE WORKSHEET 84	84	Loading - Main Channel - Deep - 300	3175 Days	
ESTIMATE WORKSHEET 85	85	Loading - Orland River - Deep - 500	146 Days	
ESTIMATE WORKSHEET 86	86	Loading - Orland River - Deep - 300	146 Days	
ESTIMATE WORKSHEET 87	87	Loading - Main Channel - Shallow - 500	572 Days	
ESTIMATE WORKSHEET 88	88	Loading - Main Channel - Shallow - 300	615 Days	
ESTIMATE WORKSHEET 89	89	Loading - Orland River - Shallow - 500	494 Days	
ESTIMATE WORKSHEET 90	90	Loading - Orland River - Shallow - 300	494 Days	
ESTIMATE WORKSHEET 91	91	Loading - Mendall Marsh - Shallow - 500	0 Days	
ESTIMATE WORKSHEET 92	92	Loading - Mendall Marsh - Shallow - 300	180 Days	
ESTIMATE WORKSHEET 93	93	Loading - EMNR - 500	1062 Days	Assumed same as dredging
ESTIMATE WORKSHEET 94	94	Loading - EMNR - 300	2914 Days	Assumed same as dredging
ESTIMATE WORKSHEET 95	95	Loading - TLC - 500	447 Days	Assumed same as dredging
ESTIMATE WORKSHEET 96	96	Loading - TLC - 300	447 Days	Assumed same as dredging
ESTIMATE WORKSHEET 96A	96A	Loading - Amended Cap	63	
ESTIMATE WORKSHEET 97	97	Backfilling - Main Channel - Deep - 500	0 Days	Assumed same as dredging
ESTIMATE WORKSHEET 98	98	Backfilling - Main Channel - Deep - 300	3175 Days	Assumed same as dredging
ESTIMATE WORKSHEET 99	99	Backfilling - Orland River - Deep - 500	146 Days	Assumed same as dredging
ESTIMATE WORKSHEET 100	100	Backfilling - Orland River - Deep - 300	146 Days	Assumed same as dredging
ESTIMATE WORKSHEET 101	101	Backfilling - Main Channel - Shallow - 500	572 Days	Assumed same as dredging
ESTIMATE WORKSHEET 102	102	Backfilling - Main Channel - Shallow - 300	615 Days	Assumed same as dredging
ESTIMATE WORKSHEET 103	103	Backfilling - Orland River - Shallow - 500	494 Days	Assumed same as dredging
ESTIMATE WORKSHEET 104	104	Backfilling - Orland River - Shallow - 300	494 Days	Assumed same as dredging
ESTIMATE WORKSHEET 105	105	Backfilling - Mendall Marsh - Shallow - 500	0 Days	Assumed same as dredging
ESTIMATE WORKSHEET 106	106	Backfilling - Mendall Marsh - Shallow - 300	180 Days	Assumed same as dredging
ESTIMATE WORKSHEET 107	107	Backfilling - EMNR - 500	1062 Days	Assumed same as dredging
ESTIMATE WORKSHEET 108	108	Backfilling - EMNR - 300	2914 Days	Assumed same as dredging
ESTIMATE WORKSHEET 109	109	Backfilling - TLC - 500	447 Days	
ESTIMATE WORKSHEET 110	110	Backfilling - TLC - 300	447 Days	
ESTIMATE WORKSHEET 110A	110A	Backfilling - Amended Cap	63	
ESTIMATE WORKSHEET 111	111	T&D - Main Channel - Deep - 500	0 Days	Assumed same as dredging
ESTIMATE WORKSHEET 112	112	T&D - Main Channel - Deep - 300	2464 Days	Assumed same as dredging
ESTIMATE WORKSHEET 113	113	T&D - Orland River - Deep - 500	113 Days	Assumed same as dredging
ESTIMATE WORKSHEET 114	114	T&D - Orland River - Deep - 300	113 Days	Assumed same as dredging
ESTIMATE WORKSHEET 115	115	T&D - Main Channel - Shallow - 500	698 Days	
ESTIMATE WORKSHEET 116	116	T&D - Main Channel - Shallow - 300	736 Days	
ESTIMATE WORKSHEET 117	117	T&D - Orland River - Shallow - 500	562 Days	
ESTIMATE WORKSHEET 118	118	T&D - Orland River - Shallow - 300	562 Days	
ESTIMATE WORKSHEET 119	119	T&D - Mendall Marsh - Shallow - 500	0 Days	
ESTIMATE WORKSHEET 120	120	T&D - Mendall Marsh - Shallow - 300	164 Days	
ESTIMATE WORKSHEET 120A	120A	T&D - FF Dredge for Draft	47	
ESTIMATE WORKSHEET 121	121	T&D Ben - Main Channel - Deep - 500	0 Days	
ESTIMATE WORKSHEET 122	122	T&D Ben - Main Channel - Deep - 300	2464 Days	
ESTIMATE WORKSHEET 123	123	T&D Ben - Orland River - Deep - 500	113 Days	
ESTIMATE WORKSHEET 124	124	T&D Ben - Orland River - Deep - 300	113 Days	
ESTIMATE WORKSHEET 125	125	T&D Ben - Main Channel - Shallow - 500	698 Days	
ESTIMATE WORKSHEET 126	126	T&D Ben - Main Channel - Shallow - 300	736 Days	
ESTIMATE WORKSHEET 127	127	T&D Ben - Orland River - Shallow - 500	562 Days	
ESTIMATE WORKSHEET 128	128	T&D Ben - Orland River - Shallow - 300	562 Days	
ESTIMATE WORKSHEET 129	129	T&D Ben - Mendall Marsh - Shallow - 500	0 Days	
ESTIMATE WORKSHEET 130	130	T&D Ben - Mendall Marsh - Shallow - 300	164 Days	
ESTIMATE WORKSHEET 130A	130A	T&D Ben - FF Dredge for Draft	47 Days	
ESTIMATE WORKSHEET 131	131	Water Treatment - Main Channel - Deep - 500	0 Days	
ESTIMATE WORKSHEET 132	132	Water Treatment - Main Channel - Deep - 300	2822 Days	
ESTIMATE WORKSHEET 133	133	Water Treatment - Orland River - Deep - 500	129 Days	
ESTIMATE WORKSHEET 134	134	Water Treatment - Orland River - Deep - 300	129 Days	
ESTIMATE WORKSHEET 135	135	Water Treatment - Main Channel - Shallow - 500	716 Days	
ESTIMATE WORKSHEET 136	136	Water Treatment - Main Channel - Shallow - 300	756 Days	
ESTIMATE WORKSHEET 137	137	Water Treatment - Orland River - Shallow - 500	577 Days	
ESTIMATE WORKSHEET 138	138	Water Treatment - Orland River - Shallow - 300	577 Days	
ESTIMATE WORKSHEET 139	139	Water Treatment - Mendall Marsh - Shallow - 500	0 Days	
ESTIMATE WORKSHEET 140	140	Water Treatment - Mendall Marsh - Shallow - 300	168 Days	
ESTIMATE WORKSHEET 140A	140A	Water Treatment - FF Dredge for Draft	49 Days	
ESTIMATE WORKSHEET 141	141	Monitoring Program - MNR - 500	0 Days	
ESTIMATE WORKSHEET 142	142	Monitoring Program - MNR - 300	0 Days	
ESTIMATE WORKSHEET 143	143	Monitoring Program - EMNR - 500	0 Days	
ESTIMATE WORKSHEET 144	144	Monitoring Program - EMNR - 300	0 Days	
ESTIMATE WORKSHEET 144A	144A	Monitoring Program - Dredge and Backfill - MC&O - 500	0 Days	
ESTIMATE WORKSHEET 144B	144B	Monitoring Program - Dredge and Backfill - MC&O - 300	0 Days	
ESTIMATE WORKSHEET 144C	144C	Monitoring Program - Dredge and Backfill - MM - 300	0 Days	
ESTIMATE WORKSHEET 144D	144D	Monitoring Program - TLC	0 Days	
ESTIMATE WORKSHEET 144E	144E	Monitoring Program - Amended Cap	0 Days	
ESTIMATE WORKSHEET 145	145	Restoration Plantings and Access Agreements- Main Channel - Deep - 500	0 Days	
ESTIMATE WORKSHEET 146	146	Restoration Plantings and Access Agreements- Main Channel - Deep - 300	0 Days	
ESTIMATE WORKSHEET 147	147	Restoration Plantings and Access Agreements- Orland River - Deep - 500	0 Days	
ESTIMATE WORKSHEET 148	148	Restoration Plantings and Access Agreements- Orland River - Deep - 300	0 Days	

ESTIMATE WORKSHEET 149	149	Restoration Plantings and Access Agreements- Main Channel - Shallow - 500	153 Days
ESTIMATE WORKSHEET 150	150	Restoration Plantings and Access Agreements- Main Channel - Shallow - 300	153 Days
ESTIMATE WORKSHEET 151	151	Restoration Plantings and Access Agreements- Orland River - Shallow - 500	60 Days
ESTIMATE WORKSHEET 152	152	Restoration Plantings and Access Agreements- Orland River - Shallow - 300	60 Days
ESTIMATE WORKSHEET 153	153	Restoration Plantings and Access Agreements- Mendall Marsh - Shallow - 500	0 Days
ESTIMATE WORKSHEET 154	154	Restoration Plantings and Access Agreements- Mendall Marsh - Shallow - 300	0 Days
ESTIMATE WORKSHEET 155	155	Restoration Plantings and Access Agreements- EMNR - 500	0 Days
ESTIMATE WORKSHEET 156	156	Restoration Plantings and Access Agreements- EMNR - 300	0 Days
ESTIMATE WORKSHEET 157	157	Restoration Plantings and Access Agreements- TLC - 500	0 Days
ESTIMATE WORKSHEET 158	158	Restoration Plantings and Access Agreements- TLC - 300	0 Days
ESTIMATE WORKSHEET 159	159	Demobilization	45 Days

Month	Start	Finish	Days	Sundays in Month	Holidays in Total Working Days
July				12	
Aug	7/15/2018			25	
Sept				25	
Oct				25	
Nov		11/30/2018		25	
			112		

QUANTITIES AND CALCULATIONS

D R E D G E A N D C A P O P T I O N S	Main Channel (Deep)		Orland River (Deep)		Main Channel (Shallow)		Orland River (Shallow)		Mendall Marsh (Shallow)		Dredge Draft
	500	300	500	300	500	300	500	300	500	300	
	Debris Disposal Quantities										
	0	3,982,113	182,724	182,724	838,342	900,969	724,144	724,144	0	264,353	138,889
	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
	0	79642	3654	3654	16767	18019	14483	14483	0	5287	2778
	0	87,606	4,020	4,020	18,444	19,821	15,931	15,931	0	5,816	3,056
Dredging & Disposal Quantities											
	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	0	3,982,113	182,724	182,724	838,342	900,969	724,144	724,144	0	264,353	138,889
	0	215,034,125	9,867,083	9,867,083	45,270,470	48,652,322	39,103,782	39,103,782	0	14,275,086	750,000
	0.00	4,936.50	226.52	226.52	1,039.27	1,116.90	897.70	897.70	0.00	327.71	17.22
	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	0	3,982,113	182,724	182,724	838,342	900,969	724,144	724,144	0	264,353	13,889
	0	0	0	0	578,596	578,596	368,911	368,911	0	0	0
	0	7,964,227	365,448	365,448	2,255,280	2,380,534	1,817,199	1,817,199	0	528,707	152,778
	0	0	0	0	0	0	0	0	0	0	0
	0	7,964,227	365,448	365,448	2,255,280	2,380,534	1,817,199	1,817,199	0	528,707	152,778
	0	7,964,227	365,448	365,448	2,255,280	2,380,534	1,817,199	1,817,199	0	528,707	152,778
	0	8,760,650	401,992	401,992	2,480,808	2,618,587	1,998,919	1,998,919	0	581,578	168,056
	0	700,852	32,159	32,159	198,465	209,487	159,914	159,914	0	46,526	13,444
	0	9,461,502	434,152	434,152	2,679,273	2,828,074	2,158,833	2,158,833	0	628,104	181,500
Backfill Quantities											
	0	215,034,125	9,867,083	9,867,083	45,270,470	48,652,322	39,103,782	39,103,782	0	14,275,086	20,432,315
	0.00	4,936.50	226.52	226.52	1,039.27	1,116.90	897.70	897.70	0.00	327.71	469.06
	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.025
	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.025
	0	7,964,227	365,448	365,448	1,676,684	1,801,938	1,448,288	1,448,288	0	528,707	
	12.5%	12.5%	12.5%	12.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	15.0%
	0	8,959,755	411,128	411,128	1,802,435	1,937,083	1,556,910	1,556,910	0	568,360	43,513
	0	12,095,670	555,023	555,023	2,433,288	2,615,062	2,101,828	2,101,828	0	767,286	56,567

Amended Cap		
Area	10,000,000	sqft
Min. Layer Thickness	0.20	ft
Allowable Overplacement	0.10	ft
Volume No Overplacement	74,074.07	cy
Material Loss	15%	%
Total Volume	85,185.19	cy
Total Weight	110,740.74	Tons
Carbon Ratio	1.75%	%
Carbon Weight	1,937.96	Ton
Sand Weight	108,802.78	Ton

\$4,812.57

Restoration Plantings and Access Agreements	Main Channel (Deep)		Orland River (Deep)		Main Channel (Shallow)		Orland River (Shallow)		Mendall Marsh (Shallow)		Main Channel and Orland River (EMNR)		Mendall Marsh (Shallow) (TLC)	
	500	300	500	300	500	300	500	300	500	300	500	300	500	300
Number of SF					13,287,985.00	13,287,985.00	5,240,661.00	5,240,661.00						
Number of Acres	0.00	0.00	0.00	0.00	305.05	305.05	120.31	120.31	0.00	0.00	0.00	0.00	0.00	0.00
Access Agreements	0.00	0.00	0.00	0.00	764.00	2,420.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Thin-Layer Cap	Mendall Marsh (Shallow)	
	500	300
Placement Area (SF)	10,347,937	10,347,937
Placement Area (Acres)	237.56	237.56
Min. Layer Thickness (FT)	0.25	0.25
Allowable overplacement (FT)	0.25	0.25
Volume (CY)	191,628	191,628
Material Loss (%)	2.5%	2.5%
Volume w/Loss (CY)	196,419	196,419
Weight (TON)	265,166	265,166
Number of Monitoring Events @0.5 Million	10	10
Bathy Surveys	0	0
Samples	713	713

Every 3 years for 30 years
 One Sample per 1 acre every 3 years for 10 Years

Dredge and Cap Monitoring	Dredge and Cap MC&O		Mendall Marsh
	500	300	300
Number of Monitoring Events	10	10	10
Bathy Surveys	0	0	0
Samples	1,298	4,307	197

Every 3 years for 30 years
 Every 3 years for 10 Years
 One Sample per 5 acres every 3 years for 10 Years

	Enhanced MNR	Main Channel and Orland River		
		500	300	
E M N R	Volume	3,900,000	10,700,000	
	Weight (TON)	5,265,000	14,445,000	
	Number of Monitoring Events	15	15	Every 3 years for 45 years
	Bathy Surveys	3	3	Every 3 years for 10 Years
	Samples	1,298	4,307	One Sample per 5 acres every 3 years for 10 Years

	MNR	Main Channel and Orland River		
		500	300	
M N R	Number of Monitoring Events	15	15	Every 3 years for 45 years

	Amended Cap (Sediment)		
A m e n d C e a d p	Placement Area (SF)	20,432,315	
	Placement Area (Acres)	469.06	
	Application Rate (Ton/Acre)	10.26	
	Material Loss (%)	7.5%	
	Weight w/Loss (TON)	5174	
	Volume w/Loss (CY)	9238	
	Number of Monitoring Events @0.5 Million	10	Every 3 years for 30 years
	Bathy Surveys	0	
	Samples	1,407	One Sample per 1 acre every 3 years for 10 Years

	Dredge for Draft		
D r a f t	Length	5,000	
	Width	150	
	Depth	5	
	Total	138,889	

	Frankfort Flats			NE Coal			
	Offloading/Process	Storage Area 1	Storage Area 2	Offloading/Process	Storage Area 1	Storage Area 2	
Sediment Processing and Water Treatment Area	\$	\$	\$	\$	\$	\$	
Pad Size Length (LF)	QTY 1,800	Qty 1,000	Qty 1,700	QTY 415	Qty 250	Qty 400	Estimated from Drawings
Pad Size Width (LF)	300	350	300	175	250	200	Estimated from Drawings
Pad Size Area (SF)	540,000	350,000	510,000	72,625	62,500	80,000	
Pad Size Area (Acre)	12	8	12	2	1	2	32
Asphalt Area (SF)	540,000	350,000	510,000	72,625	62,500	80,000	
Asphalt Thickness (FT)	0.33	0.33	0.33	0.33	0.33	0.33	Assumes placement of 2 layers: 2" binder course and 2" wearing course.
Asphalt Volume (CY)	6,667	4,321	6,296	897	772	988	
Asphalt Disposal (TONS)	10,333	6,698	9,759	1,390	1,196	1,531	Assumes density of 1.55 tons/cy
DGA Thickness (FT)	0.50	0.50	0.50	0.50	0.50	0.50	Assumes placement of 6 inches of DGA sub-base
DGA Volume (CY)	10,000	6,481	9,444	1,345	1,157	1,481	
DGA Disposal (TONS)	14,000	9,074	13,222	1,883	1,620	2,074	Assumes density of 1.4 tons/cy.
Pad Size Area (ACRES)	12.40	8.03	11.71	1.67	1.43	1.84	
SPA Perimeter (FT)	4,200	2,700	4,000	1,180	1,000	1,200	
Jersey Barrier Length (FT)	10.0	10.0	10.0	10.0	10.0	10.0	
Total Number of Jersey Barriers (EA)	420	270	400	118	100	120	
Bin Wall Length (FT)	5	5	5	5	5	5	Bin Blocks costs are for 5 ft lengths
Bin Wall Length (FT)	850	850	850	850	850	850	Assumes 400 long with 10 bins 40 ft deep.
Number of Bin Blocks Stacked	3	3	3	3	3	3	
Bin blocks (EA)	510	510	510	510	510	510	Assumes bin blocks of 5-ft. in length and stacked 3 blocks high
20 mil HDPE Liner (SF)	624,000	404,000	590,000	96,225	82,500	104,000	*Assumes entire staging area and 20-ft wide swatch on either side of jersey barrier (perimeter).
Geotextile (SF)	624,000	404,000	590,000	96,225	82,500	104,000	*Assumes same area as HDPE liner.
Concrete Sumps	8	2	2	2	1	1	Assumed
HDPE Piping for Sumps (LF)	1,000	300	300	1,000	300	300	Assumed
Erosion & Sedimentation Control Quantities							
Silt Fence (LF) and Straw Wattles (LF)	6,000	6,000	6,000	6,000	6,000	6,000	Needs to be measured from Drawings
Stockpile Tarps	20	20	20	20	20	20	Assumed
Odor Control Foam							
SPA Bins	0			0			
Area per Bin (sf)	1,600			1,600			
Total SPA Bin Area (sf)	0			0			
Drum Coverage (sf)	5,500			5,500			
Daily Quantity (ea drum)	0.00			0.00			
Unloading Area Spill Apron							
Spill Apron Length (ft)	20			20			
Spill Apron Width (ft)	40			40			
Sorbent boom (lf)	100			100			
Turbidity curtain (lf)	100			100			
Tarp (ea)	1			1			Assumes the entire spill apron is covered using a 40 ft by 60 ft tarp with an additional 10%. No spill apron requirement at RPR
Haybales	23			23			Haybales will be placed around the entire edge of the spill apron and overlain by the tarps to provide containment. Assumes haybales are 4 ft in length. Assume additional 25%.
Turbidity Curtain	Nearshore	NOTES					
Primary Curtain (LF)	3,000						
Primary Contingency (10%)	300						
Spill Apron Curtain (LF)	100						
Spill Apron Contingency (10%)	10						
Total Curtain (LF)	3,410						
Oil Sorbent Boom (LF)	3,100						
Oil Sorbent Boom Contingency (LF)	310						
Total Boom (LF)	3,410						
Oil Sorbent Pads (Each)	500						
Disposal							
Turbidity Curtain Weight (TONS/100 LF)	2.5						
Turbidity Curtain Disposal (TONS)	90						
Recycle Material (Asphalt, Brick, Concrete) (TONS)	0						
Solid Waste Landfill (TONS)	200						
Wood Waste/Pile (TONS)	480		Assume 400, 40 ft piles				
Metal Recycling (TONS)	0						

	Dredge Volume	Surface	Dredge Volume	Surface
	500	Deposites 500	300	300
Main Channel	1,676,684	578,596	9,766,165	578,596
Orland	1,813,736	368,911	1,813,736	368,911
Mendall	0	0	528,707	0
MC&O Total	3,490,420	947,507	11,579,900	947,507
MM Total	0	0	528,707	0

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Equipment	Unit Price	Unit	Monthly	Daily	Hourly	Fuel
HD Long Reach Excavator (Dredge)	\$103.33	Hour	\$ 30,000	\$ 1,000	\$ 83	\$ 20
Environmental Clamshell (4-5CY)	\$38.89	Hour	\$ 14,000	\$ 467	\$ 39	
Cable Arm Hydraulic Clamshell (3.5 CY) with	\$22.63	Hour	\$ 8,146	\$ 272	\$ 23	
Cable Arm Hydraulic Clamshell (10.0 CY) wit	\$31.28	Hour	\$ 11,260	\$ 375	\$ 31	
Dredge Barge	\$41.67	Hour	\$ 15,000	\$ 500	\$ 42	
Dredge Tender (Push Boat)	\$71.67	Hour	\$ 15,000	\$ 500	\$ 42	\$ 30
Hopper Barge	\$41.67	Hour	\$ 15,000	\$ 500	\$ 42	
Hopper Barge (2000 cy)	\$138.89	Hour	\$ 50,000	\$ 1,667	\$ 139	
Workboat	\$6.64	Hour	\$ 950	\$ 32	\$ 3	\$ 4
150 Ton Barge Mounted Crane	\$158.89	Hour	\$ 50,000	\$ 1,667	\$ 139	\$ 20
150 Ton Crane	\$117.22	Hour	\$ 35,000	\$ 1,167	\$ 97	\$ 20
100 Ton Barge Mounted Crane	\$117.22	Hour	\$ 35,000	\$ 1,167	\$ 97	\$ 20
Toyo High Solids Pump	\$17.97	Hour	\$ 5,750	\$ 192	\$ 16	\$ 2
Toyo Jet Ring	\$2.87	Hour	\$ 311	\$ 10	\$ 1	\$ 2
WA 320 broom	\$5.17	Hour	\$ 1,500	\$ 50	\$ 4	\$ 1
Wheeled Loaded WA320	\$41.72	Hour	\$ 12,500	\$ 417	\$ 35	\$ 7
8" Cutter Head Dredge	\$89.86	Hour	\$ 28,750	\$ 958	\$ 80	\$ 10
Hydraulic Booster Pump	\$11.32	Hour	\$ 3,354	\$ 112	\$ 9	\$ 2
Dump Scow (2000yard)	\$141.89	Hour	\$ 50,000	\$ 1,667	\$ 139	\$ 3
Articulated Truck	\$50.00	Hour	\$ -	\$ -	\$ -	\$ -
LGP Tracked Truck with Broadcast Spreader	\$150.00	Hour	\$ -	\$ -	\$ -	\$ -
KOMATSU PC300	\$65.51	Hour	\$ -	\$ -	\$ -	\$ -
KOMATSU D39P	\$34.48	Hour	\$ -	\$ -	\$ -	\$ -
DREDGE - 8" - SWINGING LADDER	\$271.14	Hour	\$ -	\$ -	\$ -	\$ -
DREDGE BOOSTER PUMP - 8"	\$115.65	Hour	\$ -	\$ -	\$ -	\$ -
DREDGE BOOSTER PUMP - 12"	\$140.00	Hour	\$ -	\$ -	\$ -	\$ -
DREDGE PIPE - 8"-12" (PER FT)	\$0.02	LF	\$ -	\$ -	\$ -	\$ 1
84" SMOOTH COMPACTOR	\$38.96	Hour	\$ -	\$ -	\$ -	\$ -
CRANE - 40 TON	\$77.44	Hour	\$ 25,000	\$ 833	\$ 69	\$ 8
John Deer Skidsteer CT332	\$22.28	Hour	\$ 5,500	\$ 183	\$ 15	\$ 7
Hydrocyclone/Screen Equipment	Unit Price	Unit	Monthly	Daily	Hourly	Fuel
Coarse Screen	\$26.62	Hour	\$ 9,583	\$ 319	\$ 27	\$ -
Oversized Material Conveyor	\$12.65	Hour	\$ 3,115	\$ 104	\$ 9	\$ 4
Storage Tank	\$9.98	Hour	\$ 3,594	\$ 120	\$ 10	\$ -
Hydrocyclone Feed Pump	\$5.16	Hour	\$ 1,677	\$ 56	\$ 5	\$ 1
Hydrocyclone Dewatering Screen	\$56.57	Hour	\$ 20,365	\$ 679	\$ 57	\$ -
Hydrocyclone Overflow Conveyor	\$12.65	Hour	\$ 3,115	\$ 104	\$ 9	\$ 4
Valves	\$5.32	Hour	\$ 1,917	\$ 64	\$ 5	\$ -
Piping for Size Separation Area	\$0.03	Hour	\$ 11	\$ 0	\$ 0	\$ -
Misc Instrumentation	\$7.66	Hour	\$ 2,396	\$ 80	\$ 7	\$ 1
Hydrocyclone/Screen Control System	\$7.66	Hour	\$ 2,396	\$ 80	\$ 7	\$ 1
Filter Press Equipment	Unit Price	Unit	Monthly	Daily	Hourly	Fuel
Polymer Injection System	\$5.99	Hour	\$ 2,156	\$ 72	\$ 6	\$ -
Polymer Feed Pumps	\$1.20	Hour	\$ 72	\$ 2	\$ 0	\$ 1
Filter Press Feed Pump	\$10.98	Hour	\$ 3,594	\$ 120	\$ 10	\$ 1
Filter Press	\$80.86	Hour	\$ 28,750	\$ 958	\$ 80	\$ 1
Misc Instrumentation	\$2.33	Hour	\$ 479	\$ 16	\$ 1	\$ 1
Filter Press Control System	\$2.33	Hour	\$ 479	\$ 16	\$ 1	\$ 1
Water Treatment 1	Unit Price	Unit	Monthly	Daily	Hourly	Fuel
Mix and Flocc Basins	\$2.33	Hour	\$ 479	\$ 16	\$ 1	\$ 1
Clarifiers	\$47.59	Hour	\$ 16,771	\$ 559	\$ 47	\$ 1
MMFs	\$12.31	Hour	\$ 4,073	\$ 136	\$ 11	\$ 1
GAC Skids (dual 20,000)	\$34.28	Hour	\$ 11,979	\$ 399	\$ 33	\$ 1
Bag Filter Stations	\$2.06	Hour	\$ 383	\$ 13	\$ 1	\$ 1
Backwash Pumps	\$5.66	Hour	\$ 1,677	\$ 56	\$ 5	\$ 1
Backwash Holding Tanks	\$10.98	Hour	\$ 3,594	\$ 120	\$ 10	\$ 1
Feed Pumps Diaphragm Pumps	\$4.33	Hour	\$ 1,198	\$ 40	\$ 3	\$ 1
Valves	\$1.47	Hour	\$ 168	\$ 6	\$ 0	\$ 1
Piping Water Treatment	\$14.31	Hour	\$ 4,792	\$ 160	\$ 13	\$ 1
Misc Instrumentation and Controls	\$40.93	Hour	\$ 14,375	\$ 479	\$ 40	\$ 1
Water Treatment 2	Unit Price	Unit	Monthly	Daily	Hourly	Fuel
21,000 Gal Frac Tank	3.06		\$ 1,100	\$ 37	\$ 3	
Bag Filter Housing	6.94		\$ 2,500	\$ 83	\$ 7	
Dual 5 K Carbon Vessel	12.50		\$ 4,500	\$ 150	\$ 13	
pH Adjustment System	5.56		\$ 2,000	\$ 67	\$ 6	
Bag Filter Housing	6.94		\$ 2,500	\$ 83	\$ 7	

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Water Treatment 3	Unit Price	Unit	Monthly	Daily	Hourly	Fuel
Trailers for System	2.76	EA	\$ 992	\$ 33	\$ 3	
Oil/Water Separator (100 gpm)	3.06	EA	\$ 1,102	\$ 37	\$ 3	
Influent Equalization Tanks (20,000 gal each)	2.45	EA	\$ 882	\$ 29	\$ 2	
Influent Transfer Pumps	0.43	EA	\$ 154	\$ 5	\$ 0	
Bag Filter Housings	1.30	EA	\$ 468	\$ 16	\$ 1	
pH Reaction Tank with Stand	0.38	EA	\$ 138	\$ 5	\$ 0	
Mixer for pH reaction tank	0.40	EA	\$ 143	\$ 5	\$ 0	
Inclined Plate Clarifier	6.43	EA	\$ 2,314	\$ 77	\$ 6	
Pump Feed Tank	0.29	EA	\$ 103	\$ 3	\$ 0	
Filter Feed Pumps	0.52	EA	\$ 187	\$ 6	\$ 1	
Granular Activated Carbon Vessels	2.45	EA	\$ 882	\$ 29	\$ 2	
Cartridge Filter Housings	1.41	EA	\$ 507	\$ 17	\$ 1	
Final pH Reaction Tank with Stand	0.38	EA	\$ 138	\$ 5	\$ 0	
Mixer for final pH reaction tank	0.40	EA	\$ 143	\$ 5	\$ 0	
Effluent Pump Feed Tank	0.29	EA	\$ 103	\$ 3	\$ 0	
Discharge Pumps	0.43	EA	\$ 154	\$ 5	\$ 0	
Chemical Metering Pumps	0.13	EA	\$ 47	\$ 2	\$ 0	
Level Sensor / Transmitters (Radar)	0.54	EA	\$ 193	\$ 6	\$ 1	
Flow Sensors Transmitter (Magnetic Flow)	0.64	EA	\$ 231	\$ 8	\$ 1	
Pressure Elements	0.18	EA	\$ 66	\$ 2	\$ 0	
pH Sensors/Analyzers	0.37	EA	\$ 132	\$ 4	\$ 0	
Level/Flow Switches	0.10	EA	\$ 36	\$ 1	\$ 0	
Evaporation/Temp storage area (lined)	15.31	LS	\$ 5,510	\$ 184	\$ 15	
Materials & Serv						
Portland Cement Type 1	\$130.00	Ton				
3/4 Crushed Stone Filter Material	\$25.00	Ton				
3-inch Minus Armor Material	\$24.00	Ton				
Sand Habitat Restoration Material	\$23.00	Ton				
Sand Backfill Material	\$23.00	Ton				
Aquagate	\$500.00	Ton				
DGA	\$22.00	Ton				
Geotube						
GEOTEXTILE	\$0.08	SF				
HDPE LINER - 20 MIL	\$0.27	SF				
BIN BLOCKS	\$37.50	EA				
BIN BLOCK DELIVERY	\$125.00	LS				
JERSEY BARRIERS	\$295.00	EA				
JERSEY BARRIER DELIVERY	\$780.00	LOAD				
ASPHALT PAVING	\$5.00	SF				
CONCRETE SUMPS	\$1,500.00	EA				
STOCKPILE TARPS	\$100.00	EA				
STRAW HAY BALES	\$4.25	EA				
STRAW WATTLES	\$2.45	LF				
PFTM Processing	\$75.00	cy				
Hydraulic Transfer to Geotube then Clarifier	\$20.00	cy				
8" HDPE Pipe	\$10.90	LF				
DREDGE PIPE - 8"-12" (PER FT)	\$0.01	LF				
SILT FENCE	\$0.26	LF				
6" HDPE PIPE	\$17.36	LF				
Environmental Controls						
15' Permeable turbidity curtain	\$27.00	LF				
Oil Sorbent Boom	\$10.62	LF				
Oil Sorbent Pads	\$1.25	EA				
Tarp 60'x60'	\$500.00	EA				
Straw Bales	\$1.00	LF				
Silt Fence	\$0.20	LF				
Straw Wattles	\$1.50	LF				
Odor Control Foam	\$450.00	Drum				
Poratble Pneumatic Foam Unit	\$1,995.00	Month				
Monitoring Equipment						
Water Quality Monitoring Buoy (1 Sonde)	2,149.00	Month				
Water Quality Monitoring Buoy (2 Sonde)	2,944.00	Month				
Station and Meter	628.00	Month				
Cable Rental	68.00	Month				
YSI 6091 Sonde	795.00	Month				
YSI 650MDS Display	240.00	Month				
Data Center Package	95.00	Month				
Turbidity Standard	323.00	Month				
Air Quality Monitor	1,000.00	Month				

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Disposal Costs	Unit Price	Unit
TSCA Transportation for Disposal	\$15	TON
TSCA Disposal	\$110	TON
Non-TSCA Transportation for Disposal	\$20	TON
Non-TSCA Disposal	\$60	TON
Transportation for Beneficial Reuse	\$20	TON
Beneficial Reuse	\$10	TON
Debris Transport	\$15	TON
Debris Disposal	\$175	TON
Solid Waste Transport	\$15	TON
Solid Waste Disposal	\$22	TON
Metal Recycling T&D	\$10	TON
Treated Wood Waste Transport	\$15	TON
Treated Wood Waste Disposal	\$150	TON
Transportation	\$0	TON
Testing Costs	Unit Price	Unit
TCL Volatiles	\$65.00	EA
BTEX	\$45.00	EA
TCL Semivolatiles	\$130.00	EA
PAHs	\$90.00	EA
PCBs	\$45.00	EA
TCL Pesticides	\$85.00	EA
23 TAL Metals	\$105.00	EA
Full TCL/TAL+30	\$535.00	EA
TCLP Extraction	\$30.00	EA
TCLP Metals	\$70.00	EA
TCLP Volatiles	\$70.00	EA
TCLP Semivolatiles	\$130.00	EA
Total Analytical Testing	\$1,400.00	EA
GEOTECH	\$100.00	EA
Survey Costs	Unit Price	Unit
Topographic Survey	2,500.00	DAY
Hydrographic Survey	12,000.00	DAY
Survey Vessel Standby	2,250.00	DAY
Establish Benchmarks	2,500.00	LS
SUPPLIES & MISCELLANEOUS	Unit Price	Unit
MAINTENANCE / GREASE	\$0.75	GAL
PPE LEVEL D	\$12.00	MD
MISC SAFETY SUPPLIES	\$1,000.00	MO
RADIOS	\$673.20	MO
INTERNET CARDS	\$100.00	MO
COPY MACHINE	\$150.00	MO
FEDEX SHIPPING/PACKAGES	\$150.00	MO
WATER/GATORADE ETC.	\$450.00	MO
PER DIEM	\$51.00	MD
TRAFFIC SIGNAGE	\$900.00	MO
Office Trailers	\$410.00	\$/mth
Office Trailer Mob fee	\$2,122.00	LS
Office Trailer Demob fee	\$580.00	LS
Port-A-Johns	\$90.00	MO
GPS CONTROL	\$5,880.00	MO
Sediment Core Cost	Unit Price	Unit
Labor (field)	\$186.00	Per core
Labor (office)	\$8.80	Per core
Equipment	\$15.00	Per core
Sampling Supplies	\$10.00	Per core
Boat Insurance	\$10.00	Per core
Sediment Core Cost/Core	\$229.80	Per core
Restoration Services	Unit Price	Unit
HYDROSEEDING	\$0.11	SF
PROJECT RELATED MATERIAL DISPOSAL	\$33.20	TON
Sheetpile Installation	Unit Price	Unit
Sheet Material	\$0.63	lb
AZ-47/50 Heavy Sheets	\$0.85	lb
Sheetpile Material and Installation	\$45.00	sf
Sheetpile Redriving	\$15.00	sf
Sheetpile Pulling	\$5.00	sf
Geo Tube	Unit Price	Unit
Polymer	\$4,200.00	tote
Geotube	\$66.00	lf
Chemical Control and Tracking System	\$15,000.00	month
Pinch Valves and Hoses	\$1,550.00	month
2000 GPM Water Treatment System	Unit Price	Unit
Mobilization (2000GPM)	\$257,000.00	LS
Monthly Rental w/PH Adjustment (2000GPM)	\$69,500.00	Month
Demobilization (2000GPM)	\$30,000.00	LS
Consumables (2000GPM)	\$10,000.00	month

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1000 GPM Water Treatment System	
Mobilization (1000GPM)	\$150,000.00 LS
Monthly Rental w/PH Adjustment (1000GPM)	\$50,000.00 Month
Demobilization (1000GPM)	\$20,000.00 LS
Consumables (1000GPM)	\$5,000.00 month
250 GPM Water Treatment System	
Mobilization (250GPM Barge)	\$40,000.00 LS
Monthly Rental w/PH Adjustment (250GPM)	\$16,500.00 Month
Demobilization (250GPM Barge)	\$10,000.00 LS
Consumables (250GPM Barge)	\$2,500.00 month
Monitored Natural Recover	\$1,000,000.00 Each
Monitored Natural Recover (Limited)	\$500,000.00 Each
Post Construction Bathy Survey	\$100,000.00 Each
Post Construction Monitoring	\$500,000.00 Each
Post Construction Sampling (Boat)	\$1,000.00 Each
Post Construction Sampling (Land)	\$500.00 Each
Land Acquisition	\$50,000.00 Acre
Dolphin Install	\$50,000.00 Each
Access Agreements	\$25,000.00 Each
Temporary Dock	\$500.00 LF
Restoration Planting	\$5,000.00 Acre
Sedimite	\$3,300.00 Ton

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LABOR CLASSIFICATION	HOURLY RATE	FRINGE BENIFITS	BURDEN RATE	SUB TOTAL	HAZ RATE	TOTAL RATE	AVERAGE RATE
General Construction Labor							
Corp. Sponsor							\$143.00
Corp. CIH							\$121.00
Health and Safety Officer							\$78.00
Project Engineer							\$94.00
Field Engineer							\$115.00
Project Manager							\$110.00
QA/QC Manager							\$60.00
Superintendent							\$79.00
CAD Technician							\$65.00
Project Clerical							\$32.00
Project Control/Accountant							\$45.00
Mechanic	\$40.66	\$20.40	\$0.00	\$61.06	\$0.00	\$61.06	\$71.24
Foreman	\$68.00	\$0.00	\$0.00	\$68.00	\$0.00	\$68.00	\$79.33
Crane Operator	\$41.66	\$20.40	\$0.00	\$62.06	\$0.00	\$62.06	\$72.40
Operator 1	\$41.16	\$20.40	\$0.00	\$61.56	\$0.00	\$61.56	\$71.82
Operator 2	\$40.66	\$20.40	\$0.00	\$61.06	\$0.00	\$61.06	\$71.24
Operator 3	\$39.97	\$20.40	\$0.00	\$60.37	\$0.00	\$60.37	\$70.43
Operator 4	\$38.09	\$20.40	\$0.00	\$58.49	\$0.00	\$58.49	\$68.24
Truck Driver	\$25.38	\$18.31	\$0.00	\$43.69	\$0.00	\$43.69	\$50.97
Flagperson	\$23.85	\$19.35	\$0.00	\$43.20	\$1.00	\$44.20	\$51.57
Laborer	\$26.76	\$19.35	\$0.00	\$46.11	\$0.00	\$46.11	\$53.80
Tugs Labor							
Master	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Tug Operator	\$26.49	\$9.54	\$0.00	\$36.03	\$0.00	\$36.03	\$42.04
1st Mate	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2nd Mate	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3rd Mate	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Chief Engineer	\$26.49	\$9.54	\$0.00	\$36.03	\$0.00	\$36.03	\$42.04
Assist. Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Launch Operator	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Quartermaster	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Botswain	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Seaman	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Tender	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Chief Welder	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Welder	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Welder Helper	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Oiler	\$22.51	\$9.44	\$0.00	\$31.95	\$0.00	\$31.95	\$37.28
Steward	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cook	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Assist. Cook	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Messman	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Water Treatment Operators							
Water Treatment Operator Weekdays	\$85.00	\$0.00	\$0.00	\$85.00	\$0.00	\$85.00	\$99.17
Water Treatment Operator Weekend	\$105.00	\$0.00	\$0.00	\$105.00	\$0.00	\$105.00	\$122.50
Water Treatment Operator Blended Rate	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$103.06
Dredge Labor							
Dredge Operator	\$40.66	\$20.40	\$0.00	\$61.06	\$0.00	\$61.06	\$71.24
Derrick-Crane Operator	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Craft Foreman	\$95.00	\$0.00	\$0.00	\$95.00	\$0.00	\$95.00	\$110.83
Crawler-Crane Operator	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Boat Operator	\$32.94	\$20.40	\$0.00	\$53.34	\$0.00	\$53.34	\$62.23
Deckmate	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Deckhand	\$27.76	\$10.83	\$0.00	\$38.59	\$0.00	\$38.59	\$45.02
Inland Launch Operator	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Inland Cook	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Inland Engineer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Chief Welder	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Welder	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Welder Helper	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Oiler	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Winch Operator	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

PRODUCTION CALCUATIONS

Production Summary	
Deep Dredging - Mechanical	2,822 cy/day
Deep Residual Dredging	2,258 cy/day
Shallow Dredging - Mechanical	3,150 cy/day
Shallow Residual Dredging	2,520 cy/day
Unloading, Loading, and Processing - Mechanical	7,344 cy/day
Deep Backfilling - Mechanical	2,822 cy/day
Shallow Backfilling - Mechanical	3,150 cy/day
Amended Capping by LGP Truck with Broadcast Spreader	325,200 sqft/day
Thin Layer Capping - Hydraulic	440 cy/day
Pile Removal Rate	36 pile/day
Dump Scow Rate	3,672 cy/day
Planting Rate	2 Acre/day
Debris Removal	900 cy/day

* Assumed same
 ## Residual Dredging Assumed at a Percentage of Inventory Dredging 80%

Deep Dredging - Mechanical		
Bucket Size	10.0	cy
% Full	70%	%
Insitu % Solids	60%	%
Target % Solids	60%	%
Cycle Time	2.5	min
Uptime	70%	%
# of dredges	2	ea.
Hourly Rate	235	cy/hr
Shift	12	hrs/day
Production Rate	2,822	cy/day
Production Rate (Season)	316,109	cy/season
Water Generated	3,636	Gal/Min
Water Generated	436,320	Gal/Hour
Water Generated	5,235,840	Gal/Day
Water Generated		Gal/Project

Shallow Dredging - Mechanical		
Bucket Size	10.0	cy
% Full	70%	%
Insitu % Solids	60%	%
Target % Solids	60%	%
Cycle Time	2.0	min
Uptime	25%	%
# of dredges	5	ea.
Hourly Rate	263	cy/hr
Shift	12	hrs/day
Production Rate	3,150	cy/day
Production Rate (Season)	352,800	cy/season
Water Generated	1,454	Gal/Min
Water Generated	436,320	Gal/Hour
Water Generated	5,235,840	Gal/Day
Water Generated		Gal/Project

Deep Backfilling - Mechanical		
Bucket Size	10.0	cy
% Full	70%	%
Cycle Time	2.5	min
Uptime	70%	%
# of Equipment	2	ea.
Hourly Rate	235	cy/hr
Shift	12	hrs/day
Production Rate	2,822	cy/day

Shallow Backfilling - Mechanical		
Bucket Size	10.0	cy
% Full	70%	%
Cycle Time	2.0	min
Uptime	25%	%
# of Equipment	5	ea.
Hourly Rate	263	cy/hr
Shift	12	hrs/day
Production Rate	3,150	cy/day

Storage Capacity	
43560 sqft/Acre	
5 Height of Sediment	
8067 CY/acre	
239259 Storage	

Truckable CY/Day	
132 Trucks/Day	
32 ton/truck	
29 cy/truck	
3840 Truckable cy/day	

Balance	
5,972 Dredged/Day	
2,132 Over/day	
112 Dredge Days Before Storage Runs Out	
112 Project Duration	

Dredged Sediment Transport and Disposal		
Capacity of Truck	32	tons
Tons/cy	1.1	ton/cy
cy/ton	0.9	cy
Number of CY Dredged/Day	5972.4	cy
Number of Ton Dredged/Day	6570	ton
Number of Trucks/Day	205	Truck/Day

Unloading, Loading, and Processing - Mechanical		
Bucket Size	10.0	cy
Bucket % Full	90%	%
Cycle Time	1.5	min
Uptime	85%	%
# of Equipment	2	ea.
Hourly Rate	612	cy/hr
Shift	12	hrs/day
Production Rate	7,344	cy/day
Production Rate (Season)	822,528	cy/season

EMNR Dump Scow Placement		
Barge Capacity	1500	CY
Bucket Size	5.0	cy
Bucket % Full	90%	%
Cycle Time	1.5	min
Uptime	85%	%
# of Equipment	2	ea.
Hourly Rate	306	cy/hr
Shift	12	hrs/day
Production Rate	3,672	cy/day

Amended Capping by LGP Truck with Broadcast Spreader		
Average speed	1	mph
Coverage Width	20	ft/pass
Coverage Area	108400	sqft/hour
Efficiency	25%	%
Production	27100	Actual Coverage/Hour
Shift	12	hrs/day
# of Equipment	2	Trucks
Number of passes required	2	Numbe of Pass
Production Rate	325,200	sqft/day

Thin Layer Capping - Hydraulic		
Discharge Size	12	Inch
Discharge Velocity	10	fps
Flow Rate (Q)	7.85	cfs
Flow Rate (Q)	3525.13	GPM
Conversion Factor	0.297	
In situ % Solids	60%	%
Max % Solids	5%	%
Target % Solids	60%	%
Production Factor	1.0	
Dredge Efficiency	70%	%
# of dredges	1	ea.
Hourly Rate	37	cy/hr
Shift	12.0	hrs/day
Production Rate	440	cy/day
Water Generated	3,349	Gal/Min
Water Generated	140,653	Gal/Hour
Water Generated	1,687,834	Gal/Day
Water Generated	0	Gal/Project

Debris Removal		
Bucket Size	10.0	cy
% Full	50%	%
Cycle Time	5.0	min
Uptime	25%	%
# of Equipment	5	ea.
Hourly Rate	75	cy/hr
Shift	12	hrs/day
Production Rate	900	cy/day

Sand Cap (Broadcast System)		
Discharge Size	10	Inch
Discharge Velocity	12	fps
Flow Rate (Q)	6.55	cfs
Flow Rate (Q)	2937.61	GPM
Conversion Factor	0.297	
Max % Solids	22%	%
Production Factor	1.0	
Dredge Efficiency	50%	%
Production	96	cy/hr
Uptime	50%	%
# of Equipment	1	ea.
Shift	12	hrs/day
Production Rate	576	ton/day

Pile Removal Rate		
Removal Rate	5	Pile/hour
Uptime	60%	%
Shift	12	hrs/day
Production Rate	36	Pile/Day

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PRODUCTION CALCULATIONS

Production Summary		
Deep Dredging - Mechanical	2,822	cy/day
Shallow Dredging - Mechanical	3,150	cy/day
Unloading, Loading, and Processing - Mechanical	7,344	cy/day
Deep Backfilling - Mechanical	2,822	cy/day
Shallow Backfilling - Mechanical	3,150	cy/day
Amended Capping by LGP Truck with Broadcast Spreader	325,200	sqft/day
Thin Layer Capping - Hydraulic	440	cy/day
Dump Scow Rate	3,672	cy/day
Debris Removal Rate	900	cy/day
Planting Rate	2	Acre/day

Deep Dredging - Mechanical		
Bucket Size	10.0	cy
% Full	70%	%
Insitu % Solids	60%	%
Target % Solids	60%	%
Cycle Time	2.5	min
Efficiency	70%	%
# of dredges	2	ea.
Hourly Rate	235	cy/hr
Shift	12	hrs/day
Production Rate	2,822	cy/day
Production Rate (Season)	316,109	cy/season

Shallow Dredging - Mechanical		
Bucket Size	10.0	cy
% Full	70%	%
Insitu % Solids	60%	%
Target % Solids	60%	%
Cycle Time	2.0	min
Efficiency	25%	%
# of dredges	5	ea.
Hourly Rate	263	cy/hr
Shift	12	hrs/day
Production Rate	3,150	cy/day
Production Rate (Season)	352,800	cy/season

Unloading, Loading, and Processing - Mechanical		
Bucket Size	10.0	cy
Bucket % Full	90%	%
Cycle Time	1.5	min
Efficiency	85%	%
# of Equipment	2	ea.
Hourly Rate	612	cy/hr
Shift	12	hrs/day
Production Rate	7,344	cy/day
Production Rate (Season)	822,528	cy/season

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Deep Backfilling - Mechanical		
Bucket Size	10.0	cy
% Full	70%	%
Cycle Time	2.5	min
Efficiency	70%	%
# of Equipment	2	ea.
Hourly Rate	235	cy/hr
Shift	12	hrs/day
Production Rate	2,822	cy/day

Shallow Backfilling - Mechanical		
Bucket Size	10.0	cy
% Full	70%	%
Cycle Time	2.0	min
Efficiency	25%	%
# of Equipment	5	ea.
Hourly Rate	263	cy/hr
Shift	12	hrs/day
Production Rate	3,150	cy/day

EMNR Dump Scow Placement		
Barge Capacity	1500	CY
Bucket Size	5.0	cy
Bucket % Full	90%	%
Cycle Time	1.5	min
Efficiency	85%	%
# of Equipment	2	ea.
Hourly Rate	306	cy/hr
Shift	12	hrs/day
Production Rate	3,672	cy/day

Amended Capping by LGP Truck with Broadcast Spreader		
Average speed	1	mph
Coverage Width	20	ft/pass
Coverage Area	108400	sqft/hour
Efficiency	25%	%
Production	27100	Coverage/Hour
Shift	12	hrs/day
# of Equipment	2	Trucks
Number of passes required	2	Number of Pass
Production Rate	325,200	sqft/day

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Thin Layer Capping - Hydraulic		
Discharge Size	12	Inch
Discharge Velocity	10	fps
Flow Rate (Q)	7.85	cfs
Flow Rate (Q)	3525.13	GPM
Conversion Factor	0.297	
Insitu % Solids	60%	%
Max % Solids	5%	%
Target % Solids	60%	%
Production Factor	1.0	
Dredge Efficiency	70%	%
# of dredges	1	ea.
Hourly Rate	37	cy/hr
Shift	12.0	hrs/day
Production Rate	440	cy/day

Debris Removal Rate		
Bucket Size	10.0	cy
% Full	50%	%
Cycle Time	5.0	min
Efficiency	25%	%
# of Equipment	5	ea.
Hourly Rate	75	cy/hr
Shift	12	hrs/day
Production Rate	900	cy/day