2017 SEDIMENT AND WATER QUALITY MONITORING REPORT

Penobscot River Phase III Engineering Study
Penobscot River, Maine

Prepared for:

United States District Court

District of Maine

Prepared by:

Amec Foster Wheeler
Environment & Infrastructure, Inc.

511 Congress Street
Portland, ME 04101

March 2018

Project No. 3616166052

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LIST OF ACRONYMS

%	percent
Alpha	Alpha Analytical
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
ANCOVA	analysis of covariance
ASTM	American Society for Testing and Materials
BL1	Method blank contamination
BL2	Field blank contamination
BO	Bangor-Orrington
cm	centimeters
Court	U.S. District Court for the District of Maine
DI	deionized
DOC	dissolved organic carbon
EB	equipment blank
EPA	Environmental Protection Agency
ES	estuary
Estuary	Penobscot River Estuary
Eurofins	Eurofins Frontier Global
FDR	Field Data Record
FSP	Field Sampling Plan
ft	feet
ft3/s	cubic feet per second
HASP	Health and Safety Plan
Hg	mercury
HT	holding time exceeded
J	estimated
LD	Lab Duplicate limit exceeded
LR	Laboratory Replicate
m3/s	cubic meters per second
MA	Massachusetts
MDL	method detection limit
ME	Maine
mg/g	milligrams per gram
mg/L	milligrams per liter
MLLW	mean lower low-water level
MS	Matrix Spike
MS-H	MS and/or MSD recovery high

MS-L	MS and/or MSD recovery low
MSD	Matrix Spike Duplicate
ng/g	nanograms per gram
ng/gdw	nanograms per gram dry weight
ng/L	nanograms per liter
OV	Orono-Veazie
OB	Orrington-Bucksport
PRMS	Penobscot River Mercury Study
PRMSP	Penobscot River Mercury Study Panel
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RL	reporting limit
RPD	relative percent difference
RSD	relative standard deviation
SOP	Standard Operating Procedure
SP	Sample preservation does not meet method requirements
SSC	Suspended Sediment Concentration
TOC	total organic carbon
TSS	total suspended solids
µg/gdw	micrograms per gram dry weight
U	not detected at or above the specified reporting limit
U.S.	United States
USGS	U.S. Geological Survey

EXECUTIVE SUMMARY

Amec Foster Wheeler implemented sediment and water quality monitoring in 2017 based on recommendations in the 2016 Sediment and Water Quality Monitoring Report (March 2017) and as documented in Work Order 4A-040. Historically, the Penobscot River Mercury Study (PRMS) monitored mercury concentrations in sediment and surface water in the Penobscot River Estuary between the site of the former Veazie dam and Fort Point in upper Penobscot Bay.

For sediment monitoring, Amec Foster Wheeler collected 36 samples in July-August, 2017 in intertidal, subtidal, and marsh platform environments. Analytical results were evaluated by environment to distinguish zones characterized by distinct vegetation, sedimentation rate, and wetting/drying cycles. Samples were collected as 1-foot long cores that were sectioned into 4 depth intervals. Total mercury was measured in all four depth intervals; methyl mercury was measured in the top two depth intervals, consistent with the understanding that the top 0.0-0.3 ft (approximately 9 centimeters) of the sediment column represents the biologically active zone in which food chain transfer of methyl mercury predominantly occurs.

Regarding spatial trends, monitoring results from 2016 and 2017 continue to demonstrate that surface sediment concentrations of mercury are elevated downstream of Veazie as the result of historic releases of mercury in the Estuary. For intertidal and subtidal marsh platform stations, total mercury and methyl mercury concentrations in the top intervals of sediment cores (i.e., 0.0-0.1 ft and 0.1-0.3 ft from 2017 and the top 0.0-0.3 ft interval from 2016) are similar. For sediment samples collected on the marsh platform, the spatial trend in 2017 data suggests a decreasing total mercury concentration in the top 0.0-0.3 ft in moving from the low marsh to mid marsh to high marsh within each marsh platform sampled. This trend of decreasing concentration moving toward the high marsh is the opposite of the trend observed in 2016 surface sediment sampling.

Regarding temporal trends, while there is some evidence of decreasing concentrations of mercury and/or methyl mercury over time, and particularly when data are normalized to the organic carbon content of samples, these results are not consistently apparent either within reaches or across reaches. Challenges associated with ascribing decreasing chemical concentrations in normalized data to evidence of recovery include: (1) uncertainty in whether the decrease is a function of changes in mercury loading or organic carbon loading or a combination of both; and (2) uncertainty in overall understanding of where and how both components of that ratio (i.e., mercury and organic matter) are being mixed and transported throughout the Penobscot River Estuary. Moreover, variability in the sediment accumulation rate in different parts of the Penobscot River system introduces uncertainty in interpreting temporal (or spatial) trends across a depth interval (i.e., 0.3 ft or 9 centimeters) that may or may not include the depth interval associated with the time period of initial mercury discharge in the Estuary.

Surface water was sampled three times at one monitoring location (Orono-Veazie [OV]-02 in Veazie) during April-May, 2017 to evaluate loading of total suspended solids, total mercury and methyl mercury to the Estuary. TSS concentrations are within the range reported in the Phase II Study and are consistent with the continued use of the Phase II sediment/mercury loading estimates for the Penobscot River Estuary. Likewise, total mercury (unfiltered), dissolved mercury (filtered), and river discharge measurement are also consistent with data presented in the Phase II Report.

The concentration of particulate mercury [Hg(p)] varies between sampling intervals, and ranges from 131 ng/g (qualified) to 242 ng/g. These values are consistent with particulate mercury data presented in the Phase II Report, in which 240 ng/g was defined as the average concentration of total mercury on particles entering the Estuary from upgradient sources. The concentrations of total suspended solids determined by different analytical methods (American Society for Testing and Materials [ASTM] 2540D versus ASTM D3977) were sufficiently similar and within the range of particulate loading data used in historic mass balance estimates of both particulate inputs and mercury loading to the Estuary. Data collected in 2017 do not allow for further refinement of historic mass balance estimates.

A working hypothesis following the 2016 and 2017 field season and mobile sediment investigations is that the pool of mobile sediment and wood waste is acting as an ongoing source of mercury to intertidal and marsh platform sediments. In addition, the observed heterogeneity of sediments and the presence of wood waste in sediment samples makes time trend analysis difficult due the variability in results from the same sample aliquot. The impact of heterogeneity on time-trend analysis can be addressed with a refinement of sediment sample collection, processing, and analytical procedures appropriate to the conditions encountered. In 2017, new processes were implemented in the collection, processing, and analysis of sediment from the Penobscot River. The results of triple replicate analyses on a subset of 2017 sediment samples indicates that the implementation of the revised techniques has resulted in a reduction in the uncertainty associated with prior sampling, processing, and analyses. Future sediment monitoring events should incorporate the sampling and sample handling procedures adopted in 2017.

Given the heterogeneity of the wood waste-sediment mix, and the assumptions imbedded in the recovery rate estimates presented in the Phase II Study (i.e., >20 years for sediment concentrations to decrease fifty percent to a defined sediment mercury concentration target under the assumption that the rate of system recovery will be similar to the rate at which historically elevated sediment mercury concentrations redistributed throughout the Estuary), it appears that with the current data set, a time frame of 2006-2017, may not be a long enough period to have developed consistent trends in sediment recovery as determined by simple linear regression. This lack of significant trending in decreasing mercury and methyl mercury concentrations over the period of 2006-2017 does not support the continuation of sediment monitoring on an annual basis. For the purposes of evaluating changes in surface sediment mercury concentrations, as well as evaluating the balance between sediment redistribution and system recovery. Amec Foster Wheeler recommends that sediment and water quality monitoring be conducted within the Estuary on a 3-year interval.

Estimation of the annual sediment/mercury load entering the Estuary from the main stem of the Penobscot River helps in understanding the recovery rate of the Estuary. Comparison of 2017 water quality monitoring data to Phase II Study calculations corroborates sediment/mercury loading estimates. Pending more complete evaluation of the role that mobile sediments and wood waste play in the ongoing redistribution of mercury within the system, as well as the size and turnover rate of this pool of mobile material, additional upgradient source monitoring is not recommended at this time.

1.0 INTRODUCTION

1.1 Purpose, Scope, and Objectives

This report describes the results of sediment and water quality monitoring for mercury and ancillary physical parameters in the Penobscot River Estuary (Estuary) in 2017. The purpose of the monitoring is to further assess annual trends in mercury contamination within the Estuary. The objectives of implementing the recommendations in the 2016 Sediment and Water Quality Monitoring Report (Amec Foster Wheeler Environment & Infrastructure, Inc. [Amec Foster Wheeler], 2017a) are to provide data that will be used in supporting the sediment modeling and evaluate the impact of woody waste in the system on mercury and methyl mercury concentrations. The work described herein is part of the Phase III Engineering Study to identify and evaluate potential and cost-effective measures to remediate mercury in the Estuary.

Beginning in 1967, a chlor-alkali plant located in Orrington, Maine released mercury into the Penobscot River. The amount of mercury released annually decreased between 1970 and 1982, and decreased further when the plant was closed in 2000. The Penobscot River in northern Maine is the second-largest river in New England. The Estuary has a surface area of approximately 35 square miles and extends 22 miles southward from Bangor, Maine (ME) to about Searsport, ME, with Penobscot Bay extending further southward (**Figure 1-1**).

In January 2016, the United States (U.S.) District Court for the District of Maine (the Court) selected Amec Foster Wheeler to conduct the Phase III Engineering Study to identify and evaluate potential effective and cost-effective measures to remediate mercury present in the Penobscot River, from the former Veazie Dam south to Upper Penobscot Bay, including Mendall Marsh and the Orland River. As a component of this work, the Court contracted with Amec Foster Wheeler the task to conduct water quality and sediment monitoring in 2017, to continue the monitoring conducted between 2006 and 2012, in the Penobscot River Mercury Study (PRMS), and by Amec Foster Wheeler in 2016. Work Order 4A-040, which outlines the scope of the 2017 Sediment and Water Quality Monitoring, was prepared by Amec Foster Wheeler and issued to the Court on April 13, 2017. The scope of the work order includes three rounds of water sampling during the spring freshet (April-May) in the vicinity of the former Veazie Dam, one round of sediment sampling, and the maintenance of a turbidity meter at Eddington town boat ramp near the former Veazie Dam location.

The PRMS monitored mercury levels in sediment, surface water, and various biota between 2006 and 2012 (Penobscot River Mercury Study Panel [PRMSP], 2013a). The most recent report of sediment, surface water, and biota monitoring data was presented in the 2016 Sediment and Water Quality Monitoring Report (Amec Foster Wheeler, 2017a). This 2017 Monitoring Report focuses upon the collection of sediment and water quality samples and resulting data for the sampling period of April 2017 through October 2017, and compares the sediment data to results of other monitoring years since 2006. The data from the Eddington turbidity meter and collection of river stage data from the U.S. Geological Survey (USGS) Streamflow Station 01036390 is included in this report to provide data on upriver sediment input to the study area.

The 2017 sediment monitoring results presented in this report are used in conjunction with the historical data to assess potential temporal, seasonal, and geographical (spatial) patterns of mercury and methyl mercury concentrations in the sediments. In 2017, the monitoring of the surface waters of the Penobscot River Estuary were reduced to one location to further evaluate the input of sediment and particulates during the spring freshet. The 2017 biota monitoring will be addressed in a separate monitoring report to be issued by Amec Foster Wheeler in 2018.

1.2 Report Organization

- Section 1.0 - Introduction presents the purpose and organization of this 2017 Sediment and Water Quality Monitoring Report.
- Section 2.0 - Approach, Methods, and Criteria summarizes the process, plan, criteria, and rationale for sampling.
- Section 3.0 - 2017 Sediment and Water Quality Analytical Results presents the analytical results.
- Section 4.0 - Temporal and Spatial Distribution of Sediment Mercury and Methyl Mercury presents the statistical analysis comparing 2017 results temporally with historical data spanning back to 2006, and spatial distribution of the mercury and methyl mercury within the river Estuary system.
- Section 5.0 - Water Quality Monitoring Evaluation presents the interpretation of 2017 water quality monitoring results and turbidity measurements in the vicinity of the former Veazie Dam.
- Section 6.0 - Conclusions and Recommendations presents the significant findings of the results presented in Section 3.0 and evaluations conducted in Sections 4.0 and 5.0, as well as recommendation for changes to the next round of monitoring.
- Section 7.0 - References provides references to documents cited within this report.

2.0 APPROACH, METHODS, AND CRITERIA

Amec Foster Wheeler developed and implemented the 2017 Sediment and Water Quality Monitoring in accordance with the following documents:

- Amec Foster Wheeler Work Order 4A-040 (Amec Foster Wheeler, 2017b)
- 2016 Sediment and Water Quality Monitoring Plan (Amec Foster Wheeler, 2016a)
- 2016 Draft Field Sampling Plan (Amec Foster Wheeler, 2016b)
- 2016 Draft Quality Assurance Project Plan (Amec Foster Wheeler, 2016c)
- 2017 Health and Safety Plan (Amec Foster Wheeler, 2017c)

The sample locations for sediment were consistent with previous annual monitoring identified in the 2012 and 2016 monitoring reports. Site agreements were obtained with property owners for land access as necessary. A Health and Safety Plan (HASP) was implemented to provide for the safety of on-Site workers and to protect the public during field work (Amec Foster Wheeler, 2017c).

Laboratories that were selected to perform project-related analyses are as follows:

<u>Sediments</u>

- Eurofins Frontier Global Sciences of Bothell, WA (Eurofins) performed both low level mercury analysis (Environmental Protection Agency [EPA] methods 1631e) and methyl mercury analysis (EPA method 1630).
- Alpha Analytical of Mansfield, Massachusetts (MA) (Alpha) performed Total Organic Carbon (TOC) analysis (Lloyd-Kahn method).
- Total Organic Content (American Society for Testing and Materials [ASTM] D2974-C) analyses were performed by Amec Foster Wheeler of Durham, NC.

<u>Surface Water</u>

- Eurofins performed both medium level total and dissolved mercury analysis (EPA method 1631e), as well as total and dissolved methyl mercury analysis (EPA method 1630)
- Samples for Suspended Sediment Concentration (ASTM D3977-97B) (SSC) analyses were sent to Eurofins but subcontracted to CalScience.
- Alpha performed TOC and Dissolved Organic Carbon (DOC) analysis (Method SW-846 9060), as well as Total Suspended Solids (TSS) analysis (modified standard method 2450D).

2.1 Adjustments to 2017 Monitoring Program

During the course of the 2017 monitoring program, there were several adjustments made to the program which differed from the scope presented in Work Order 4A-040 (Amec Foster Wheeler, 2017b). The following paragraphs provide a brief summary of those adjustments.

Work Order 4A-040 specified collection of one grab sample from 0.0-0.3 foot (ft) per sediment monitoring location. However, conversations with the Phase II Study Panel members at a meeting in Boston on April 24, 2017 indicated a distinct preference to sample sediments for annual monitoring at a finer interval (i.e., 0-3 centimeters [cm]). As a result of the conversations with the Phase II Study Panel, Amec Foster Wheeler selected the approach of coring each location to 1.0

ft, with samples for analysis obtained from the following intervals: 0.0-0.1 ft, 0.1-0.3 ft, 0.3-0.5 ft, and 0.5-1.0 ft. This approach to sampling was presented to the Special Master and Litigants at the July 20, 2017 quarterly project status meeting in Boston, MA. As this change to sampling intervals resulted in an increase in labor and analytical costs beyond the scope of WO 4A-040, the sediment sieving originally proposed in the work order was not conducted to keep the total cost of the work order within budget.

The sediment monitoring program was refined during the summer of 2017 and several standard operating procedures (SOPs) were developed to provide guidance and quality control over field and laboratory processes. The SOPs which were modified or developed for sediment sampling and processing are presented in **Appendix B**, and include the Eurofins procedure for sample homogenization and subsampling (see **Appendix B-4**) which was developed to minimize the impact of sample heterogeneity on analytical results.

There were no adjustments to the scope of the water quality monitoring scope defined in Work Order 4A-040 (Amec Foster Wheeler, 2017b).

2.2 2017 Sediment Sample Collection and Processing

Amec Foster Wheeler collected samples at 37 sediment monitoring locations in July and early August 2017 in subtidal, intertidal, and marsh platform environments. Sediment samples locations were collected based upon the sampling locations completed in the 2016 monitoring program (Amec Foster Wheeler, 2017b). The sediments have been sorted into primary categories of environments, or zones that have distinct characteristics, as presented below.

1. ***Subtidal Zone -*** The subtidal zone refers to the main channel of the Estuary and separate side channels (e.g., Mendall Marsh, the Orland River, and lesser tributaries) that are submerged (below mean lower low-water levels [MLLW]). Some of these areas are relatively shallow, with average depths ranging from 1 to 5 feet below MLLW; the majority of these areas have average depths ranging from approximately 20 to 30 feet below MLLW; however, there are portions of the channel that are much deeper, with average depths ranging from 50 to 80 feet below MLLW, and in the Verona Narrows reaching 90 feet below MLLW.

2. ***Intertidal Zone -*** The intertidal zone refers to the portion of the ecosystem that is subjected to varying tide levels during each tidal cycle, and is generally located between the mean high water and mean low water levels. These areas are alternately submerged and exposed twice daily due to tidal fluctuations. During low tide, the entire sediment surface of the intertidal zone is exposed, while at high tide the area is completely submerged.

3. ***Marsh Platform -*** The marsh platform is the generally flat, vegetated marsh surface that is at or just above the mean high-water level, and is inundated regularly by high tides (minimally during neap and more substantially during spring tides).

Table 2-1 presents a listing of the sediment samples collected as part of the 2017 monitoring. **Figure 2-1** presents the 2017 sediment monitoring locations. The intertidal sediment sample from the Pleasant River in Addison, ME was collected as a background location, as this data can also be used as reference to biota sampling in the Addison location. Samples in marsh platform W-17-

High and W-17-Mid were collected in 2016 in the northern platform with the co-located biota samples. In 2017 the W-17-High and W-17-Mid sediment samples were collected in the southern platform where sediment monitoring data has been collected historically.

Sediment core collection and processing were conducted in accordance with SOPs presented in **Appendix B**. Sediment samples were collected using one of three techniques depending on the physical location: 1) a Petite Ponar was utilized in subtidal sediment sample locations, 2) a direct-push coring tube sampler was utilized for intertidal samples, and 3) a slide-hammer, tube coring device was used for marsh platform cores (see **Subsection 2.1.1**). Decontamination of equipment between samples was consistent with SOP S-17 of the Quality Assurance Project Plan (QAPP) (Amec Foster Wheeler 2016c). Field Data Records (FDRs) for each collected sediment core are contained in **Appendix A-1**. Sediment was collected from all proposed sampling locations, and no significant deviations from the scope of work were encountered. Photo logs presenting general sediment sample collection and processing procedures is included as **Appendix A-4**.

For samples collected with a Petite Ponar, 0.0-0.3 ft of sediment material was homogenized in the field, placed directly into labeled sample containers, and placed into coolers containing dry ice for transport to the field office. The sample containers where frozen in the Field Office freezers prior to shipment to the laboratories. For 0.0-1.0 ft undisturbed sediment cores, the cores were retained in the Lexan sleeve and placed into a cooler with dry ice for transport to the field office. Once frozen, the cores were removed from the freezer and sliced into four intervals: 0-0.1 ft; 0.1-0.3 ft; 0.3-0.5 ft; and 0.5-1.0 ft. The rationale for the core sectioning used in this field program is as follows:

- The surface interval of 0-0.1 ft is equivalent to the Phase II Study Panel surface sampling interval of 0-3 cm;
- The sum of the surface two intervals (0-0.1 ft and 0.1-0.3 ft) are consistent with the Amec Foster Wheeler 2016 sampling program;
- The sum of the surface three intervals (0-0.5 ft) is consistent with the ‘bioactive zone’ as defined in ecological risk assessment guidance;
- For total mercury, assessing concentration trends over the top foot of the sediment profile (i.e., the three intervals consistent with the ‘bioactive zone’, plus a fourth interval that includes 0.5-1.0 ft) provides evidence of whether mercury concentrations are changing (either increasing or decreasing) over time in a sampled location;
- For methyl mercury, because net methylation and methyl mercury accumulation are often higher in saturated surface sediments than deeper in the sediment profile, analysis of the top two intervals (0-0.1 ft and 0.1-0.3 ft) allows assessment of potential biological exposure to methyl mercury within surface sediment.

Field personnel followed the QAPP guidance on sediment sample container requirements, sample labeling and tracking requirements, as well as packaging and shipping. Sediment samples were analyzed as indicated in **Table 2-1**. Field Quality Control (QC) samples were collected in accordance with procedures identified in the QAPP (Amec Foster Wheeler, 2016c). The field duplicates were collected at a frequency of 10 percent (%) (1 in every 10) for samples submitted to the analytical laboratory for the analysis of the target compounds. The field duplicates are used as replicate samples for consistency and comparability of the analytical process. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) material was collected and submitted for laboratory equipment check of analytical performance. The extra sediment volume was provided to the laboratory for MS/MSD at a frequency of 5% (1 in every 20) for samples submitted to the analytical laboratory for the analysis of the target compounds. The MS/MSD results are used to evaluate accuracy by the ability to measure percent recovery of surrogate for the spiked analysis of laboratory instrumentation. Equipment blanks (EB) or rinsate blanks were collected at a rate of 2 per sample event to evaluate effectiveness of rinsing procedures used during sample collection. EBs were collected using laboratory-provided de-ionized (DI) water after the equipment was decontaminated using the methods identified in the QAPP (Amec Foster Wheeler 2016c).

One outcome of the 2016 sediment investigations conducted under Phase III was the recognition that the observed heterogeneity of sediments and the presence of wood waste in sediment samples outside of the mobile pool make time trend analysis difficult due the variability of sample results from the same aliquot. To minimize the effects of heterogeneity impacts on time-trend analysis, refined sediment collection, processing, and analytical techniques were employed in 2017 (see **Section 2.1**). To assess the homogenization techniques of the analytical laboratories, triple replicate analyses for mercury, methyl mercury, and TOC were performed on roughly 10% of samples to assess the effectiveness of the sample homogenization process. The results of the triplicate analyses were averaged and are used in the 2017 data set included herein. A discussion of the results of these triplicate analyses is presented in **Section 2.5**.

The following subsections describe the types and location identifications of sediment collection for the three sediment zones.

2.2.1 Subtidal Sediment

Subtidal sediment samples were collected from three locations along the E-01 transect (latitude 44.482), which crosses Fort Point Cove from west to east, and in one location near Searsport Harbor (see **Figure 2-1**). Locations sampled are listed below:

E-01-01
E-01-03
E-01-04
ES-04

Samples were collected using a stainless-steel Petite Ponar collection device. Recovery in the deployed Petite Ponar dredge samples collected to approximately 0.3 feet deep. The contents of the petite Ponar were homogenized and placed into sample containers.

2.2.2 Intertidal Sediment

Intertidal sediment samples were collected at low tide from 13 locations throughout the Estuary, plus one background location (ADD-02) on the Pleasant River in Addison, ME (see **Figure 2-1)**. These intertidal sediments include those locations adjacent to marsh platforms which were sampled as part of the 2016 monitoring program. Locations sampled are listed below:

ADD-02
BO-05
ES-02
OV-01
OV-02
OV-04
W-61-Intertidal
W-63-Intertidal
W-65-Intertidal

ES-13
OB-05
W-17-Intertidal
W-21-Intertidal

Intertidal sediments were generally collected using push-core devices, capturing sediments directly into disposable Lexan core sleeves.

2.2.3 Marsh Platform Sediment

A total of 19 marsh platform sediment samples were collected from one marsh platform (W-63) in the Orrington reach, one marsh platform (W-17) in the Frankfort Flats reach, one marsh platform (W-61) in the Verona East reach, and Mendall Marsh (W-21 and W-65) (see **Figure 2-1**). The marsh platform sites were sampled at four elevations specifically denoted as High, Mid, Low, and Intertidal. Intertidal samples associated with marsh platforms are discussed in **Subsection 2.2.2**, and the remaining marsh platform zones sampled are defined as follows:

1) High - the upper edge of the marsh platform just below the border with the adjacent upland, visually identified by the presence of woody shrubs and trees;
2) Mid - the outer edge of the marsh platform immediately above the slope down to the mudflat (mid marsh); and
3) Low - on the marsh slope at the outer edge of the marsh vegetation just above the mean high water.

Consistent with previous PRMS sampling, the high marsh elevation at W-21 and W-65 were approximately 45 feet inland from the outer edge of the marsh platform, rather than at the uplands border sampled at other high elevation marsh sites. On the broad marsh platform at Mendall Marsh, additional marsh platform sediment samples were collected at four sites with the initial designation W-21-UM. Locations of marsh platforms sampled are listed below:

W-17-High
W-17-Mid
W-17-Low
W-21-High
W-21-Mid
W-21-Low
W-21-UM-Central-C
W-21-UM-East-C
W-21-UM-South
W-21-UM-West-A
W-61-High
W-61-Mid
W-61-Low
W-63-High
W-63-Mid
W-63-Low
W-65-High
W-65-Mid
W-65-Low

In general, the marsh platform sediments were collected using a hand slide-hammer driven barrel-type core, lined with disposable Lexan core sleeves.

2.3 2016 Water Quality Monitoring Sample Collection

The 2017 water quality monitoring consisted of surface water sample collection to characterize the concentrations of dissolved and particulate mercury in the water column. Sampling was conducted at the furthest upstream annual location (OV-02) to capture sediment and mercury flux during the spring freshet flow. (See **Table 2-2**). Three rounds of water quality monitoring were conducted during the spring freshet on April 19, May 8, and May 24, 2017. The surface water monitoring sample location is presented on **Figure 2-1**.

Water quality monitoring was conducted in accordance with SOP S-4: Surface Water Sampling and SOP S-5: Clean Hands/Dirty Hands Surface Water Sampling of the QAPP (Amec Foster Wheeler, 2016c). Surface water samples were collected at a depth of approximately 1 foot below the water surface with a peristaltic pump, equipped with pre-cleaned and certified sample tubing from the analytical laboratory. New, pre-cleaned tubing from the analytical laboratory was used at each sample location and disposed of after each use. Surface water sample container requirements, sample labeling and tracking requirements, as well as packaging and shipping requirements are specified in the Field Sampling Plan (FSP) (Amec Foster Wheeler, 2016b) and QAPP (Amec Foster Wheeler, 2016c). Field Data Records (FDRs) for each water quality sampling event are contained in **Appendix A-2**.

Surface water samples were analyzed as presented in **Table 2-2**. Analyses included total and dissolved mercury (method 1631E) and methyl mercury (method 1630), suspended sediment concentration (SSC) [method ASTM D3977-97B], total organic carbon (TOC) [method 9060A], and total suspended solids (TSS) [method 2540D]. Equipment blanks were collected for surface water using laboratory supplied pre-cleaned disposable tubing and DI water. During each of the three rounds, samples were collected as field triplicates and submitted to the laboratory for the analysis of the target compounds. Additional volume was collected for MS and MD per sample event. Field parameters were collected for water temperature, pH, specific conductivity, dissolved oxygen, oxidation reduction potential, turbidity, and salinity. Equipment calibration logs for water quality monitoring instrumentation are presented in **Appendix A-3**. A photo log presenting general surface water sample collection and processing procedures is included as **Appendix A-4**.

2.4 River Stage and Turbidity Monitoring

River stage and turbidity monitoring data from the 2017 monitoring program are included in **Appendix D**. A turbidity meter with continuous monitoring capabilities was installed on September 9, 2016 near the former boat landing in Eddington, ME. The turbidity meter was installed to provide information on suspended solids entering the Estuary from the Penobscot River above the influence of the tide. Prior to August 22, 2013, the turbidity measurements were collected by USGS Streamflow Station #01036390, Latitude 44°49'36", Longitude 68°41'48", North American Datum of 1983. The USGS no longer monitors for turbidity at the referenced station. Amec Foster Wheeler arranged and established an access agreement with the town of Eddington to install a cabled sensor in the river downstream from the (former) Eddington boat landing, and upstream from water quality monitoring point OV-02, USGS Station #01036390, and the former Veazie Dam (see **Figure 2-1**).

A Campbell Scientific OBS-501 Smart Turbidity Meter with sidescatter and backscatter capabilities was installed 50 feet to the west from the eastern bank of the Penobscot River. At the time the meter was installed, the probe head was set at six inches above the riverbed in a water depth of four feet. The OBS-501 probe head is protected from river debris by a fabricated metal mesh enclosure. The sensor within the probe uses an infrared, monochromatic light source for measuring turbidity in Formazin Nephelometric Units. A ½ inch galvanized steel conduit runs from the OBS-501 in the river to a protective garden box located approximately 50 feet east of the river's shore. The Campbell Scientific CS300 Datalogger, battery, and wireless Raven XT Airlink cellular digital modem were placed in the plastic garden box. A 10-watt solar panel mounted to a grounded 10-foot tripod was placed above the garden box to continuously recharge the instrument battery. The datalogger is set to collect sidescatter, backscatter, water temperature, and wet/dry reading every two hours. The data is stored on the CS300 datalogger, and downloaded regularly via cellular modem.

The Campbell Scientific turbidity meter control box was flooded during the high-water freshet in early May 2017, and ceased to function on May 12, 2017. The meter appeared to be recording erroneous data starting on June 2, 2017. On June 5, 2017, Amec Foster Wheeler removed the Campbell Scientific datalogger for repairs and installed an In-Situ Aqua Troll 600 turbidimeter. This unit was installed at the Eddington location on June 21, 2017 and continually recorded data through July 18, 2017. A replacement Campbell Scientific unit was reinstalled alongside of the In-Situ Aqua Troll 600 unit for 3 days to assess each of the turbidity meter's accuracy. The Campbell Scientific turbidity meter continued to collect data until October 22, 2017 when the Campbell Scientific unit shut down due to ongoing telemetry issues. An In-Situ Aqua Troll 600 turbidimeter replaced the Campbell Scientific unit on November 3, 2017 and continually collected data to November 30, 2017.

2.5 Laboratory Data Deliverables and Data Validation

Full analytical data deliverable packages, equivalent to a Contract Laboratory Program data package, for sediment and water quality data are provided in **Appendices C-1** and **C-2**, respectively. The analytical data packages consist of forms summarizing sample analytical results, QC blank results, raw data, and forms summarizing QC measurement parameters including the sample preparation logs. Data packages were provided by the laboratories in portable document format and an electronic data deliverable.

In addition to laboratory analytical data, organic content of sediment samples collected under the 2017 monitoring are presented in **Section 3.0**. Analyses of the sediment samples for organic content was performed by Amec Foster Wheeler's geotechnical laboratory in Durham, North Carolina.

Amec Foster Wheeler utilized the laboratory analytical data packages to perform data validation using a technical review for accuracy and completeness. Stage 2B data validation was performed for 90% of project data and Stage 3 validation for the remaining 10% of analytical laboratory deliverable packages. The Stage 2B validation included review of quality control information and summary forms. The Stage 3 validation included review of raw data and supporting documentation. The Stage 3 level of validation allowed the validator to uncover any potential data quality issues pertaining to laboratory analysis. If severe non-compliant QC issues were identified, the laboratory was required to correct the problem. No non-compliant QC issues were identified for data from this field program. The data validation process is outlined in Worksheets #35, #36, and #37 in the QAPP (Amec Foster Wheeler, 2016c). The Amec Foster Wheeler validators identified potential data quality issues pertaining to laboratory analysis and either required actions by the laboratory to correct, or qualified the data accordingly. Data validation reports are provided in **Appendices C-3** and **C-4**.

The project laboratory reported results using a combination of two detection limits including the reporting limit (RL) and the method detection limit (MDL). Results for compounds that are not detected in samples are reported as U qualified results at the RL. Positive detections between the MDL and RL are qualified as estimated (J) by the laboratory.

The following qualifiers as applied during data validation or reported by the laboratory that are included in the final data set:

J = the reported concentration is considered an estimated value
U = the target compound was not detected above the RL

Validation reason codes were applied to results associated with QC measurements outside project QC goals. The following data validation reason codes were applied to one or more sample results:

Sediment:

HT = Holding time exceeded
LD = Lab Duplicate limit exceeded
LR = Laboratory replicate % relative standard deviation (RSD) limit exceeded
MS-H = MS and/or MSD recovery high
MS-L = MS and/or MSD recovery low
MS-RPD = MS/MSD Relative Percent Difference limit exceeded

Water:

BL1 = Method blank contamination
BL2 = Field blank contamination
SP = Sample preservation does not meet method requirements

The following paragraphs present a summary of significant findings from data validation.

Sediment

Selected sediment samples collected in the monitoring program were subsampled by the laboratory in accordance with the SOP presented in **Appendix B-4**, and three aliquots of the homogenized samples (triple replicates) were analyzed for the selected sediment samples per the following table:

Field Sample ID	Mercury	Methyl Mercury	Organic Content	Percent Solids	Total Organic Carbon
E-01-01_072117_SED_00-03	x	x	x	x	x
E-01-04_072117_SED_00-03	x	x	x	x	x
OB-05_080317_SED_05-10	x		x	x	x
W-63-INT_072517_SED_00-01				x	x
W-63-INT_072617_SED_05-10	x			x	x
W-63-Low_080117_SED_00-01	x	x	x	x	x
Totals:	**5**	**3**	**4**	**6**	**6**

During the validation process, the triple replicate results were evaluated and a % RSD calculated for each group of triple replicate results. If the % RSD exceeded 30%, the 3 replicate results were qualified and discussed in the validation report. The quantity of samples with acceptable % RSD less than 30% was as follows: for mercury 5/5; for methyl mercury 2/3; for organic content 4/4; for TOC 6/6; and for percent solids 6/6. The results indicate that the homogenization method produces consistent results from the same aliquot, thereby reducing uncertainty of analytical results associated with sample heterogeneity.

The triple replicate results were averaged to present a single result (with a Final Qualifier in the database containing “z”) for each of the parameters analyzed, and the replicate results were refuse flagged “Y” in the database.

The homogenization of sediment samples W-17-Low_071817_SED_00-01, W-17-Mid_071817_SED_00-01, W-63-Mid_071817_SED_00-01, W-21-UM-Central-C_071817_SED_01-03, and W-63-High_071817_SED_01-03 deviated from the homogenization procedure outlined in the Eurofins Sediment Lab Homogenization and Subsampling (see **Appendices C-3 and B-4**). Following the implementation of homogenization procedures outlined in the Eurofins SOP, the laboratory erroneously homogenized the samples further using a Magic Bullet blender. Analytical results have not been qualified, but have been flagged in the database as being ground with a blender prior to analysis.

All percent solids results were qualified as estimated “J” due to analysis beyond the technical hold time. None of analytical results were rejected as a result of validation, and all results are considered useable (see **Appendix C-3**).

Water Quality

For the April 18, 2017 water quality sampling round, the samples received for SSC analysis were sent to Eurofins CalScience for analysis. Due to an internal error at Eurofins CalScience, the samples were logged and analyzed for TSS instead of SSC. There was no remaining volume for SSC analysis. The TSS results from Alpha Analytical were retained in the project database, but the TSS results from Eurofins CalScience were refuse flagged during data validation.

None of analytical results were rejected as a result of validation, and all results are considered useable (see **Appendix C-4**).

3.0 2017 SEDIMENT AND WATER QUALITY ANALYTICAL RESULTS

This section summarizes the analytical and physical results of the 2017 Sediment and Water Quality Monitoring.

3.1 2017 Sediment Monitoring Results

This subsection describes the concentrations and geographic distributions of mercury and methyl mercury concentrations in 2017 sediments. The sediment analytical results are presented in **Table 3-1**, and figures presenting the geographical distribution of mercury and methyl mercury are presented as **Figures 3-1 through 3-5**. **Table 3-2** presents a summary of statistics for sediment analytical results.

In subtidal grab sediments collected in Upper Penobscot Bay from the 0.0-0.3 ft interval, total mercury concentrations ranged from 266 nanograms per gram (ng/g) (ES-04 in Searsport Harbor) to 612.3 ng/g (E-01-01 in Fort Point Cove) [see **Table 3-1** and **Figure 3-5**]. The mean mercury concentration for subtidal sediments was 412 ng/g (**Table 3-2**). Methyl mercury concentrations ranged from 2.3 ng/g (E-01-04 in Fort Point Cove) to 9.13 ng/g (E-01-01 in Fort Point Cove). The mean methyl mercury concentration for subtidal sediments is 4.60 ng/g. The percent methyl mercury ranged from a low of 0.8% to a high of 1.5% in the samples, with a mean of 1.10% (**Table 3-2**). Organic content at 550 degrees C ranged from 6.70% to 12.5% (mean = 9.0%), while TOC ranged from 2.47% to 4.94% (mean = 3.6%).

A background intertidal sediment collection point (ADD-02) in the Addison River was sampled for mercury, methyl mercury, and other parameters (see **Table 3-1**). Mercury concentrations were consistent in the samples from the four sample intervals (0.0-0.1 ft, 0.1-0.3 ft, 0.3-0.5 ft, and 0.5-1.0 ft), ranging from 33.0 ng/g to 35.9 ng/g. The methyl mercury concentrations in the ADD-02 samples were 4.0 ng/g (0.0-0.1 ft) and 4.3 ng/g (0.1-0.3 ft). The percent methyl mercury in the 0-0.1 ft and 0.1-0.3 ft sample intervals was 11.4% and 12.0%, respectively (see **Table 3-1**). Organic content ranged from 7.20 % to 23.6 %, and TOC ranged from <0.05 % to 3.07 %.

For intertidal sediments (exclusive of background location ADD-02 and OV locations above tidal influence) collected in the 2017 monitoring program, total mercury concentrations ranged from 30.6 ng/g to 2,190 ng/g for all depth intervals between 0.0 ft and 1.0 ft (see **Table 3-2** and **Figures 3-1 through 3-4**). The mean mercury concentrations for intertidal sediments ranged from 564 ng/g (0.3-0.5 ft) to 1,107 ng/g (0.5-1.0 ft) [**Table 3-2**]. Methyl mercury concentrations ranged from 1.5 ng/g to 22.4 ng/g in the 0.1-0.3 ft and 0.0-0.1 ft sample intervals, respectively. The mean methyl mercury concentration for intertidal sediments was 7.20 ng/g for the 0.0-0.1 ft sample interval, and 6.40 ng/g for the 0.1-0.3 ft sample interval. The mean percent methyl mercury is 1.20% in both the 0.0-0.1 ft and 0.1-0.3 ft sample intervals (**Table 3-2**). Mean percent organic content at 550 degrees C over all sample depth intervals ranged from 10.8% to 12.8%, and TOC ranged from 5.18% to 5.79%.

In marsh platform sediments, total mercury concentrations ranged from 15.5 ng/g to 3,890 ng/g for all depth intervals between 0.0 ft and 1.0 ft (see **Table 3-2** and **Figures 3-2 through 3-4**). The mean mercury concentrations for marsh platform sediments ranged from 473 ng/g (0.0-0.1 ft) to

1,064 ng/g (0.5-1.0 ft) [**Table 3-2**]. Methyl mercury concentrations ranged from 1.30 ng/g to 39.5 ng/g in the 0.0-0.1 ft and 0.1-0.3 ft sample intervals. The mean methyl mercury concentration for marsh platform sediments was 14.9 ng/g for the 0.0-0.1 ft sample interval, and 8.1 ng/g for the 0.1-0.3 ft sample interval. The mean percent methyl mercury was 3.9% in the 0.0-0.1 ft sample interval and 1.7% in the 0.1-0.3 ft sample interval (**Table 3-2**). Mean organic content at 550 degrees C over all sample depth intervals ranged from 22.7% to 33.0%, and TOC ranged from 11.8% to 15.3%.

For 2017 intertidal sediments, the mean concentrations of total mercury were relatively consistent at approximately 500 ng/g in the sampling intervals between 0.0 ft and 0.5 ft, but more than doubled to 1,107 ng/g in the 0.0-0.5 ft interval (**Table 3-2**). The marsh platform sediment analytical data show an increasing mean total mercury concentration with depth for the sample intervals 0.0-0.1 ft (473 ng/g), 0.1-0.3 ft (601 ng/g), 0.3-0.5 ft (933 ng/g), and 0.5-1.0 ft (1,064 ng/g). The mean results for percent solids, organic content, and TOC are all quite consistent between sample depth intervals for the intertidal and marsh platform sediments (see **Table 3-2**).

Figures 3-6 and **3-7** present total mercury, methyl mercury, and percent methyl mercury concentrations for intertidal and subtidal sediments from upriver to downriver, for the 0.0-0.1 ft interval and 0.1-0.3 ft interval, respectively. **Figure 3-6** shows background and upriver concentrations of total mercury from < 50 ng/g to approximately 200 ng/g. Moving downriver to the Orrington and Winterport reaches (beginning at location OB-05), total mercury concentrations in intertidal sediments increase to a maximum concentration of 1,280 ng/g at location W-63-Intertidal (0.0-0.1 ft). W-17 and Mendall Marsh intertidal (W-65 and W-21) samples from the 0.0-0.1 ft interval exhibit total mercury concentrations between 510 ng/g and 827 ng/g. Further downriver at location ES-02, the total mercury concentration was 683 ng/g, and at location ES-04 (Searsport Harbor) was 266 ng/g. Methyl mercury concentrations in the 0.0-0.1 ft interval for intertidal and subtidal sediments followed a similar pattern to total mercury with respect to change in concentrations between various reaches of the river (see **Figure 3-6**). Methyl mercury concentrations ranged from 0.6 to 4.0 ng/g in the background and upriver sampling locations, to 22.4 ng/g at location W-63-Intertidal, and 2.3 ng/g in Upper Penobscot Bay (location E-01-04). The percent methyl mercury exhibited a different geographic pattern in the 0.0-0.1 ft interval than the concentrations of total mercury and methyl mercury. Percent methyl mercury in intertidal and subtidal sediments was highest at location BO-05 (2.4%) and lowest (0.4%) at Mendall Marsh location W-21-Intertidal. (See **Figure 3-6**).

The geographic patterns in relative concentrations of total mercury and methyl mercury in the 0.1-0.3 ft sample interval for intertidal and subtidal sediments (see **Figure 3-7**) mirror those of the 0.0-0.1 ft sample interval (**Figure 3-6**).

Figures 3-8 and **3-9** present total mercury, methyl mercury, and percent methyl mercury concentrations for marsh platform sediments from upriver to downriver, for the 0.0-0.1 ft interval and 0.1-0.3 ft interval, respectively. **Figure 3-8** shows Mendall Marsh mercury concentrations at locations W-21-UM-West-A and W-21-Low ranging from 90.4 ng/g and 804 ng/g, and Verona East marsh sediment total mercury concentrations ranging from 209 ng/g to 835 ng/g. The mean concentrations of total mercury in 0.0 - 0.1 ft marsh platform sediment samples for Mendall Marsh and Verona East (location W-61) were 384 ng/g and 487 ng/g, respectively. Methyl mercury concentrations in the 0.0-0.1 ft interval for marsh sediments followed a similar pattern to total mercury with respect to change in concentrations from sample to sample, except for locations W-21-Central-C, W-65-High and W-65-Mid locations. (see **Figure 3-8**). Percent methyl mercury was the highest at W-21-UM-Central-C at 12.5 percent. Percent methyl mercury exhibited a similar geographic pattern to the concentrations of total mercury in the 0.0-0.1 ft interval. Analytical results are presented in **Table 3-1**.

The geographic patterns in relative concentrations of total mercury and methyl mercury in the 0.1-0.3 ft sample interval for marsh platform sediments (see **Figure 3-9**) are similar those of the 0.0-0.1 ft sample interval (**Figure 3-8**).

The ratio of methyl mercury to total mercury can be used as an indicator of methylation efficiency; ratios of 1-3% commonly observed in saturated sediments (Krabbenhoft et al. 1999). Sediments characterized by methyl mercury to total mercury ratios greater than ten percent can indicate areas with higher net methylation efficiencies. In subtidal sediments in this data set, the methyl mercury to total mercury ratio ranges from 0.8% to 1.5%. In intertidal sediments, the ratio ranges from 0.4% to 2.4% in marsh platform sediments, the ratio ranges from 0.3% to 12.5%. (**Table 3-1**). Comparison of 2017 Analytical Results to 2016 Results

The analytical results of sediment monitoring from 2017 are comparable to those of the 2016 monitoring program. The following bullets present a summary of the significant similarities, and differences in analytical results between 2016 and 2017.

- Both 2017 and 2016 data sets demonstrate that total mercury concentrations in sediment are higher downstream of Veazie than in the upstream reference stations.

- For intertidal and subtidal sediments, the range of total mercury and methyl mercury concentrations are comparable between the 0.0-0.1 ft and 0.1-0.3 ft sampling intervals of 2017 and the 0-0.3 ft sampling interval of 2016 (comparison of **Figures 3-6 and 3-7** to Figure 3-1 of 2016 Monitoring Report [Amec Foster Wheeler, 2017a]).

- For marsh platform sediments, the range of total mercury and methyl mercury concentrations are comparable between 0.0-0.1 ft and 0.1-0.3 ft sampling intervals of 2017 and the 0-0.3 ft sampling interval of 2016 (comparison of **Figures 3-8 and 3-9** to Figure 3-2 of 2016 Monitoring Report [Amec Foster Wheeler, 2017a]). However, the mean concentrations of methyl mercury in the 2017 0.0-0.1 ft interval (14.9 ng/g) and the 0.1-0.3 ft interval (8.1 ng/g) are both greater than the mean of 5.6 ng/g for the 0.0-0.3 ft interval of 2016 samples.

- 2017 marsh platform sediments collected from 0.0-0.1 ft and 0.1-0.3 ft indicate that total mercury concentrations are generally higher in the low marsh sampling locations and decrease from Low to Mid to High marsh. In 2016 marsh platform data appeared to follow the opposite spacial trend.

3.2 2017 Water Quality Monitoring Results

The following paragraphs present a summary of water quality monitoring analytical results for 2017. The 2017 surface water quality monitoring was conducted at only one location, specifically OV-02 upstream of the former Veazie Dam (see **Figure 2-1**). Sampling at this location was designed to assess mercury and sediment flux to the Estuary. The salinity measured at OV-02 in the three rounds of sampling in April and May 2017 (less than 0.02 parts per thousand) suggests this location is above the influence of tides, and may be considered as a background location.

Table 3-3 presents the 2017 water quality monitoring analytical results and field parameters. All field sample (QC Code = FS) results for dissolved and total mercury and methyl mercury, as well as DOC, TOC, TSS, and SSC in **Table 3-3** are the average of field triplicate results. Particulate mercury concentrations presented in **Table 3-3** were calculated as follows:

$$[Hg]_p = \{([Hg]_{unf} – [Hg]_{filt})(ng/L) / TSS (mg/L)\} \text{ x } 1000 (mg/g)$$

That is, the particulate concentration (ng/g) is equal to the unfiltered concentration (ng/L) minus the filtered concentration (ng/L), divided by the TSS concentration (mg/L), multiplied by 1,000 mg/g.

Dissolved total mercury concentrations ranged from 3.43 ng/L on April 19, 2017 to 2.46 ng/L on May 24, 2017. Likewise, concentration of total (unfiltered) mercury were highest on April 19, 2017 (4.87 ng/L) and lowest on May 24, 2017 (2.97 ng/L). Calculated particulate mercury concentrations ranged from 267 ng/g on April 19, 2017 to 131 ng/g on May 8, 2017.

Dissolved methyl mercury concentrations at OV-02 ranged from a high of 0.10 ng/L on May 8, 2017 to a low of < 0.05 ng/L on April 19, 2017; dissolved methyl mercury was not detected at concentrations greater than 0.13 ng/L in samples from the May 24, 2017 sampling event (see **Table 3-3**). Total (unfiltered) methyl mercury concentrations at OV-02 ranged from 0.10 ng/L on May 8, 2017 to 0.08 ng/L on April 19, 2017; total methyl mercury was not detected at concentrations greater than 0.14 ng/L in samples from the May 24, 2017 sampling event.

3.3 Summary of Flow and Turbidity Monitoring Results

Table 3-4 presents 2017 river stage data and estimated discharge rates from the USGS gaging station #01036390 at Eddington, ME. Discharge rates were estimated based on a USGS table of stage height versus river flow. 2017 Turbidity data readings collected from the probe at the former Eddington boat ramp are provided in **Table 3-5**. The turbidity meter data are not comparable between different instruments due to challenges with consistent and reliable turbidity readings as well as the use of multiple turbidity meters throughout the year. Historical data from the USGS monitoring station indicates that a rapid rise in stage typically results in an increase in turbidity.

As presented in **Table 3-6,** there were 6 storm events that each produced more than an inch of precipitation in Bangor (Wunderground.com) in 2017. These high precipitation events occurred on January 24 (1.48 inches), April 6 (1.18 inches), April 26 (1.08 inches) May 14 (1.99 inches), May 26 (1.04 inches), and October 25 and 26 (two-day total 3.47 inches). The cumulative precipitation recorded at Bangor, ME between the months of January and November 2017 of 37.27 inches is similar to average of 38.22 inches calculated from the past ten years of data (2007-2016).

The most complete data sets that include full gage height, precipitation and turbidity data are for the precipitation events that occurred on Jan 24, April 6, and May 26, 2017. Each of the rain events is reflected in the 2017 turbidity and flow rate data with the data spike generally occurring 2-3 days after each precipitation event. The river flow rate peaked on April 18th with a gage height of 14.94 feet above the datum, which is approximately equivalent to a discharge of 81,783 cubic feet per second. No turbidity data were recorded during this high flow event due to flooding and malfunction of the turbidity control box.

A comparison of historical gage height and turbidity data for the years August 2007 thru August 2016 is provided in **Appendix D-1** and illustrated in **Appendix D-2**. A comparison of 2017 gage height and turbidity data is illustrated in **Appendix D-3.**

4.0 TEMPORAL AND SPATIAL DISTRIBUTION OF SEDIMENT MERCURY AND METHYL MERCURY

Section 4.0 presents an assessment of the temporal and spatial trends of mercury and methyl mercury concentrations in sediment using data from the period 2006 through 2017.

4.1 Sediment Assessment Methods

Historical data were evaluated by number of samples and years to determine which sampling locations had multiple years of data that would result in a robust exploratory data evaluation. The data used in the statistical evaluation included data from the years 2006 to 2012 and 2016 to 2017 (**Table 4-1**). Sampling locations by sediment type include:

- Subtidal: E-01-01, E-01-03, E-01-04
- Intertidal: OV-04, OV-01, OV-02, OB-05, W-17-Intertidal, W-21-Intertidal, W-61 Intertidal, W-63-Intertidal, W-65-Intertidal, ES-02, ES-13
- Marsh Platforms: W-21-UM-Central-C, W-21-UM-East-C, W-21-UM-South, W-21-UM-West-A, W-21-High, W-21-Mid, W-21-Low, W-61-High, W-61-Mid, W-61-Low, W-63-High, W-65-High, W-65-Mid, W-17-Low

Historical sediment data were paired with sediment data collected in 2016 and 2017 at selected monitoring stations as indicated above. Field duplicates were not included in the data set. Data from other sampling stations within the Estuary were not evaluated due to the limited number of years of sample collection. Sediment samples collected in 2006 and 2016 were analyzed for methyl mercury following methylene chloride extraction. Methyl mercury data from 2006 and 2016 sediment samples were adjusted by a factor of 2 to allow comparison with data generated by distillation extraction (Phase II data after 2006) or extraction with methanolic KOH (Amec Foster Wheeler, 2017 data). This approach to data adjustment is consistent with the recommendation made by the Phase II Study Group, and is as discussed in the Analytical Methods Comparison Technical Memorandum (Amec Foster Wheeler, 2017d).

Two data sets based on sample depth were used to evaluate temporal sediment mercury trends. The sediment data set was split as follows: 1) The depth intervals of historical samples used in the evaluation were limited to the 0- to 0.3-ft interval. 2) Results from samples collected in 2017 in the 0- to 0.1-ft depth were matched with historical sediment samples that also contained data for the 0-0.1 ft depth increment. For both data sets, data were evaluated, where available, based on sediment type: subtidal, intertidal (including marsh platform intertidal), marsh platform high elevation, marsh platform mid elevation, and marsh platform low elevation. The 0- to 0.3-ft data set is larger and allows for a more spatiotemporally comprehensive statistical evaluation of sediment sampling locations. The results of the evaluation of the 0- to 0.3-ft data set is presented in **Section 4.2 and 4.3**. The results of the evaluation of the 0- to 0.1-ft data set are presented in **Appendix E**.

Results from samples collected at the same location on the same date at multiple depths were averaged using weighted averaging termed interval participation weighted concentrations (IPWCs). IPWCs were calculated to make intervals comparable throughout the river. IPWCs were calculated for both data sets. An example IPWC calculation for the 0- to 0.3-ft interval using three increments of one example core is show below.

Example calculation: ((0.1 ft * 200 ng/g + 0.2 ft * 150 ng/g) / 0.3 ft) = 167 ng/g

Increment	Start Depth (ft)	End Depth (ft)	Mercury (ng/g)
1	0	0.1	200
2	0.1	0.3	150
3	0.3	0.5	140

Trends analysis using depth intervals to 0.3 ft (9.1 cm) can be confounded by vertical gradients in mercury concentrations, as depths to 9 cm may represent older, more contaminated sediments in some areas. Likewise, where trends are not detected, it may be because older, deeper sediments within the 0-9 cm interval confound the observation of change in surface sediments. Where trends are detected in sediment samples collected to a depth of 9 cm, this may indicate areas where deposition rates of new sediment are high relative to other areas of the Estuary.

Total mercury and methyl mercury results were normalized for percent TOC. Normalization of mercury and methyl mercury concentrations by TOC was conducted for each sediment type (i.e., subtidal, intertidal, and marsh platform) by dividing the individual mercury concentration by individual TOC, and then multiplying by the median TOC for that sediment type. The central tendency of the TOC (median rather than the average) of the dataset was used to scale (“normalize”) each data point. The normalized mercury concentrations are calculated individually. An example calculation using only three samples from the data is shown below.

Example calculation: (1,104 ng/g) / (6.2 percent) * 7.3 percent = 1,300 ng/g

Sample	Mercury (ng/g)	TOC (percent)	Normalized Mercury (ng/g)
1	994	7.3	994
2	1,104	6.2	1,300
3	1,247	7.3	1,247

Median TOC = 7.3 percent

The statistical evaluation of both data sets of sediment data was conducted using the publicly available statistical software package R, version 3.4.2 (R Core Team 2017). Additional packages used for evaluation of the data include *reshape, lattice, stringr, PMCMR*, and *Kendall*. The packages used are indicated at the top of the code. Code and output are presented in **Appendix F**. Data were tested for normality where applicable and transformed if possible. Non-parametric statistical evaluations were conducted because data were not typically normally distributed. An alpha value of 0.05 was used to determine statistical significance where $p < 0.05$ indicates a rejection of the null hypothesis of no difference. Statistical methods for exploratory data evaluations were adapted from EPA's Unified Guidance (USEPA 2009), Conaway et al. (2007), and Bolker (2008).

Subtidal Sediments

Total mercury and methyl mercury concentrations were evaluated for differences between Estuary reaches using a Kruskal Wallis Rank Sum test. If the Kruskal Wallis Rank Sum test indicated a significant difference between reaches, a Kruskal-Nemenyi post-hoc comparison test with a Chi-squared distribution (to account for ties in the data) was conducted to determine significance between groups. Total and methyl mercury concentrations were also evaluated by TOC and reach using an Analysis of Covariance (ANCOVA) to determine if the relationship between total mercury or methyl mercury concentrations and TOC differs by reach.

Total mercury and methyl mercury concentrations were evaluated per location against year to determine if sediment concentrations differed by year. Due to significant relationships between total mercury and TOC, and methyl mercury and TOC, data were normalized for TOC and regressed with time.

For subtidal sediments, data are presented as box and whisker plots by reach and sampling location (**Figures 4-1 through 4-6**), and as temporal trend plots by location (**Figures 4-7 through 4-10**).

Intertidal Sediments

Total mercury and methyl mercury concentrations were evaluated for differences among reaches using a Kruskal Wallis Rank Sum test. If the Kruskal Wallis Rank Sum test indicated a significant difference between reaches, a Kruskal-Nemenyi post-hoc comparison test with a Chi-squared distribution to account for ties in the data was conducted to determine significance between groups. Total mercury and methyl mercury showed significant differences between Veazie and downstream reaches, so the data were pooled into an upstream (Veazie) versus a downstream (below Veazie) category. Total mercury and methyl mercury concentrations were evaluated by TOC and upstream/downstream using an ANCOVA to determine if the relationship of total mercury and methyl mercury concentrations to TOC differs between upstream and downstream locations/categories.

Total mercury and methyl mercury concentrations were evaluated per location against year to determine if sediment concentrations differ by year. Due to significant relationships between total mercury and TOC, and methyl mercury and TOC, data were normalized for TOC and regressed with time.

For intertidal sediment, data are presented as box and whisker plots by reach and sampling location (**Figures 4-11 through 4-16**), and as temporal trend plots by location (**Figures 4-17 through 4-20**).

Marsh Platform Sediments

Total mercury and methyl mercury concentrations in each marsh platform elevation were evaluated for differences among reaches using a Kruskal Wallis Rank Sum test. If the Kruskal Wallis Rank Sum test indicated a significant difference between reaches, a Kruskal-Nemenyi post-hoc comparison test with a Chi-squared distribution to account for ties in the data was conducted to determine significance between groups.

Total mercury and methyl mercury concentrations were evaluated per location against year to determine if sediment concentrations differ by year. Due to significant relationship between total mercury and TOC, and methyl mercury and TOC, data were normalized for TOC and regressed with time.

For marsh platform sediments, data are presented as box and whisker plots by reach and sampling location for intertidal, low, mid, and high elevations (**Figures 4-21 through 4-26**), and as temporal trend plots by location and platform elevations (**Figures 4-27 through 4-30**).

4.2 Sediment Assessment Results

Subtidal Sediments

Mercury, methyl mercury, and TOC were different between reaches (includes all years of available data) (**Figures 4-1 through 4-6**). Kruskal-Wallis rank sum tests (**Tables 4-2 and 4-3**) confirm that observed differences are statistically significant. Mercury and methyl mercury concentrations and percent TOC were approximately two to three times higher in Fort Point Cove than in the Upper Penobscot Bay reach (**Tables 4-3 and 4-4**), consistent with the expected difference of a depositional environment (i.e., Fort Point Cove) compared to an area subject to more estuarine circulation and flow (i.e., Upper Penobscot BayMercury was significantly related to TOC, but the relationship did not differ by reach (**Table 4-5a and 4-5b**). Methyl mercury showed a significant interaction between TOC and reach. Methyl mercury also was significantly related to TOC and reach, indicating that the relationship of TOC and methyl mercury differs by reach (**Table 4-5a**).

Linear regressions by sampling location help test for trends over time – *are mercury concentrations in sediments changing at a rate that is statistically significant for the data set analyzed?* Using a log-linear regression model, mercury and methyl mercury concentrations in subtidal sediments did not show significant change through time (**Table 4-6**, **Figures 4-7 and 4-8)**, except at E-01-04 where methyl mercury concentrations appear to be increasing through time due to samples collected in 2012 and 2016 (**Figure 4-8**). Normalizing mercury to organic carbon did not change the lack of trend (**Figure 4-9**). After methyl mercury concentrations were normalized by TOC, the increase at E-01-04 was no longer significant as determined by a loglinear regression model (**Figure 4-10**).

Rank-order tests for trends provide evidence regarding the impact of outliers, which can substantially impact linear regression models. **Table 4-6** includes a Kendall's rank order probability (p-Tau) for statistically significant trends. Although the methyl mercury trend is significant by loglinear regression at E-01-04, the p-Tau value (0.94) means that a significant trend was not indicated by the Kendall rank order test. This lack of significant trend suggests that the trend of methyl mercury identified by a loglinear regression model is driven by the 2012 and 2016 outlying data points. This is also reflected in the relatively large confidence interval apparent in the plot of methyl mercury at E-01-04 shown in **Figure 4-8**. Conversely, the p-Tau values for TOC-normalized mercury at E-01-01 and at E-01-03 were significant (0.012 and 0.041, respectively) while loglinear values were not (**Table 4-6**).

Intertidal Sediments

Mercury, methyl mercury, and percent TOC were significantly different in intertidal sediments among reaches (**Table 4-2**, **Figures 4-11 through 4-16**). Mercury and methyl mercury concentrations were significantly different between the intertidal sediments in the Veazie reach compared to the Orrington and Verona (Verona East and Verona Northeast) reaches (**Tables 4-7 and 4-8**). Percent TOC differed significantly between the Veazie and Orrington reaches, but not the other reaches (**Table 4-7**).

Mercury and methyl mercury showed a significant interaction between TOC and reach and between TOC and upstream/downstream location (**Table 4-9 and 4-10**). Mercury and methyl mercury also were significantly related to TOC, reach, and upstream/downstream location, indicating that the relationship of TOC and mercury or methyl mercury differ by reach (**Table 4-9**) and by separation of upstream to downstream locations (**Table 4-10**).

Time trends analysis using linear regression models on intertidal sediment sampling locations showed significantly decreasing ($p<0.05$) mercury concentrations at OV-04, OV-02, W-21-Intertidal, and ES-02 through time (consistent with the Kendall rank order test results), but not at the other intertidal sediment sampling locations (**Table 4-6, Figures 4-17 and 4-27**). Methyl mercury concentrations decreased significantly over time at W-17-Intertidal, W-21-Intertidal (consistent with the Kendall rank order test results), and W-61-Intertidal, but not in any of the other intertidal stations (**Table 4-6, Figures 4-18 and 4-29**). TOC normalized mercury (**Figures 4-19 and 4-28, Table 4-6**) showed a downward trend at W-21-Intertidal and ES-02 (consistent with the Kendall rank order test results). TOC normalized mercury showed a significant upward trend at OV-01 ($p=0.047$), but the Kendall rank order test did not support this upward trend (p-Tau = 0.30) (**Figure 4-19**). Normalized methyl mercury concentrations showed a significant downward trend only at W-21-Intertidal ($p<0.001$) and W-65-Intertidal ($p=0.002$) (**Figures 4-20 and 4-30**). The Kendall rank order test (p-Tau<0.05) was consistent with the loglinear regression results at W-65-Intertidal, but not at W-21-Intertidal (**Table 4-6**). As with subtidal sediments, some p-Tau values for TOC-normalized mercury at W-17-Intertidal and mercury at W-65-Intertidal were significant for intertidal sediments while loglinear values were not significant (**Table 4-6**).

Marsh Platform Sediments

Mercury concentrations were significantly different among reaches for low elevation marsh platform sediments, but not other elevation categories (**Table 4-2**, **Figures 4-21 and 4-22**). The highest mercury concentration was at Frankfort Flats (2,510 ng/g) and the lowest at Mendall Marsh (17.6 ng/g) (**Figure 4-21**). The Nemenyi Chi-squared test indicates that there could be some separation of mercury by reach, but variability overwhelms any differences between low elevation marsh platform sediments in these reaches (**Table 4-12**).

Methyl mercury concentrations were significantly different in high elevation marsh platform sediments (**Table 4-2**), but not in marsh platform sediments at other elevations (**Figures 4-23 and 4-24**). Mendall Marsh had significantly higher methyl mercury concentrations than sediments in the Orrington and Verona East reaches, but did not differ from high marsh platform sediments in the Frankfort Flats reach (**Table 4-13**). Reaches other than Mendall Marsh were similar in methyl mercury concentrations in high marsh platform sediments (**Table 4-11**).

Percent TOC was significantly different in marsh platform high, marsh platform low, and marsh platform intertidal sediments among reaches (**Table 4-2**, **Figures 4-25 and 4-26**). The average (median or mean) percent TOC in marsh platform high elevation sediments in the Orrington reach was approximately three to four times lower than the mean percent TOC in high elevation marsh platform sediments in the other three reaches (**Table 4-11**), although was not statistically significantly different than the average percent TOC in Frankfort Flats due to variability among the samples and small sample size (**Table 4-13**). Percent TOC in low elevation marsh platform sediments in the Mendall Marsh reach was significantly lower than in low elevation marsh platform sediments in the Frankfort Flats reach (**Table 4-12**), but did not differ from percent TOC in sediments in the Verona East or Orrington reaches despite the very similar average percent TOC values of Verona East and Frankfort Flats (**Tables 4-11 and 4-12**). While marsh platform intertidal sediments were significantly different according to the Kruskal Wallis Rank Sum test, the post-hoc Nemenyi comparison did not show a statistically significant difference in percent TOC between reaches (**Tables 4-2 and 4-14**). The Nemenyi test indicates that there is some separation of percent TOC between reaches, but variability in percent TOC within reach overwhelms any differences between intertidal elevation marsh platform sediments in these reaches (**Table 4-14**).

Linear regressions at marsh platform sediment sampling locations showed significantly decreasing mercury and TOC normalized mercury concentrations at W-21 in low marsh platform sediments, but not in mid or high elevation marsh platform sediments (**Table 4-6**, **Figures 4-27 and 4-28**). The mercury concentrations also decreased significantly at W-21-UM-South, but not the Central, East, or West W-21-UM locations. Mercury concentrations also decreased significantly through time at W-63 high locations (**Table 4-6, Figure 4-27**), and otherwise did not change significantly at other locations including W-61-High, W-65-High, W-61-Mid, W-65-Mid, W-61-Low, or W-17-Low locations. TOC normalized mercury concentrations did not change significantly at any marsh platform sampling location with the exception of W-21-Low (**Table 4-6**, **Figure 4-28**).

Linear regressions at marsh platform sediment sampling locations showed significantly decreasing methyl mercury concentrations at W-21-UM-East-C, W-21-UM-West-A, W-21-High, W-63-High, W-21-Low, and W-17-Low (**Table 4-6, Figure 4-29**). The other marsh platform sediment sampling locations showed no significant decrease in methyl mercury concentrations over time. Linear regressions at marsh platform sediment sampling locations showed significantly decreasing TOC normalized methyl mercury concentrations at W-21 in high, mid, and low marsh platform sediments, as well as at stations W-21-UM-East-C, W-21-UM-West-A, and W-21-UM-South (**Table 4-6**, **Figure 4-30**). P-Tau values were consistent with many of the loglinear regression results presented here (**Table 4-6**).

4.3 Sediment Assessment Findings

Data collected in 2017 corroborate many of the results presented in the 2016 annual monitoring report (Amec Foster Wheeler, 2017a). In general, concentrations of mercury and methyl mercury in 2017 sediments were similar to 2016 results. This similarity among years, given heterogeneous sediment concentrations and inter-annual variability, provides additional confidence in the interpretation of temporal trend results, whether a trend significant or not.

Spatially, subtidal sediments differ in mercury and methyl mercury concentration and percent TOC between Fort Point Cove and Upper Penobscot Bay. Similarly, intertidal sediments differ upstream (i.e., Veazie) compared to downstream (i.e., Orrington, Verona East, Verona Northeast) in mercury and methyl mercury concentrations and in general for percent TOC. High elevation marsh platform sediments tend to be lower in methyl mercury concentrations by Orrington and Verona East and higher in the Frankfort Flats and Mendall Marsh reaches. Mercury concentrations do not differ spatially at any marsh platform sediment elevation. Percent TOC shows some potential spatial variability in high and low elevation sediments, but not in other sediment elevations. Variability and sample size affect comparisons.

Six sampling locations (W-21-Intertidal, W-21-UM-East-C, W-21-UM-South, W-21-UM-West-A, ES-02, and W-65-Intertidal), of which five are in Mendall Marsh, show a significant decrease (significant loglinear and Kendall’s rank order test p-values) in either normalized mercury or normalized methyl mercury. The sixth location in which the trend was significant was in the Verona Northeast reach. The six areas where normalized mercury or methyl mercury concentrations had decreasing trends provide the strongest evidence for changes in sediment mercury concentrations, as the normalization accounts for mercury and methyl mercury variation with percent TOC.

Three additional sampling locations (W-21-High, W-21-Mid, and W-21-Low) showed a significant decreasing loglinear trend in either mercury, methyl mercury, normalized mercury, or normalized methyl mercury, but p-Tau value did not indicate a significant trend. This suggests that the observed loglinear regression results are affected by the variability in the data set, particularly in the historical dataset where multiple samples were collected in a year (**Figures 4-27 to 4-30**, **Table 4-6**).

For the statistical evaluation using data from the period 2006 through 2017 for which data are available for the 0-0.1 ft depth increment, three sampling locations (E-01-01, W-21-UM-Central-C, and W-21-UM-West-A), of which two are in Mendall Marsh, show a significant decline (significant loglinear and Kendall's rank order test p-values) in either normalized mercury or normalized methyl mercury in the top 0-0.1 ft of sediment. The third sampling location is in the Fort Point Cove reach. Other sampling locations indicated the potential for trends with either mercury or methyl mercury, but when the data are normalized by percent TOC, the statistically significant relationships no longer exist.

Ten additional sampling locations (E-01-03, OB-05, W-21-UM-East-C, W-21-UM-South, W-21-Intertidal, W-21-High, W-21-Mid, W-21-Low, W-61-High, and W-61-Low) showed a significant decreasing loglinear trend in the top 0.1-ft of sediment, but the p-Tau value did not indicate a significant trend. This suggests that the observed loglinear regression results are affected by the variability in the data set, particularly in the historical dataset where multiple samples were collected in a year and/or affected by the limited number of data points (**Figures E-27 to E-30**, **Table E-3**). Importantly, limiting the temporal trends evaluation to only the 0-0.1 ft data set (Phase II and Phase III) did not improve the ability to identify statistically significant changes in sediment mercury and/or methyl mercury concentrations with time.

Overall, in terms of broad-scale temporal trends, while there is some evidence of decreasing concentrations of mercury and/or methyl mercury over time, and particularly when data are normalized to the organic carbon content of samples, these results are not consistently apparent either within reaches or across reaches. Challenges associated with ascribing decreasing chemical concentrations in normalized data to evidence of recovery include: (1) uncertainty in whether the decrease is a function of changes in mercury loading or organic carbon loading or a combination of both; and (2) uncertainty in overall understanding of where and how both components of that ratio (i.e., mercury and organic matter) are being mixed and transported throughout the Penobscot River Estuary. Moreover, variability in the sediment accumulation rate in different parts of the Penobscot River system introduces uncertainty in interpreting temporal (or spatial) trends across a depth interval (i.e., 0.0-0.3 ft or 0-9 cm) that may or may not include the depth interval associated with the time period of initial mercury discharge in the Estuary.

Further discussion of potential system recovery, including use of various approaches to identify or predict likely system recovery rates, are included in the Alternatives Evaluation Report and the Risk Reduction Report.

Future efforts to monitor sediment concentrations in the Estuary, such as long-term monitoring, should re-evaluate the set of sampling locations monitored. A robust data set is necessary to provide evidence of trends and recovery rates in sediment concentrations. Criteria to be considered include (but should not be limited to):

- Temporal coverage of historical data (e.g., W-65 high, mid, and intertidal marsh platform elevations)
- Use of Mendall Marsh sampling location elevations based on NAVD88
- Spatial coverage of marsh platform elevations (e.g., W-63 high elevation is the only representative elevation presented in this report)
- Depth of sampling
- Hydrologic zone
- Sample collection time of year
- Further development of pre-remediation data set in areas designated for remediation

The minimum sample size necessary for a robust statistical evaluation should be calculated with the appropriate power analysis.

5.0 WATER QUALITY MONITORING EVALUATION

The principal objectives of the 2017 water quality monitoring program were to collect mercury, methyl mercury, and water quality data at the upriver OV-02 location (near the former Veazie Dam) over the course of the 2017 spring freshet, and to evaluate the impact of the spring freshet on the loading rate of dissolved and particulate mercury to the Estuary. As secondary objectives, the monitoring program evaluated the extent to which freshet conditions were included with, or deviated from, conditions under which historic (Phase II) turbidity calibration data were generated, and evaluated various methods for determining the concentration of suspended particulate matter as well as the concentration of mercury on suspended sediments.

As presented in **Table 3-3**, TSS concentrations decreased from 6.2 mg/L in mid-April 2017 to 2.1 mg/L in late May 2017. These concentrations of TSS were within the range of TSS concentrations (0.49-22.5 mg/L; discharge weighted mean 6.48 mg/L) reported in the Phase II Study (PRMSP, 2013b), and are consistent with the continued use of the Phase II sediment/mercury loading estimates for the Penobscot River Estuary.

Over the April-May 2017 sampling interval, both total mercury (unfiltered) and dissolved mercury (filtered) concentrations also decreased. For total mercury, concentrations decreased from 4.87 ng/L to 2.97 ng/L; for dissolved mercury, concentrations decreased from 3.43 ng/L to 2.46 ng/L. These data are consistent with data presented in the Phase II Report, in which the discharge weighted average concentration of total mercury in surface water samples collected near the Veazie Dam was 4.3 ng/L, and the discharge weighted average concentration of dissolved mercury was 3.2 ng/L (PRMSP, 2013b). River discharge during the April-May 2017 freshet (see **Table 3-4**) decreased from 2,315 cubic meters per second (m3/s) [81,783 ft3/s] to 326 m3/s [11,529 ft3/s], and was within the range of discharge (126 – 3,141 m3/s) measured in the Phase II Study and used in the assessment of the discharge-particulate loading relationship for the Estuary (PRMSP, 2013b).

The concentration of particulate mercury varied between sampling intervals, but ranged from 131 ng/g to 267 ng/g (see **Table 3-3**). These values are consistent with particulate mercury data presented in the Phase II Report (PRMSP, 2013b), in which 240 ng/g was defined as the average concentration of total mercury on particles entering the Estuary from upgradient sources. The concentrations of total suspended solids determined by different analytical methods (ASTM 2540D versus ASTM D3977) were sufficiently similar (**Table 3-3**) and within the range of particulate loading data used in historic mass balance estimates of both particulate inputs and mercury loading to the Estuary (PRMSP, 2013b) that additional comparison sampling is not warranted.

Although most of the 2017 methyl mercury data were qualified, and so interpretation is limited, the estimated % methyl mercury for the spring 2017 samples was 1-2%, consistent with the overall % methyl mercury observed for samples from the Study Area (Amec Foster Wheeler 2017a; PRMSP 2013a).

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Sediment monitoring results from 2017 reveal a consistent pattern of mercury concentrations increasing downriver from Veazie, as has been previously observed in the Phase II Study (PRMSP, 2013a), and the 2016 Sediment and Water Quality Monitoring Report (Amec Foster Wheeler, 2017a). The range of mercury concentrations in sediments observed (300 to 1,100 ng/g), and the covariance of mercury with TOC, are also consistent with Phase II Study observations.

While there is some evidence of decreasing concentrations of mercury and/or methyl mercury in the Estuary over time, and particularly when data are normalized to the organic carbon content of samples, these results are not consistently apparent either within reaches or across reaches. Challenges associated with ascribing decreasing mercury concentrations in normalized data to evidence of recovery include: (1) uncertainty in whether the decrease is a function of changes in mercury loading or organic carbon loading, or a combination of both; and (2) uncertainty in overall understanding of where and how both components of that ratio (i.e., mercury and organic matter) are being mixed and transported throughout the Penobscot River Estuary. Moreover, variability in the sediment accumulation rate in different parts of the Penobscot River system introduces uncertainty in interpreting temporal (or spatial) trends across a depth interval (i.e., 0.3 ft or 9 cm) that may or may not include the depth interval associated with the time period of initial mercury discharge in the Estuary. Further discussion of potential system recovery, including use of various approaches to identify or predict likely system recovery rates, are included in the Alternatives Evaluation Report and the Risk Reduction Report.

Water quality monitoring data collected during the 2017 spring freshet at the site of the former Veazie Dam are also consistent with data from the Phase II Study. This consistency in data is apparent for both mercury and total suspended solids and results in the calculation of similar and consistent loading rates of mercury on suspended particles entering the Estuary.

6.2 Recommendations

Reviewing monitoring goals helps focus monitoring program design. Prior to implementing additional annual monitoring, the driving study questions should be revisited and the approach tailored based on lessons learned. Monitoring questions and associated lessons learned are summarized below, each followed by a specific recommendation. The monitoring questions below are based on the observations of 2016 and 2017 monitoring data, as well as a review of the PRMSP Phase II Study Report, Chapter 13 - Plan for long-term monitoring of mercury in sediments and biota in Penobscot River and Bay (PRMSP, 2013b).

Monitoring Question 1: Are mercury concentrations in Penobscot River sediments changing over time fast enough to make monitored natural attenuation a viable strategy?

A working hypothesis following the 2016 and 2017 field season and mobile sediment investigations is that the pool of mobile sediment and wood waste is acting as an ongoing source of mercury to intertidal and marsh platform sediments. In addition, the observed heterogeneity of sediments and the presence of wood waste in sediment samples makes time trend analysis difficult due the variability in results from the same sample aliquot. The impact of heterogeneity on time-trend analysis can be addressed with a refinement of sediment sample collection, processing, and analytical procedures appropriate to the conditions encountered. In 2017, new processes were implemented in the collection, processing, and analysis of sediment from the Penobscot River. The results of triple replicate analyses on a subset of 2017 sediment samples indicates that the implementation of the revised techniques has reduced uncertainty associated with prior sampling, processing, and analyses. Future sediment monitoring events should incorporate the sampling and sample handling procedures adopted in 2017.

Given the heterogeneity of the wood waste-sediment mix, and the assumptions imbedded in the recovery rate estimates presented in the Phase II Study (i.e., > 20 years for sediment concentrations to decrease to half way to a defined sediment mercury concentration target under the assumption that the rate of system recovery will be similar to the rate at which historically elevated sediment mercury concentrations redistributed throughout the Estuary), it appears that with the current data set, a time frame of 2006-2017 may not be a long enough period to have developed consistent trends in sediment recovery (as could be determined by simple linear regression). This lack of significant trending in decreasing mercury and methyl mercury concentrations over the period of 2006-2017 does not support the continuation of monitoring on an annual basis. For the purposes of evaluating changes in surface sediment mercury concentrations, as well as evaluating the balance between sediment redistribution and system recovery, Amec Foster Wheeler recommends that sediment and water quality monitoring be conducted on a 3-year interval.

Further assessment of the viability of monitored natural recovery is included in the Alternatives Evaluation Report and the Risk Reduction Report.

Monitoring Question 2: Has the annual sediment load entering the Estuary been adequately defined?

Definition of the annual sediment/mercury load entering the Estuary from the main stem of the Penobscot River helps in understanding the recovery rate of the Estuary. Comparison of 2017 water quality monitoring data to Phase II Study (PRMSP 2013b) calculations corroborates sediment/mercury loading estimates. Pending more complete evaluation of the role that mobile sediments and wood waste play in the ongoing redistribution of mercury within the system, as well as the size and turnover rate of this pool of mobile material, additional upgradient source monitoring is not recommended at this time.

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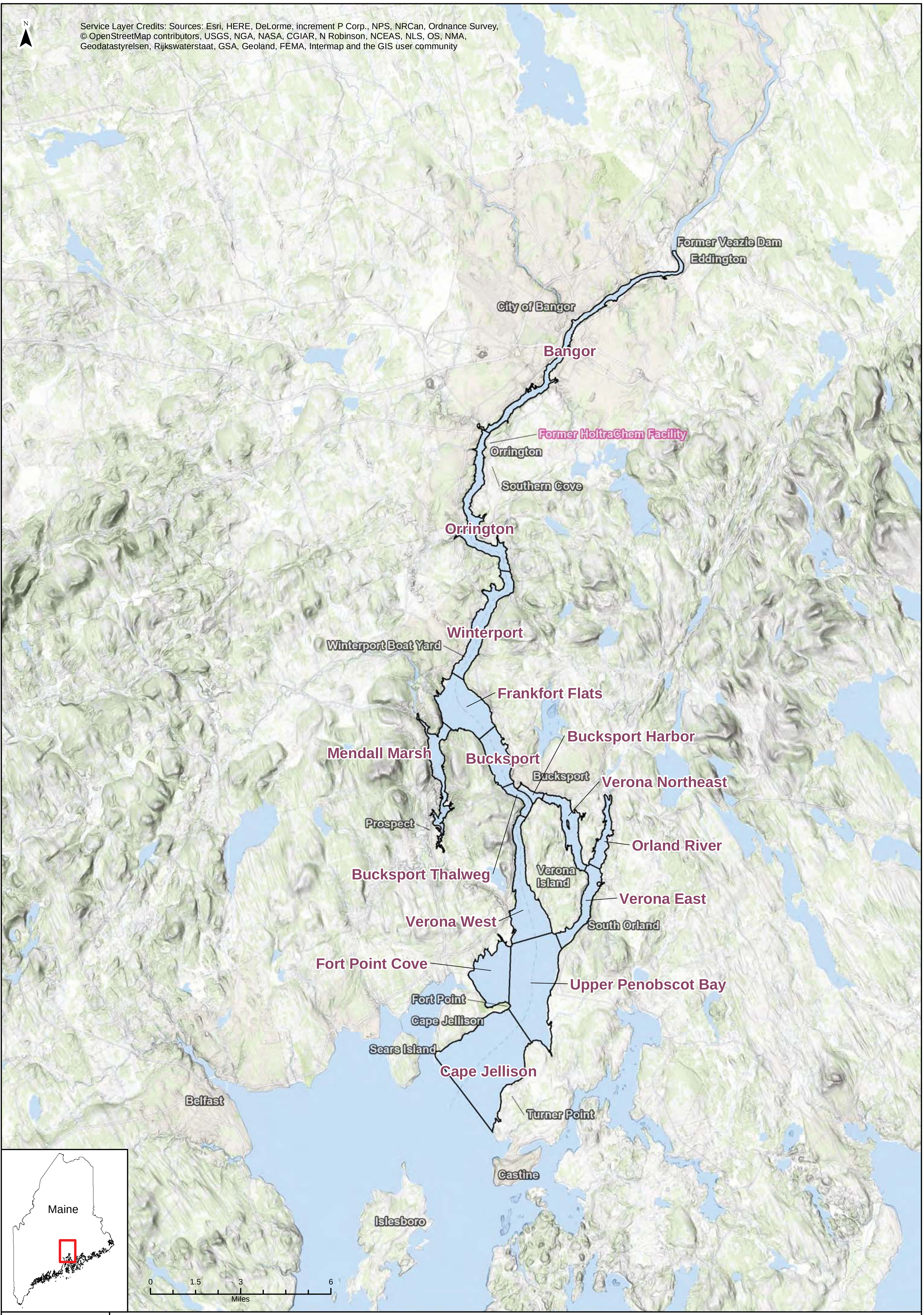
FIGURES



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Symbol Key

☐ Official Study Reach

Figure 1-1
Site Location and River Reaches

2017 Sediment and Water Quality
Monitoring Report
Penobscot River Phase III Engineering Study

Project: 3616166052	Prepared: ICD 12/14/2017	Checked: BPW 12/14/2017

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Symbol Key

▲ Sediment Sampling Location

▼ Surface Water Sampling Location

▭ Official Study Reach

Figure 2-1
Sediment and Water Quality Monitoring Locations

2017 Sediment and Water Quality Monitoring Report
Penobscot River Phase III Engineering Study

Project: 3616166052	Prepared: ICD 2/6/2018	Checked: BPW 2/6/2018

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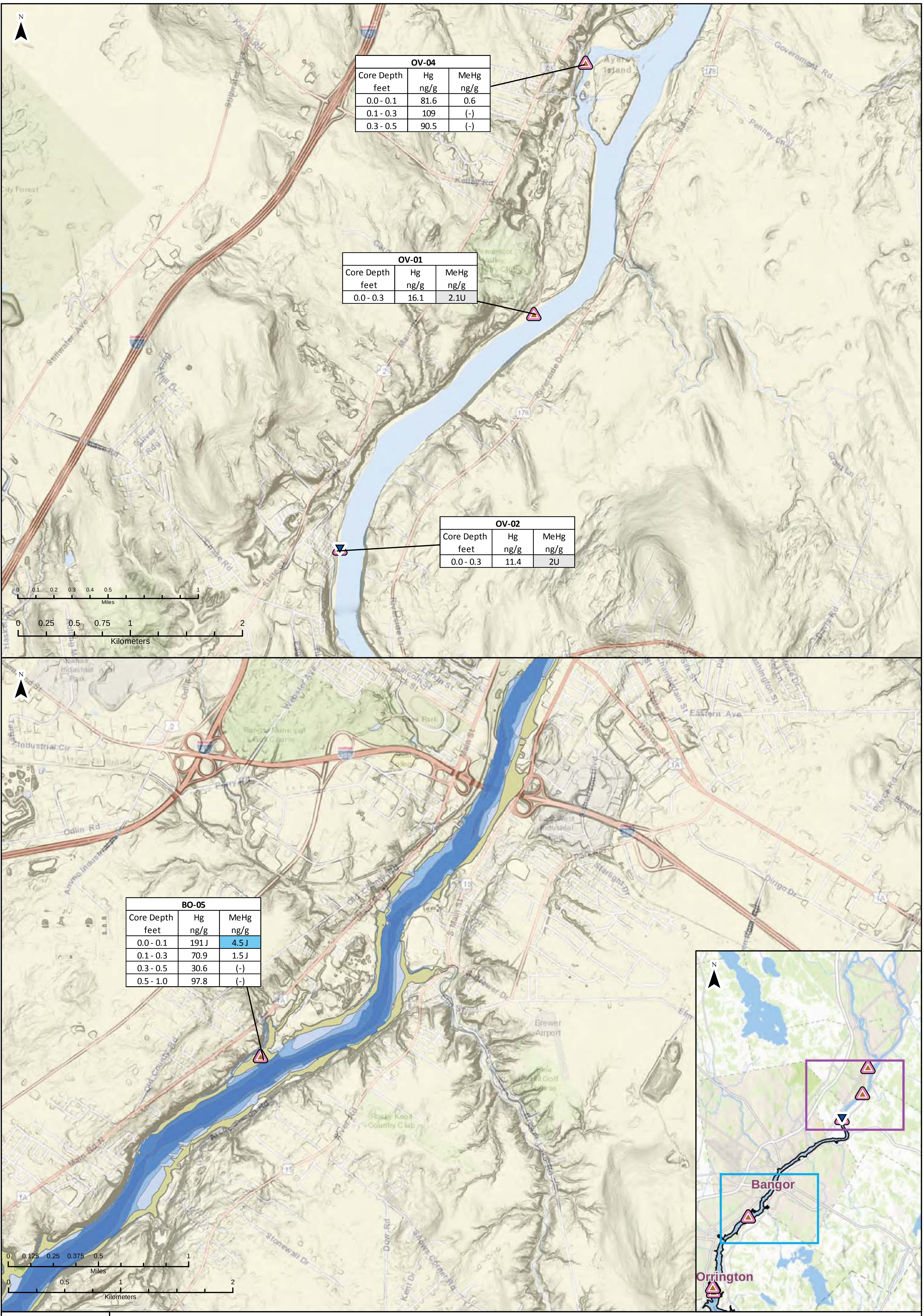

OV-04		
Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	81.6	0.6
0.1 - 0.3	109	(-)
0.3 - 0.5	90.5	(-)

OV-01		
Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.3	16.1	2.1U

OV-02		
Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.3	11.4	2U

BO-05		
Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	191 J	4.5 J
0.1 - 0.3	70.9	1.5 J
0.3 - 0.5	30.6	(-)
0.5 - 1.0	97.8	(-)

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Symbol Key

- △ Intertidal Location
- △ Marsh Platform Location
- △ Subtidal Location
- ▼ Surface Water Sample Location
- ▨ Marsh Platform
- ▨ Intertidal Zone

(-) Interval not analyzed for MeHg
J - Estimated value
ND - Non Detect
(ng/g) micrograms/gram

Mercury [Hg] (ng/g)	Methyl Mercury [MeHg] (ng/g)
ND	ND
< 200	< 2
200 - 450	2 - 4.5
450 - 750	4.5 - 7.5
750 - 1,000	7.5 - 15
1,000 - 2,200	15 - 25
2,200 - 5,000	25 - 50
> 5,000	> 50

Figure 3-1
Total Mercury and Methyl Mercury
Bangor Reach

2017 Sediment and Water Quality
Monitoring Report
Penobscot River Phase III Engineering Study

Project: 3616166052 | Prepared: ICD 12/14/2017 | Checked: BPW 12/14/2017

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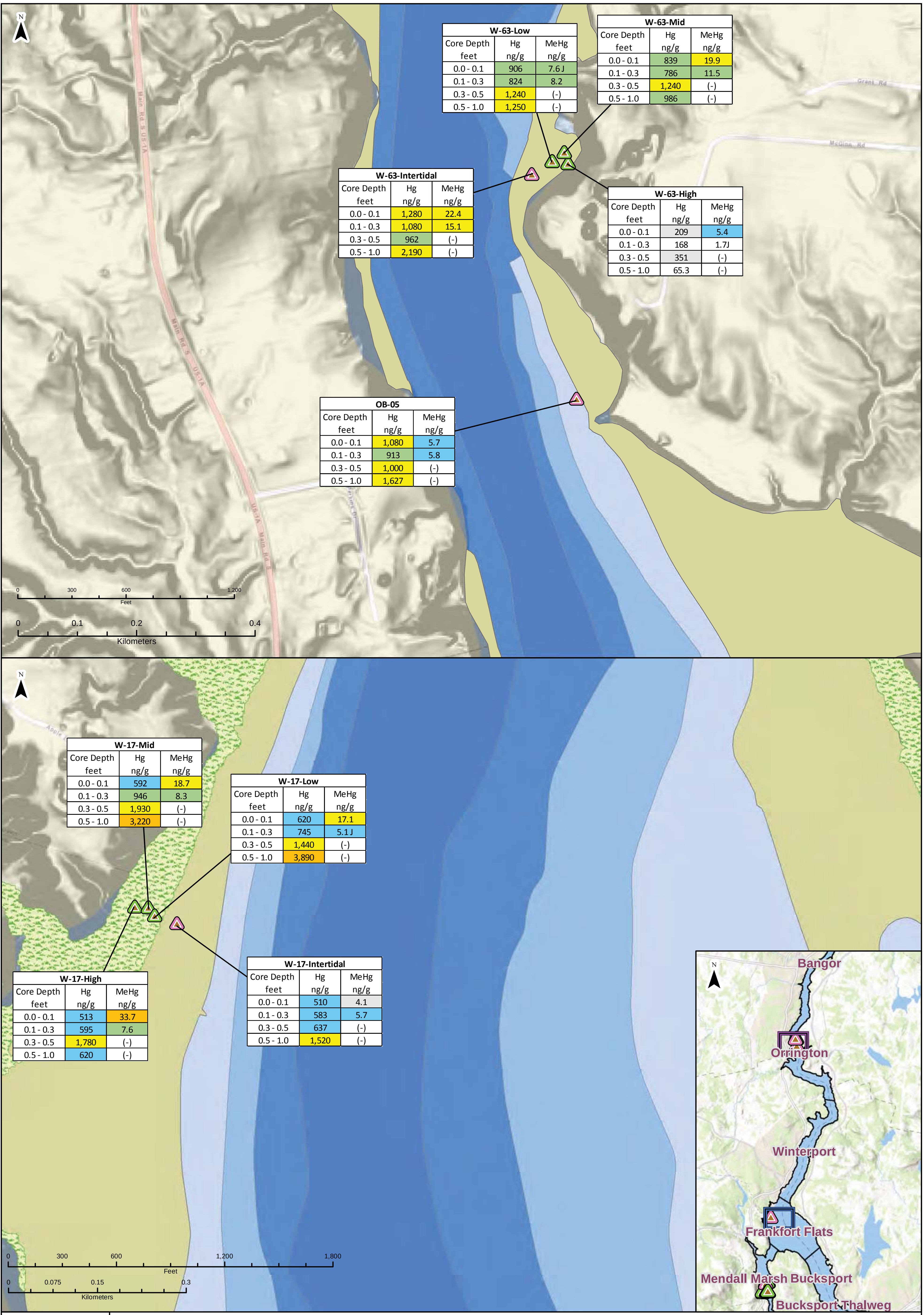

W-63-Low

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	906	7.6 J
0.1 - 0.3	824	8.2
0.3 - 0.5	1,240	(-)
0.5 - 1.0	1,250	(-)

W-63-Mid

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	839	19.9
0.1 - 0.3	786	11.5
0.3 - 0.5	1,240	(-)
0.5 - 1.0	986	(-)

W-63-Intertidal

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	1,280	22.4
0.1 - 0.3	1,080	15.1
0.3 - 0.5	962	(-)
0.5 - 1.0	2,190	(-)

W-63-High

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	209	5.4
0.1 - 0.3	168	1.7J
0.3 - 0.5	351	(-)
0.5 - 1.0	65.3	(-)

OB-05

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	1,080	5.7
0.1 - 0.3	913	5.8
0.3 - 0.5	1,000	(-)
0.5 - 1.0	1,627	(-)

W-17-Mid

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	592	18.7
0.1 - 0.3	946	8.3
0.3 - 0.5	1,930	(-)
0.5 - 1.0	3,220	(-)

W-17-Low

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	620	17.1
0.1 - 0.3	745	5.1 J
0.3 - 0.5	1,440	(-)
0.5 - 1.0	3,890	(-)

W-17-High

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	513	33.7
0.1 - 0.3	595	7.6
0.3 - 0.5	1,780	(-)
0.5 - 1.0	620	(-)

W-17-Intertidal

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	510	4.1
0.1 - 0.3	583	5.7
0.3 - 0.5	637	(-)
0.5 - 1.0	1,520	(-)

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Symbol Key

- △ Intertidal Location
- △ Marsh Platform Location
- △ Subtidal Location
- ▼ Surface Water Sample Location
- ▨ Marsh Platform
- ▨ Intertidal Zone

(-) Interval not analyzed for MeHg
J - Estimated value
ND - Non Detect
(ng/g) micrograms/gram

Mercury [Hg] (ng/g)	Methyl Mercury [MeHg] (ng/g)
ND	ND
< 200	< 2
200 - 450	2 - 4.5
450 - 750	4.5 - 7.5
750 - 1,000	7.5 - 15
1,000 - 2,200	15 - 25
2,200 - 5,000	25 - 50
> 5,000	> 50

Figure 3-2
Total Mercury and Methyl Mercury
Orrington and Winterport Reaches

2017 Sediment and Water Quality
Monitoring Report
Penobscot River Phase III Engineering Study

Project: 3616166052 | Prepared: ICD 12/14/2017 | Checked: BPW 12/14/2017

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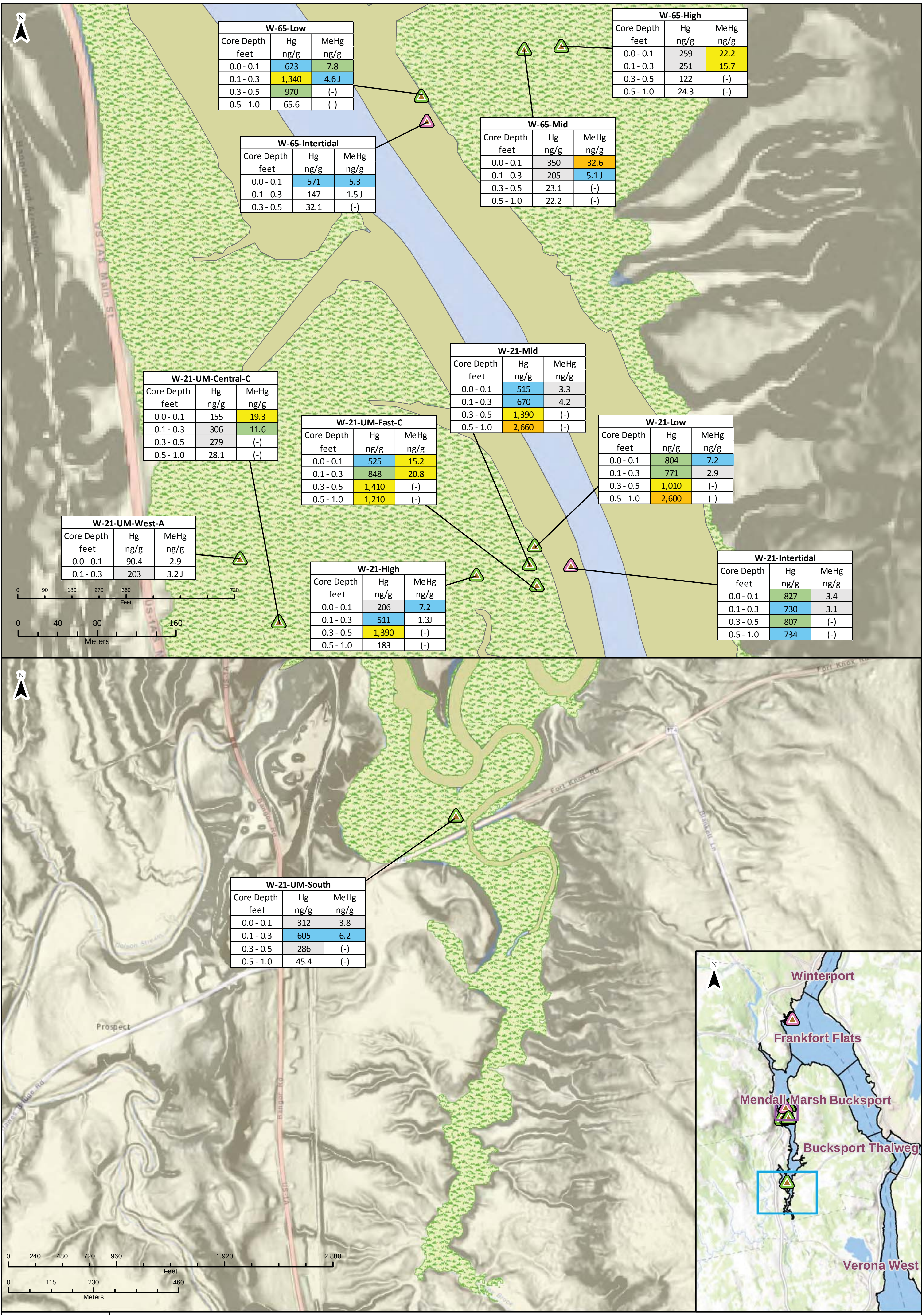

W-65-Low

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	623	7.8
0.1 - 0.3	1,340	4.6 J
0.3 - 0.5	970	(-)
0.5 - 1.0	65.6	(-)

W-65-High

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	259	22.2
0.1 - 0.3	251	15.7
0.3 - 0.5	122	(-)
0.5 - 1.0	24.3	(-)

W-65-Intertidal

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	571	5.3
0.1 - 0.3	147	1.5 J
0.3 - 0.5	32.1	(-)

W-65-Mid

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	350	32.6
0.1 - 0.3	205	5.1 J
0.3 - 0.5	23.1	(-)
0.5 - 1.0	22.2	(-)

W-21-Mid

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	515	3.3
0.1 - 0.3	670	4.2
0.3 - 0.5	1,390	(-)
0.5 - 1.0	2,660	(-)

W-21-UM-Central-C

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	155	19.3
0.1 - 0.3	306	11.6
0.3 - 0.5	279	(-)
0.5 - 1.0	28.1	(-)

W-21-UM-East-C

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	525	15.2
0.1 - 0.3	848	20.8
0.3 - 0.5	1,410	(-)
0.5 - 1.0	1,210	(-)

W-21-Low

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	804	7.2
0.1 - 0.3	771	2.9
0.3 - 0.5	1,010	(-)
0.5 - 1.0	2,600	(-)

W-21-UM-West-A

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	90.4	2.9
0.1 - 0.3	203	3.2 J

W-21-Intertidal

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	827	3.4
0.1 - 0.3	730	3.1
0.3 - 0.5	807	(-)
0.5 - 1.0	734	(-)

W-21-High

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	206	7.2
0.1 - 0.3	511	1.3J
0.3 - 0.5	1,390	(-)
0.5 - 1.0	183	(-)

W-21-UM-South

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	312	3.8
0.1 - 0.3	605	6.2
0.3 - 0.5	286	(-)
0.5 - 1.0	45.4	(-)

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Symbol Key

- △ Intertidal Location
- △ Marsh Platform Location
- △ Subtidal Location
- ▼ Surface Water Sample Location
- ▨ Marsh Platform
- ▨ Intertidal Zone

(-) Interval not analyzed for MeHg
J - Estimated value
ND - Non Detect
(ng/g) micrograms/gram

Mercury [Hg] (ng/g)	Methyl Mercury [MeHg] (ng/g)
ND	ND
< 200	< 2
200 - 450	2 - 4.5
450 - 750	4.5 - 7.5
750 - 1,000	7.5 - 15
1,000 - 2,200	15 - 25
2,200 - 5,000	25 - 50
> 5,000	> 50

Figure 3-3
Total Mercury and Methyl Mercury
Mendall Marsh

2017 Sediment and Water Quality
Monitoring Report
Penobscot River Phase III Engineering Study

Project: 3616166052 | Prepared: ICD 12/14/2017 | Checked: BPW 12/14/2017

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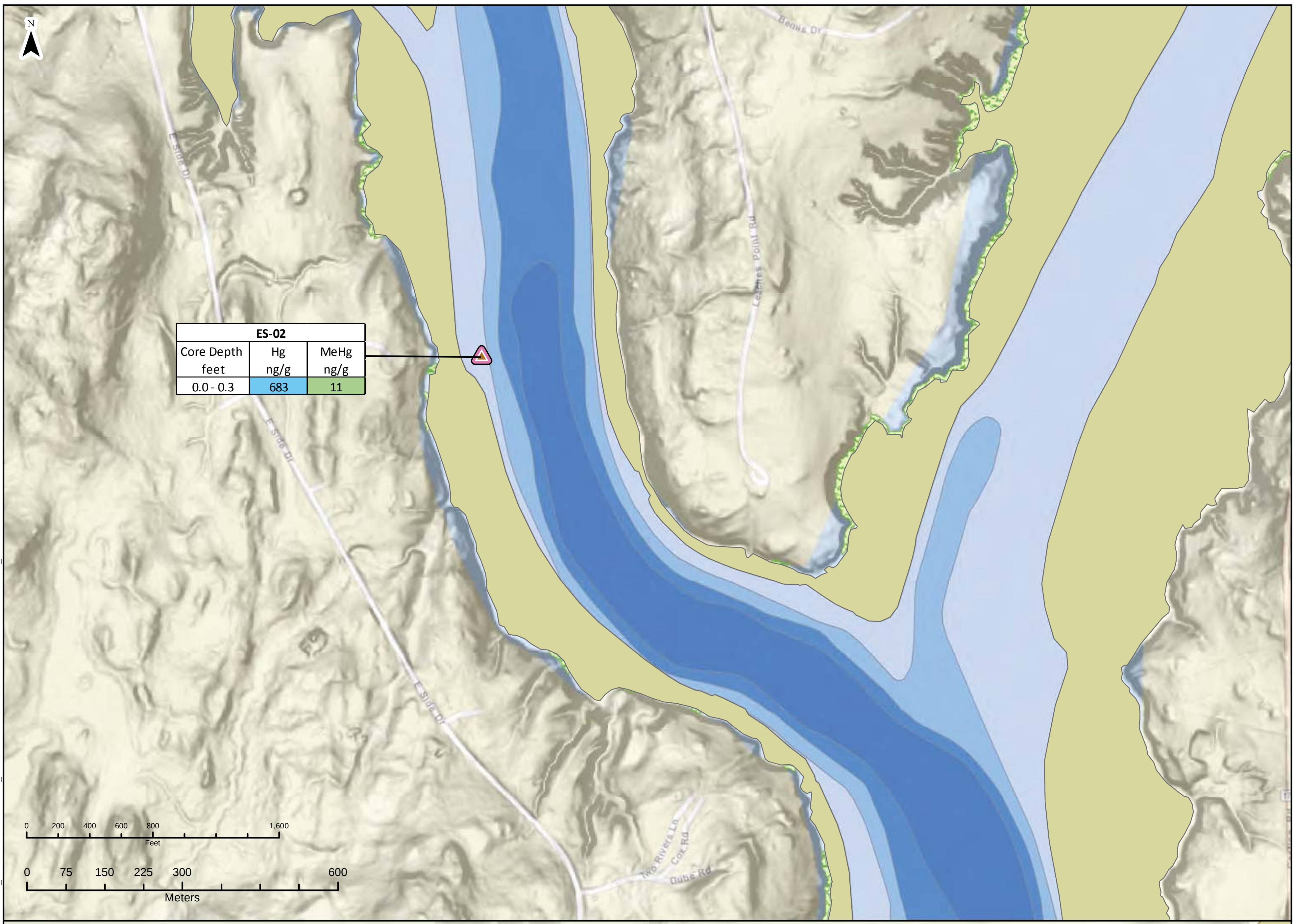
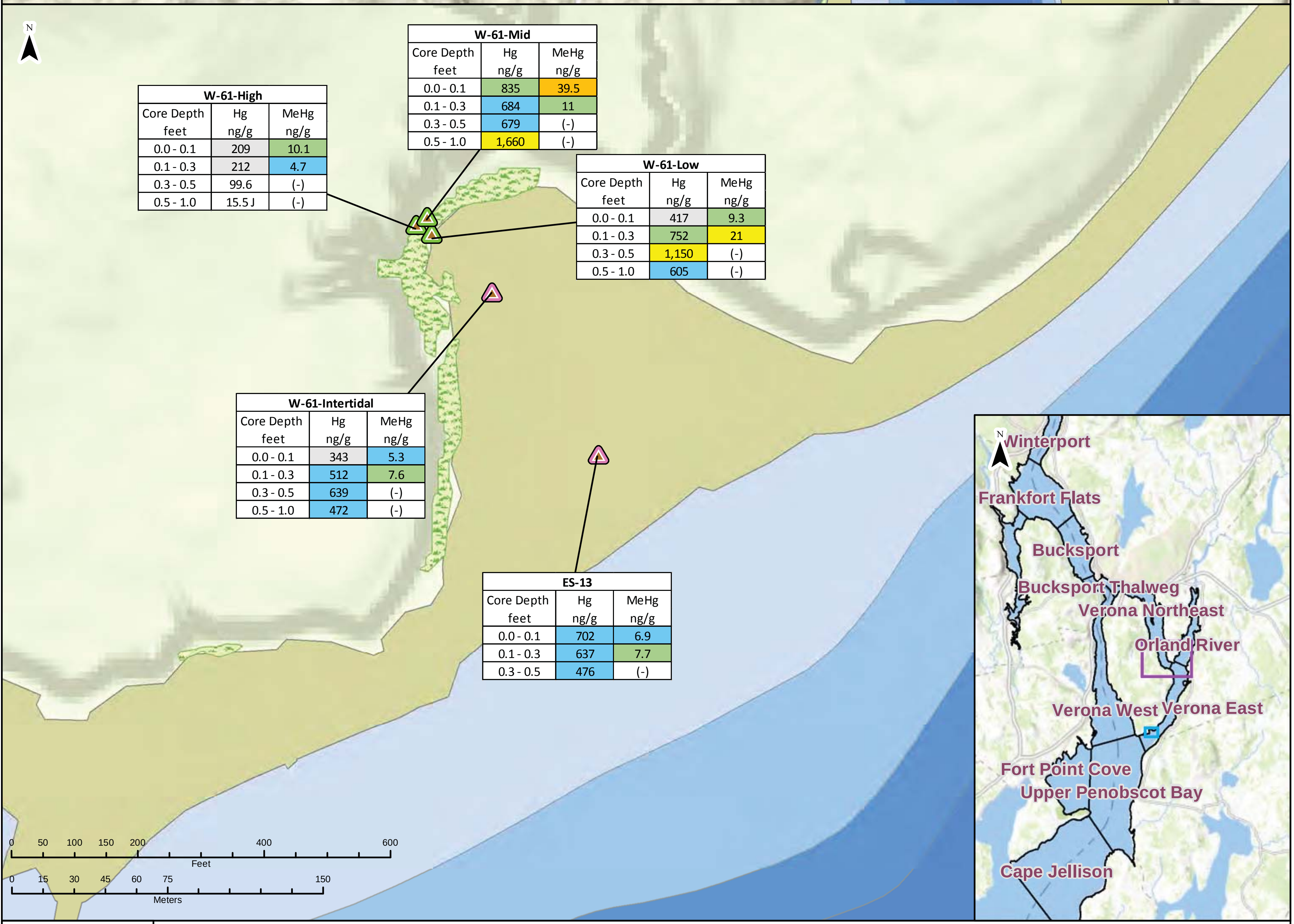


ES-02

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.3	683	11



W-61-Mid

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	835	39.5
0.1 - 0.3	684	11
0.3 - 0.5	679	(-)
0.5 - 1.0	1,660	(-)

W-61-High

Core Depth feet	Hg ng/g	MeHg 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 J	(-)

W-61-Low

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	417	9.3
0.1 - 0.3	752	21
0.3 - 0.5	1,150	(-)
0.5 - 1.0	605	(-)

W-61-Intertidal

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	343	5.3
0.1 - 0.3	512	7.6
0.3 - 0.5	639	(-)
0.5 - 1.0	472	(-)

ES-13

Core Depth feet	Hg ng/g	MeHg ng/g
0.0 - 0.1	702	6.9
0.1 - 0.3	637	7.7
0.3 - 0.5	476	(-)

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Symbol Key

- △ Intertidal Location
- △ Marsh Platform Location
- △ Subtidal Location
- ▼ Surface Water Sample Location
- ▨ Marsh Platform
- ▭ Intertidal Zone

(-) Interval not analyzed for MeHg
J - Estimated value
ND - Non Detect
(ng/g) micrograms/gram

Mercury [Hg] (ng/g)	Methyl Mercury [MeHg] (ng/g)
ND	ND
< 200	< 2
200 - 450	2 - 4.5
450 - 750	4.5 - 7.5
750 - 1,000	7.5 - 15
1,000 - 2,200	15 - 25
2,200 - 5,000	25 - 50
> 5,000	> 50

Figure 3-4
Total Mercury and Methyl Mercury
Verona Northeast and Verona East

2017 Sediment and Water Quality
Monitoring Report
Penobscot River Phase III Engineering Study

Project: 3616166052 | Prepared: ICD 12/14/2017 | Checked: BPW 12/14/2017

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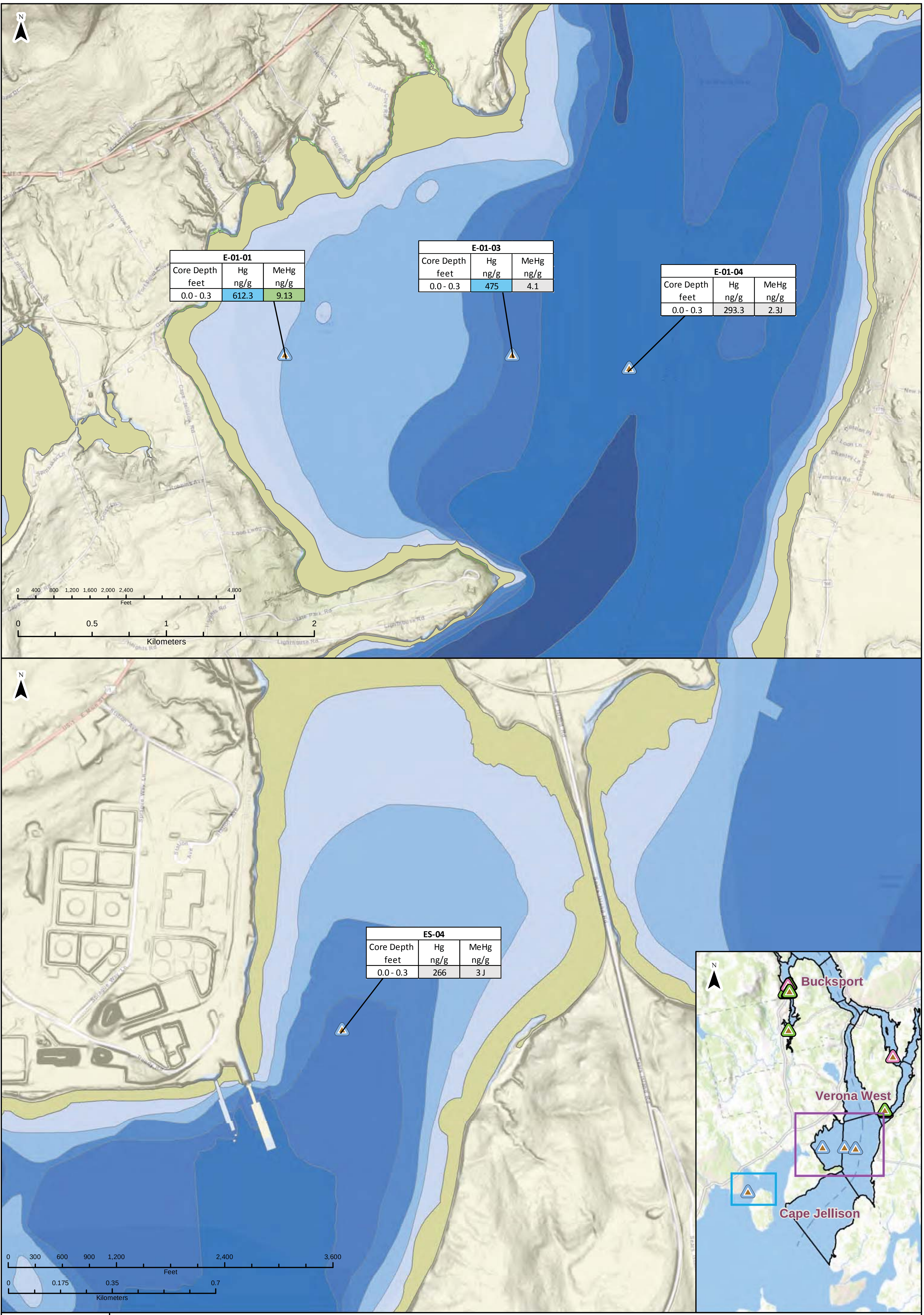

Symbol Key

- △ Intertidal Location
- △ Marsh Platform Location
- △ Subtidal Location
- ▼ Surface Water Sample Location
- ▨ Marsh Platform
- ▨ Intertidal Zone

(-) Interval not analyzed for MeHg
J - Estimated value
ND - Non Detect
(ng/g) micrograms/gram

Mercury [Hg] (ng/g)	Methyl Mercury [MeHg] (ng/g)
ND	ND
< 200	< 2
200 - 450	2 - 4.5
450 - 750	4.5 - 7.5
750 - 1,000	7.5 - 15
1,000 - 2,200	15 - 25
2,200 - 5,000	25 - 50
> 5,000	> 50

Figure 3-5
Total Mercury and Methyl Mercury
Upper Penobscot Bay

2017 Sediment and Water Quality
Monitoring Report
Penobscot River Phase III Engineering Study

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FIGURE 3-6

TOTAL MERCURY, METHYL MERCURY AND PERCENT METHYL MERCURY IN INTERTIDAL AND SUBTIDAL SEDIMENTS 0.0-0.1 FT

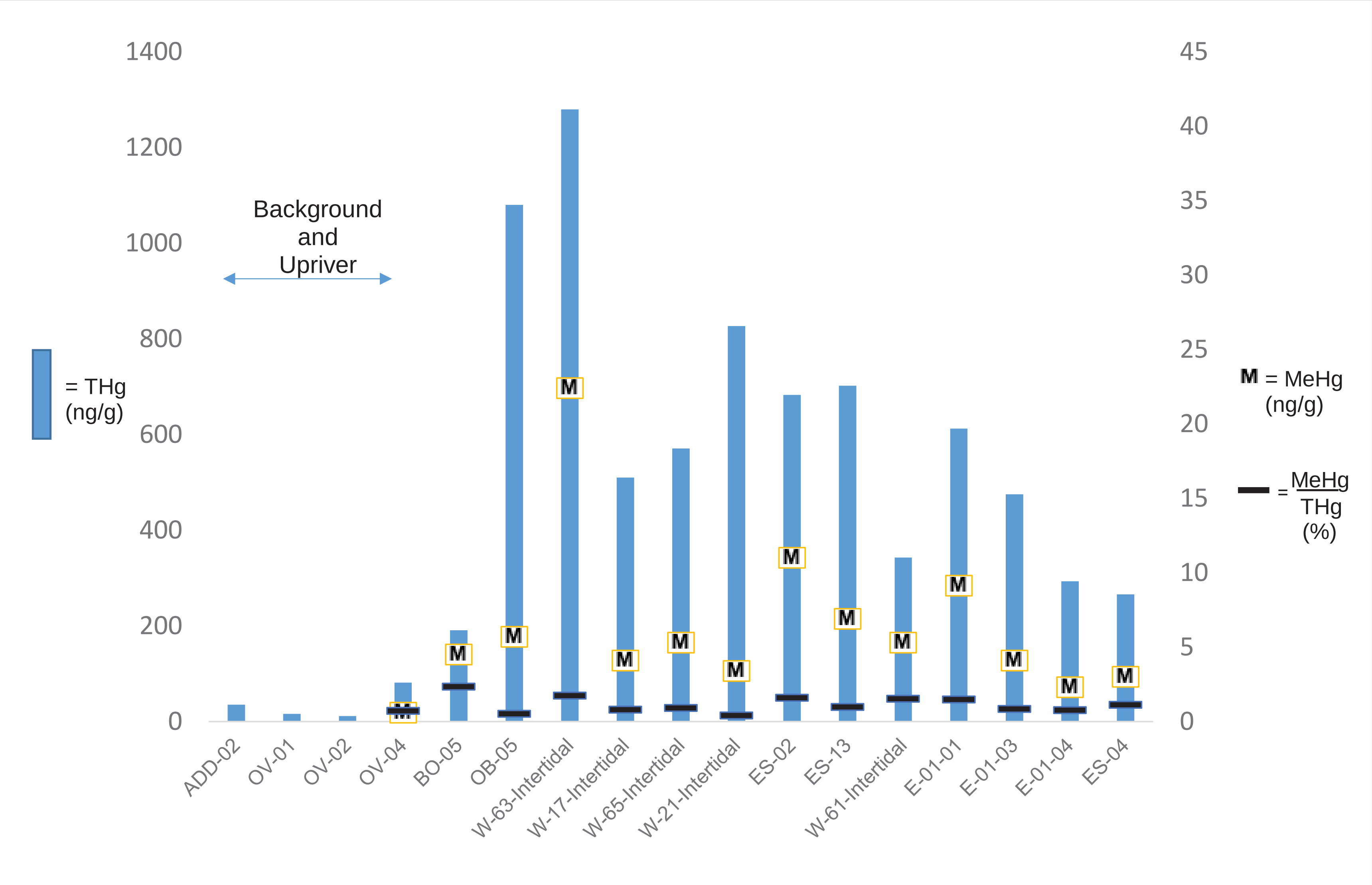


FIGURE 3-7

TOTAL MERCURY, METHYL MERCURY AND PERCENT METHYL MERCURY IN INTERTIDAL AND SUBTIDAL SEDIMENTS 0.1-0.3 FT

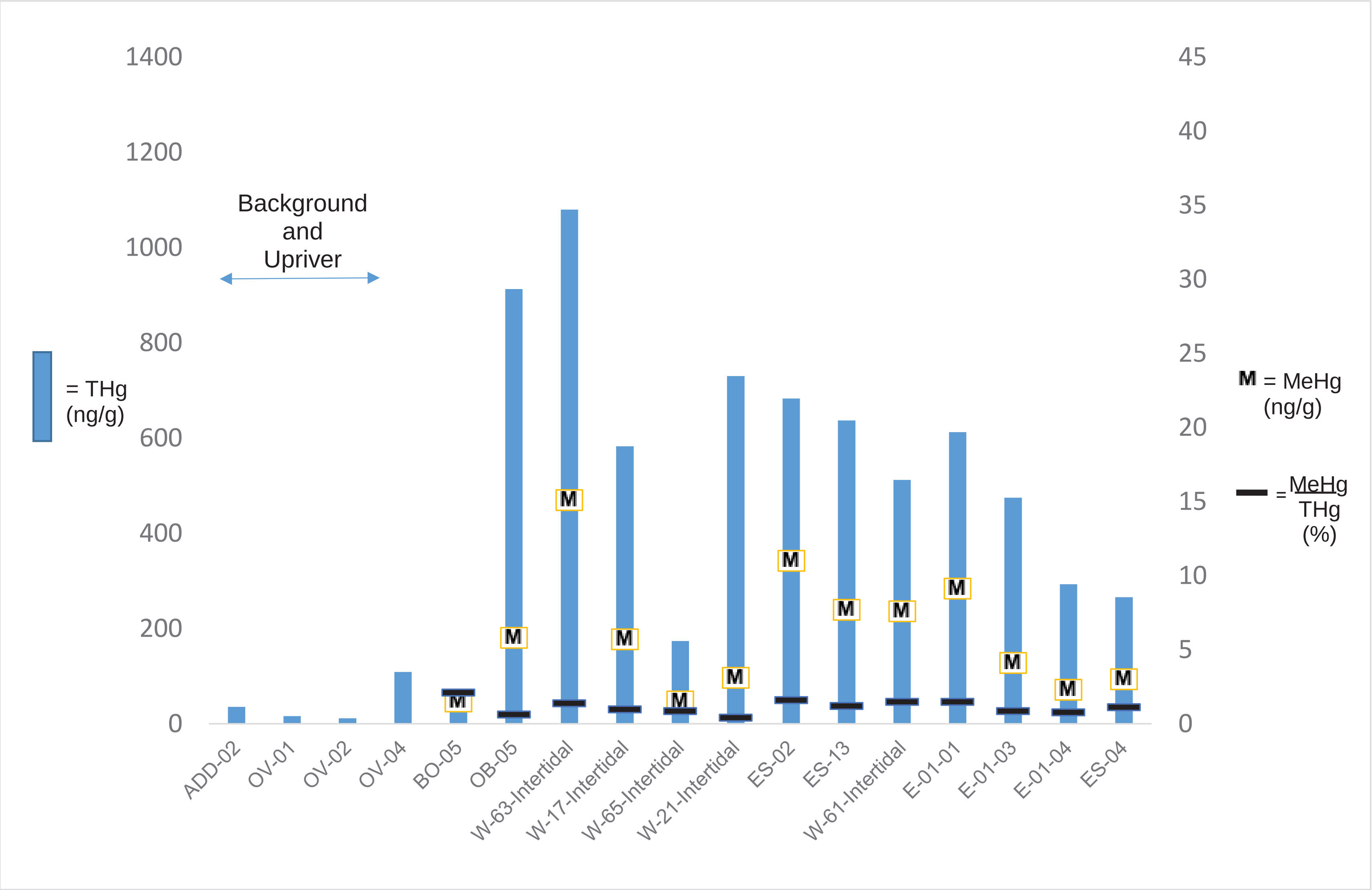


FIGURE 3-8

TOTAL MERCURY, METHYL MERCURY AND PERCENT METHYL MERCURY IN MARSH PLATFORM SEDIMENTS 0.0-0.1 FT

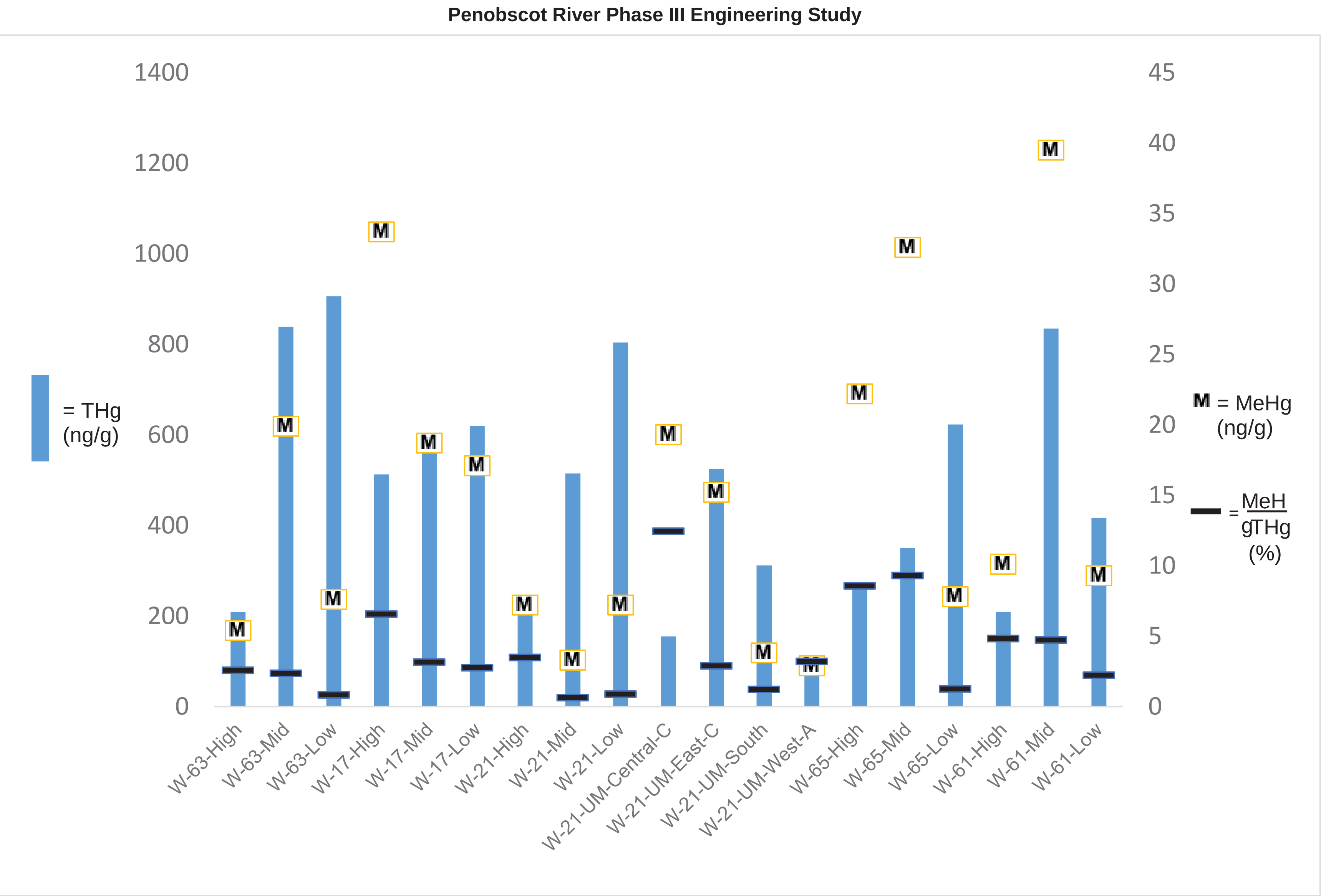


FIGURE 3-9

TOTAL MERCURY, METHYL MERCURY AND PERCENT METHYL MERCURY IN MARSH PLATFORM SEDIMENTS 0.1-0.3 FT

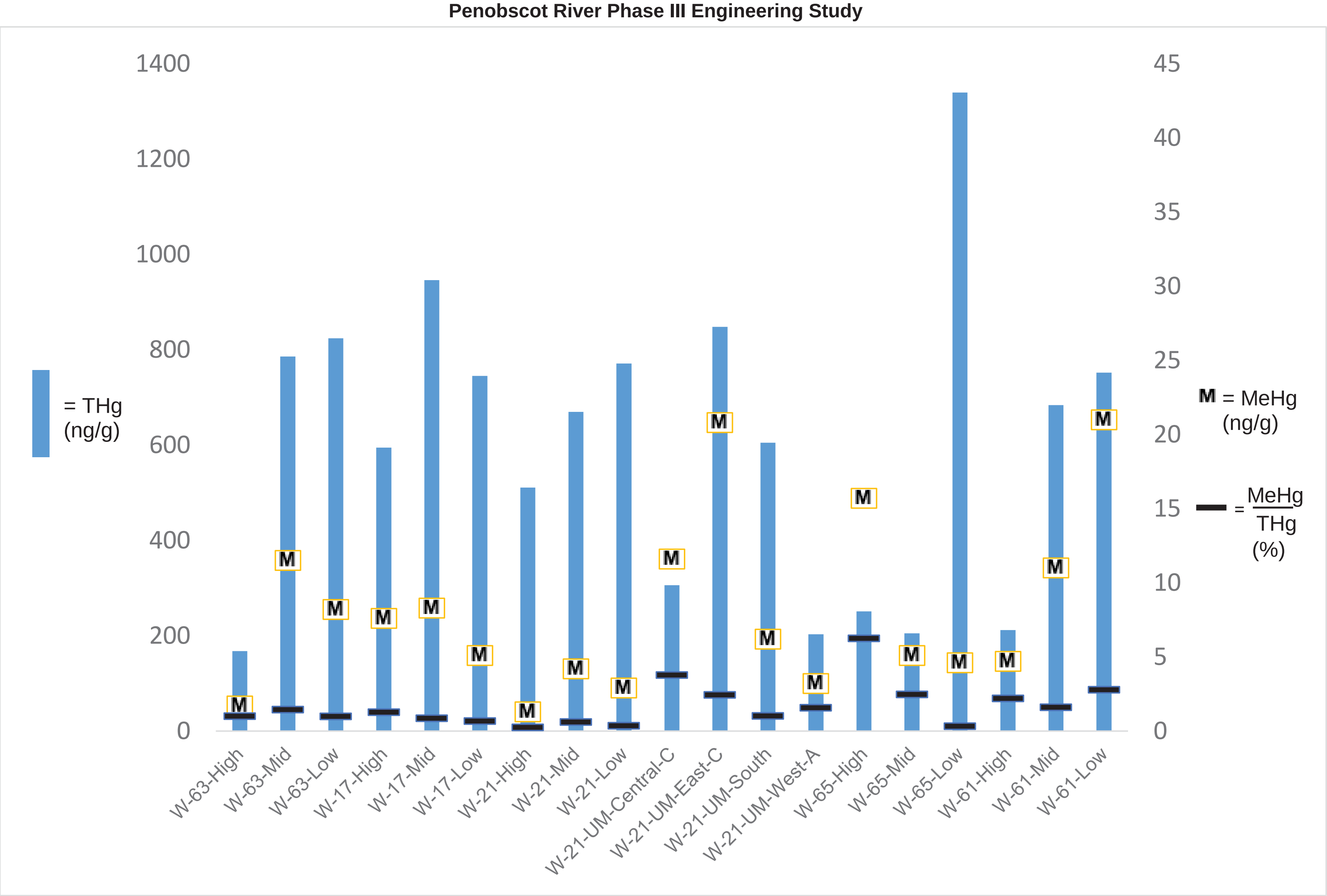
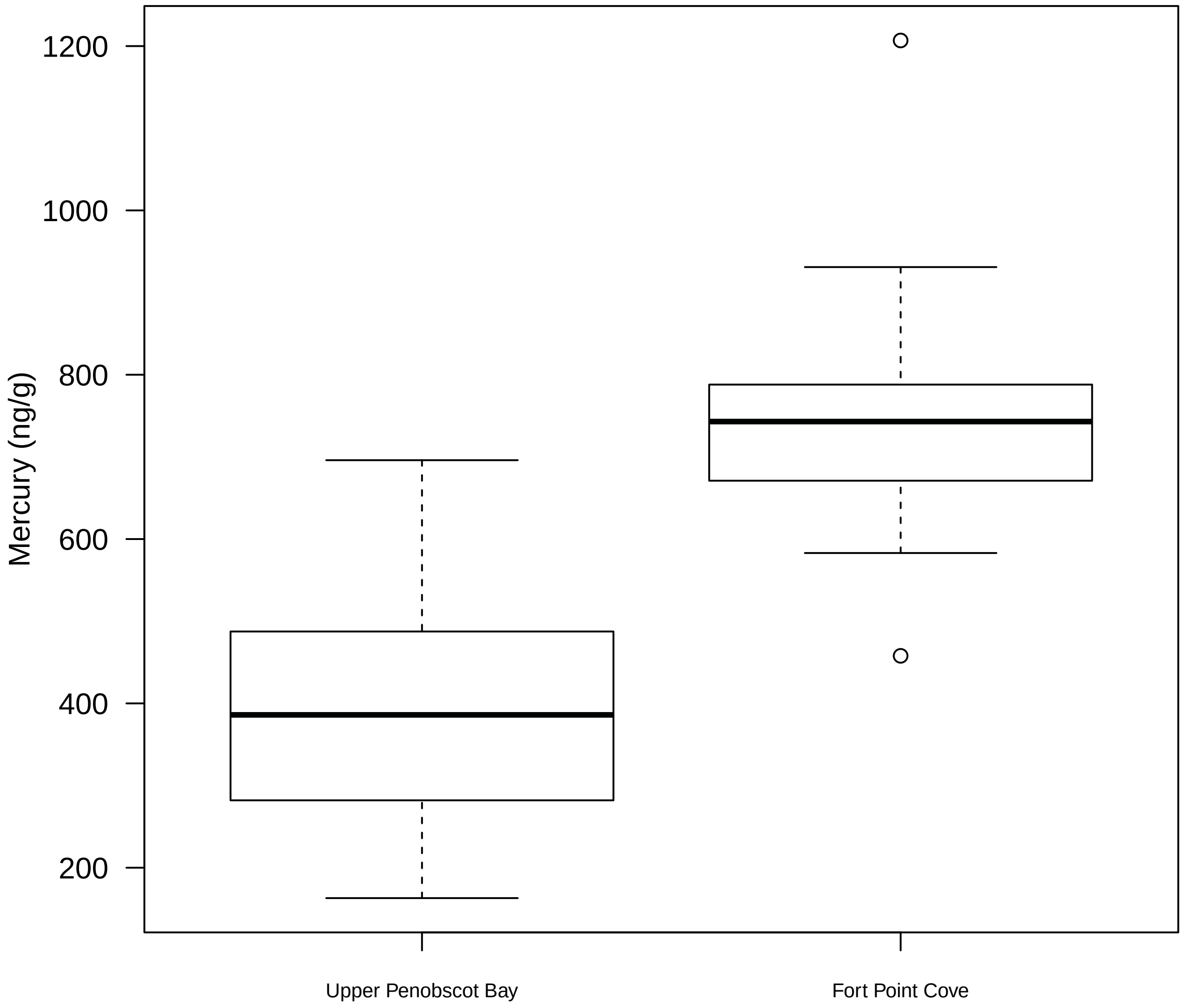
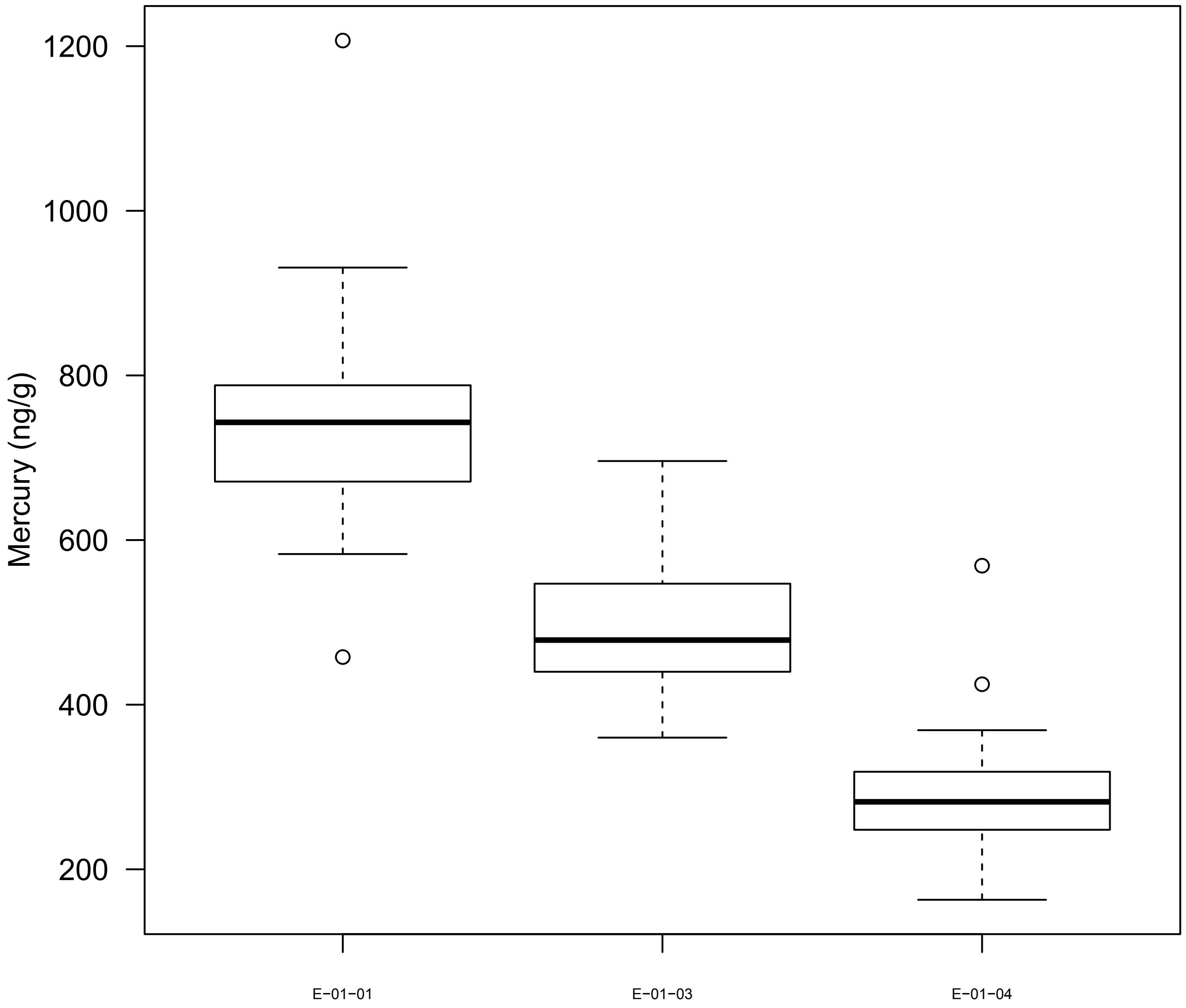


FIGURE 4−1
SUBTIDAL SEDIMENT MERCURY BY RIVER REACH



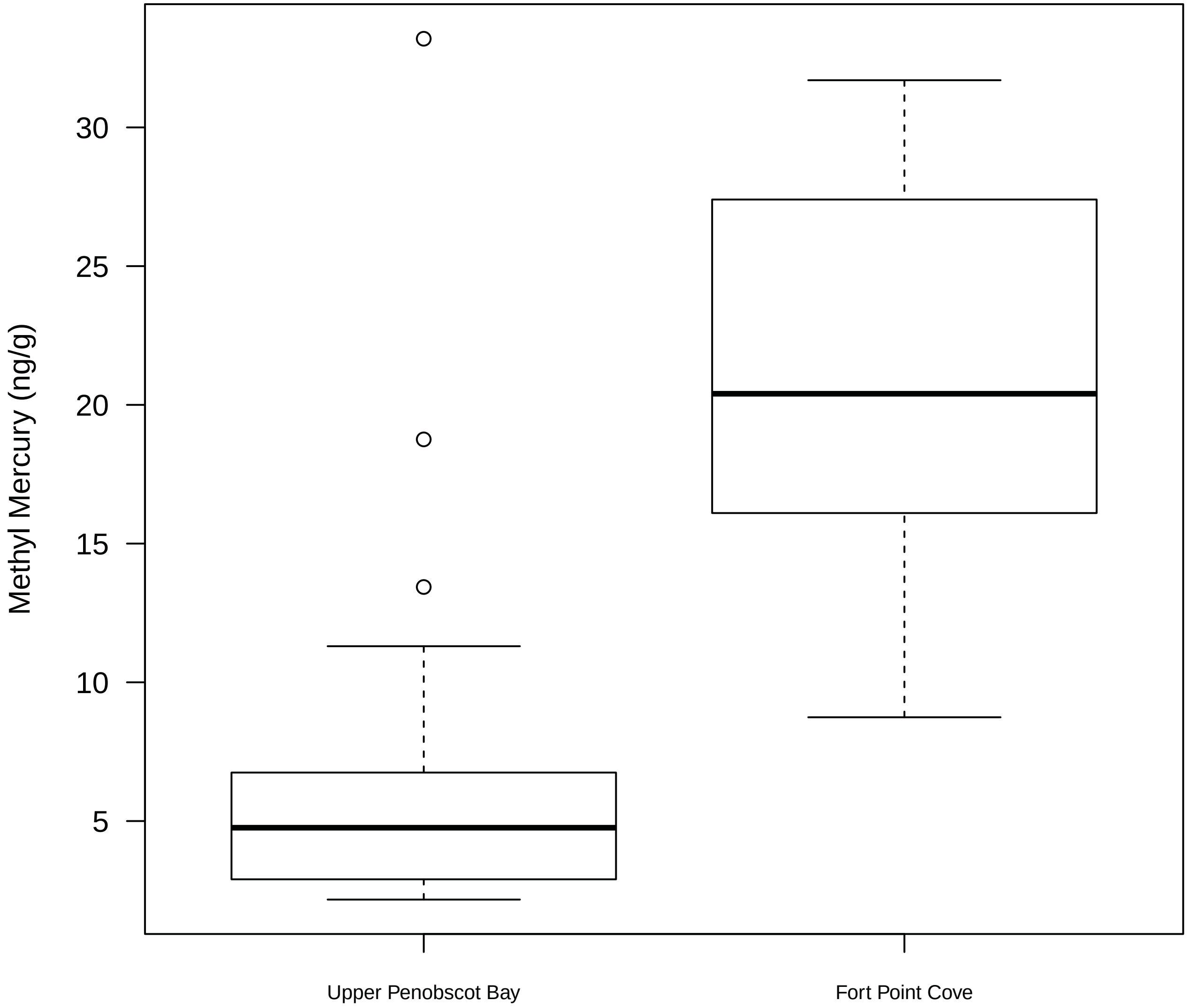
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−2
SUBTIDAL SEDIMENT MERCURY BY SAMPLE LOCATION



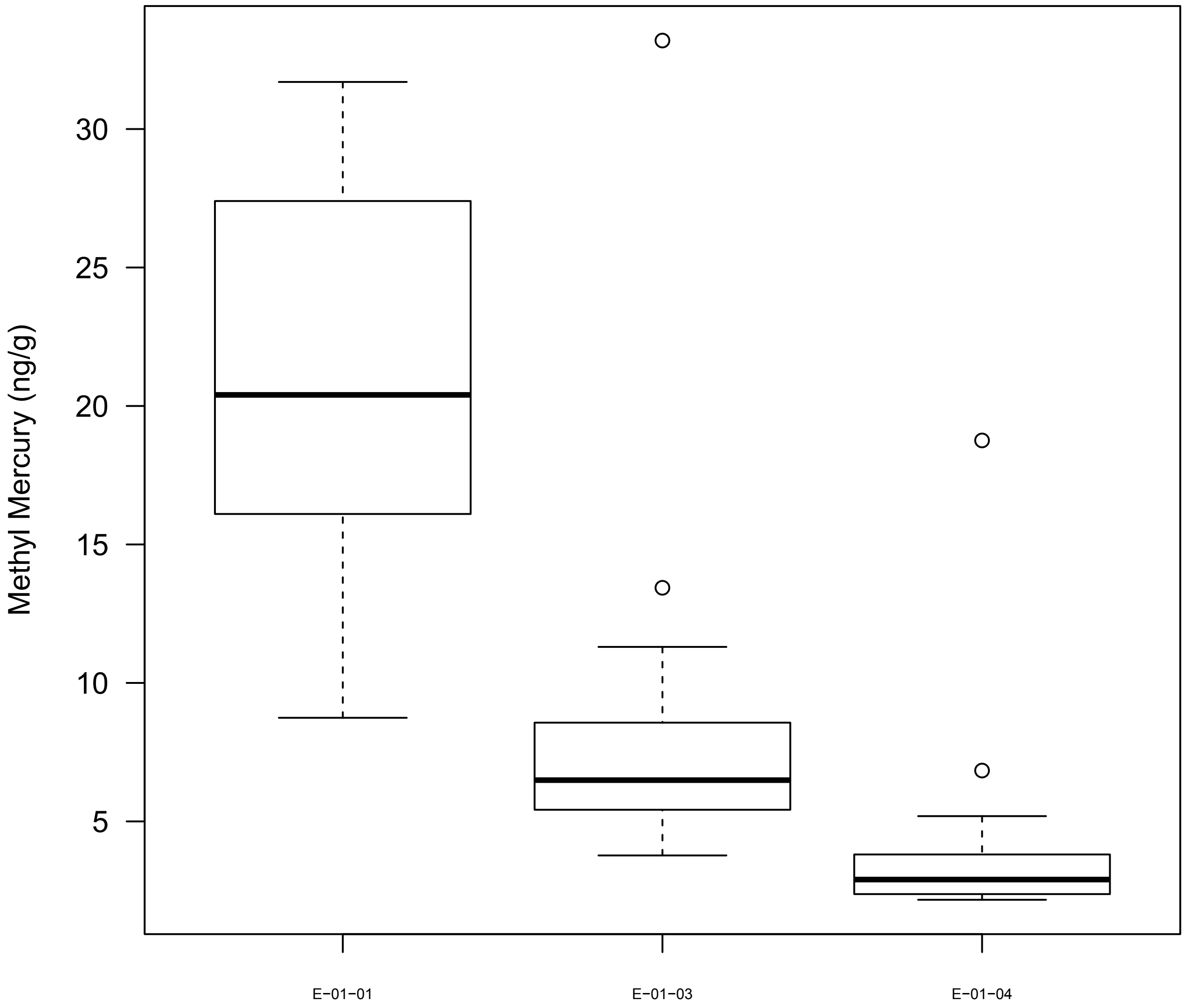
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−3
SUBTIDAL SEDIMENT METHYL MERCURY BY RIVER REACH



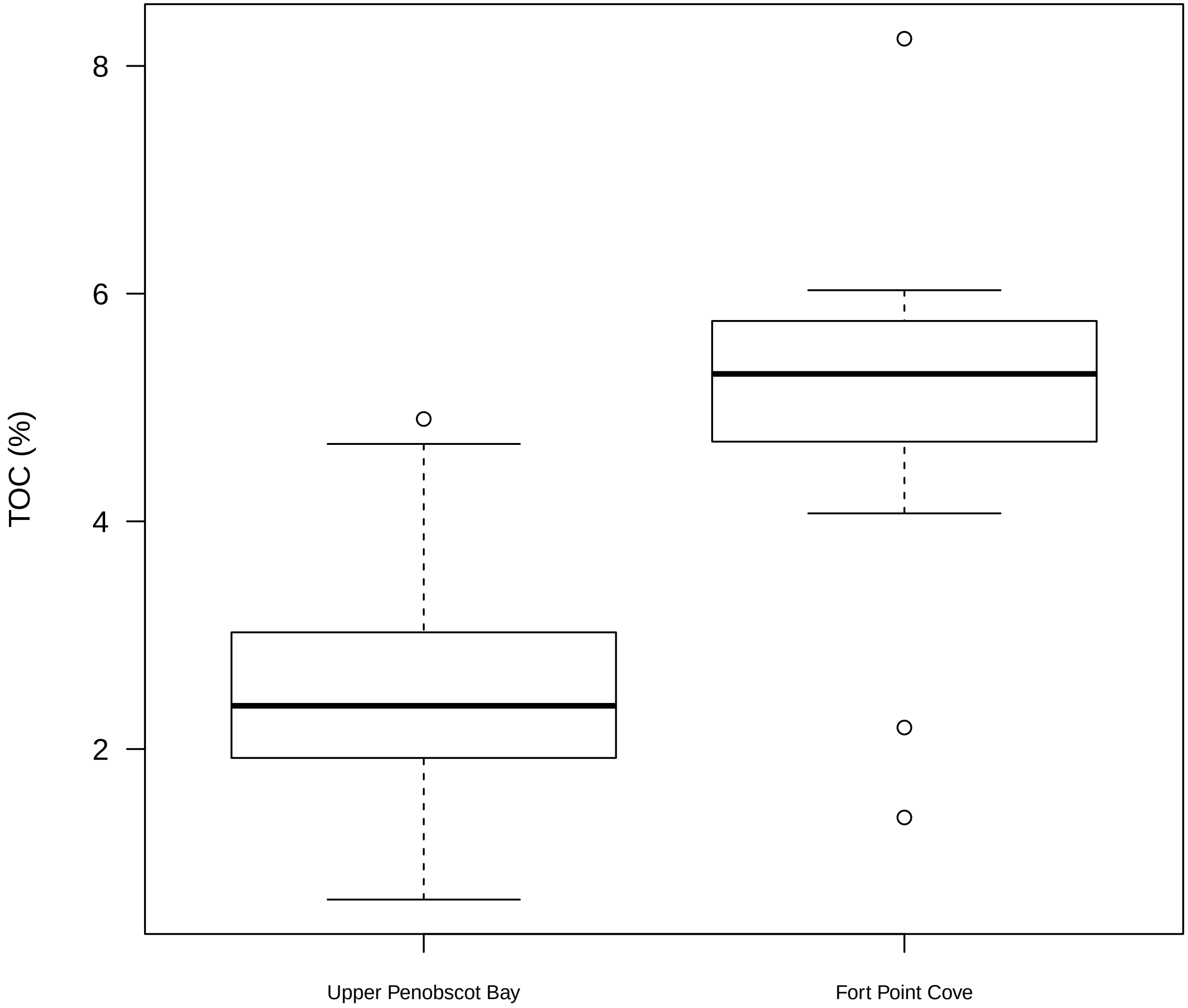
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−4
SUBTIDAL SEDIMENT METHYL MERCURY BY SAMPLE LOCATION



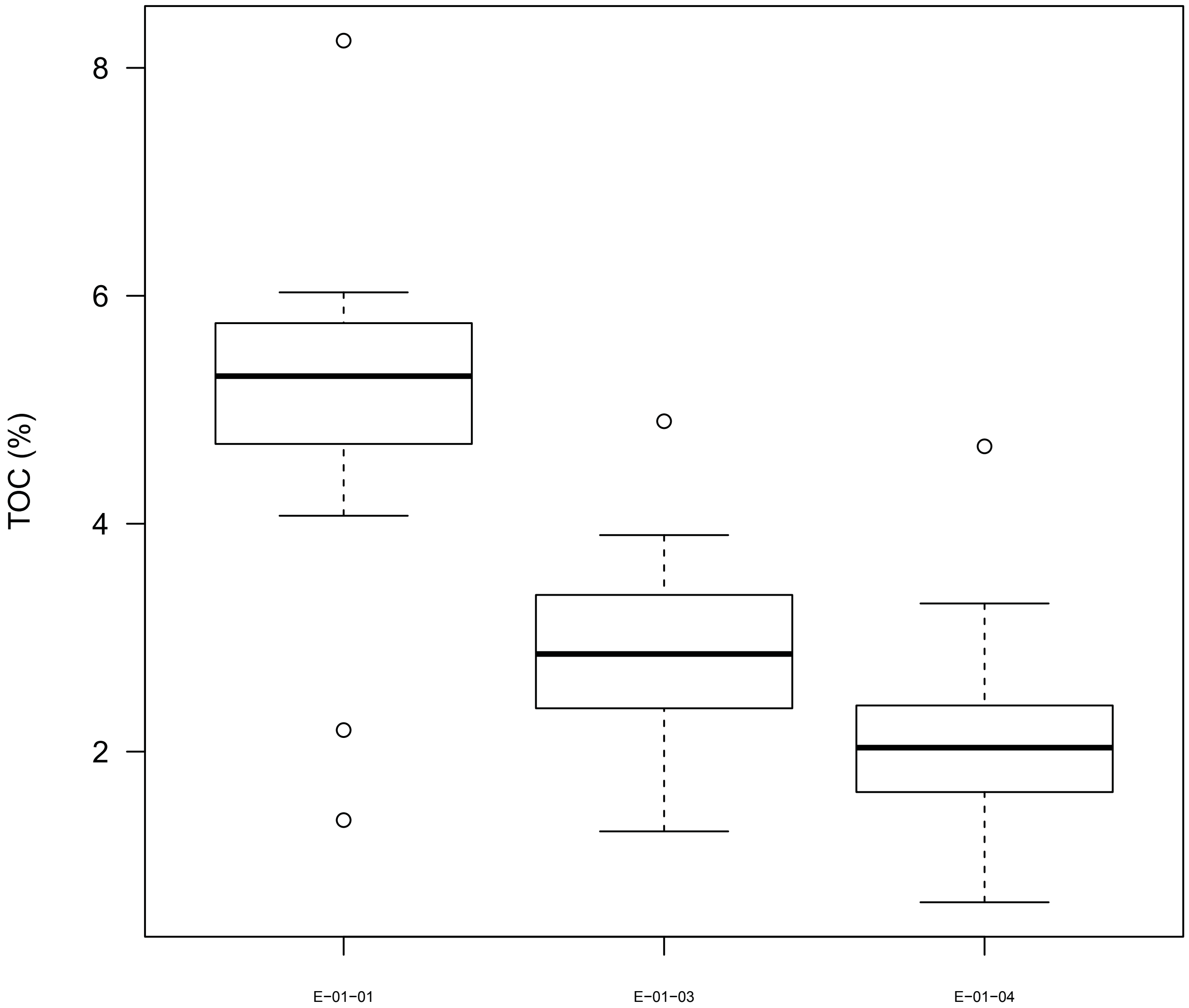
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−5
SUBTIDAL SEDIMENT TOTAL ORGANIC CARBON BY RIVER REACH



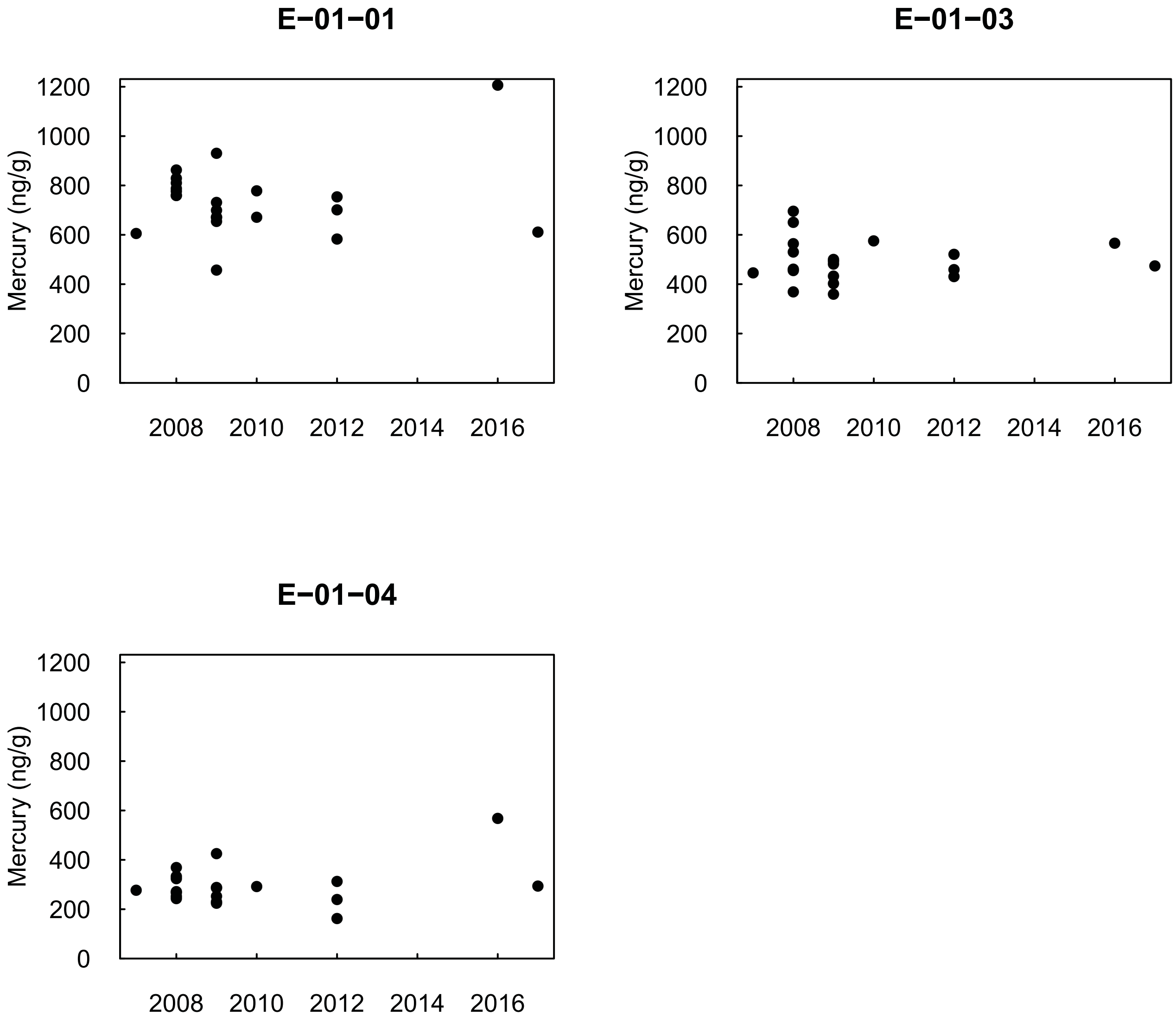
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−6
SUBTIDAL SEDIMENT TOTAL ORGANIC CARBON BY SAMPLE LOCATION



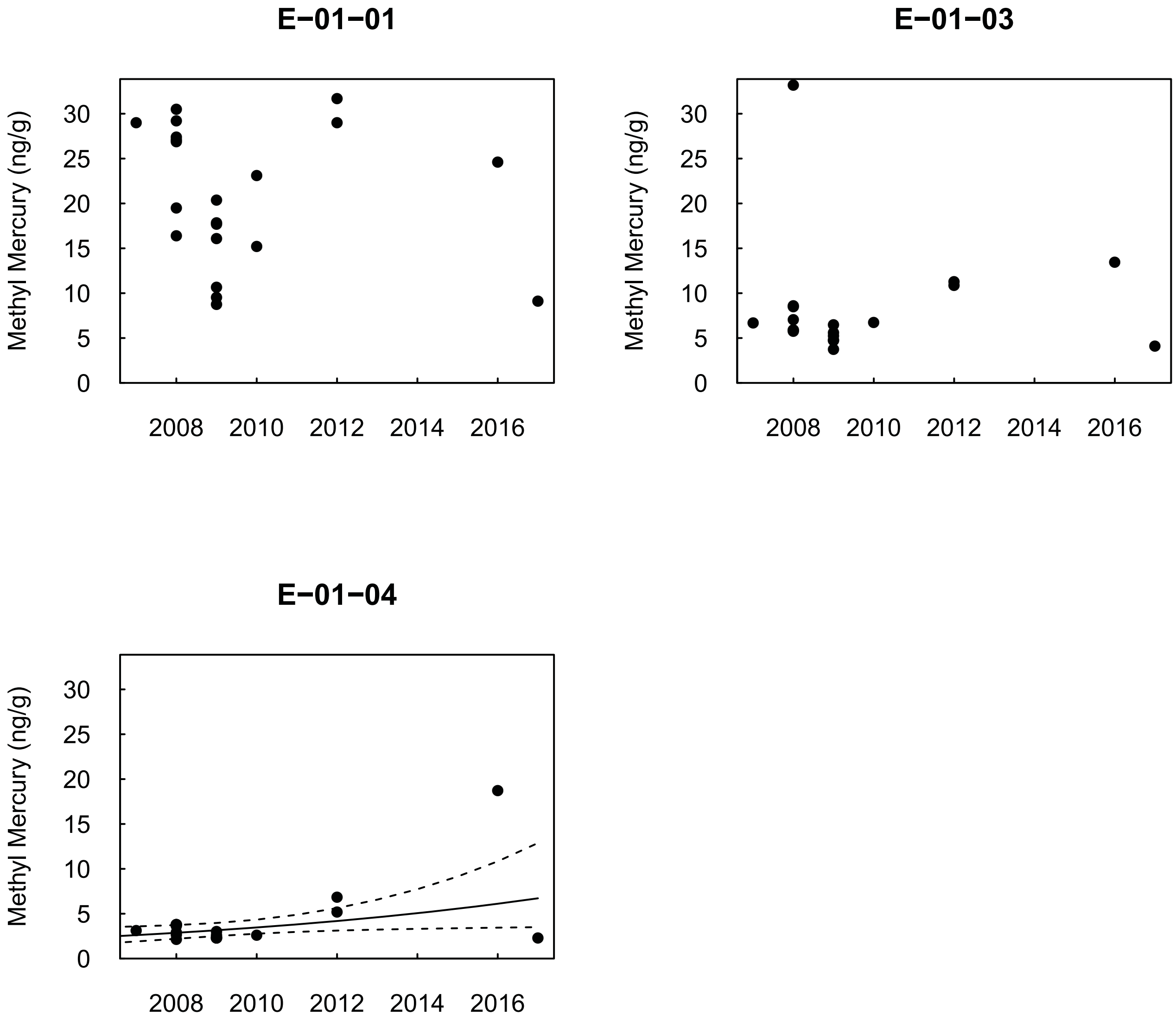
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−7
TEMPORAL SUBTIDAL SEDIMENT MERCURY



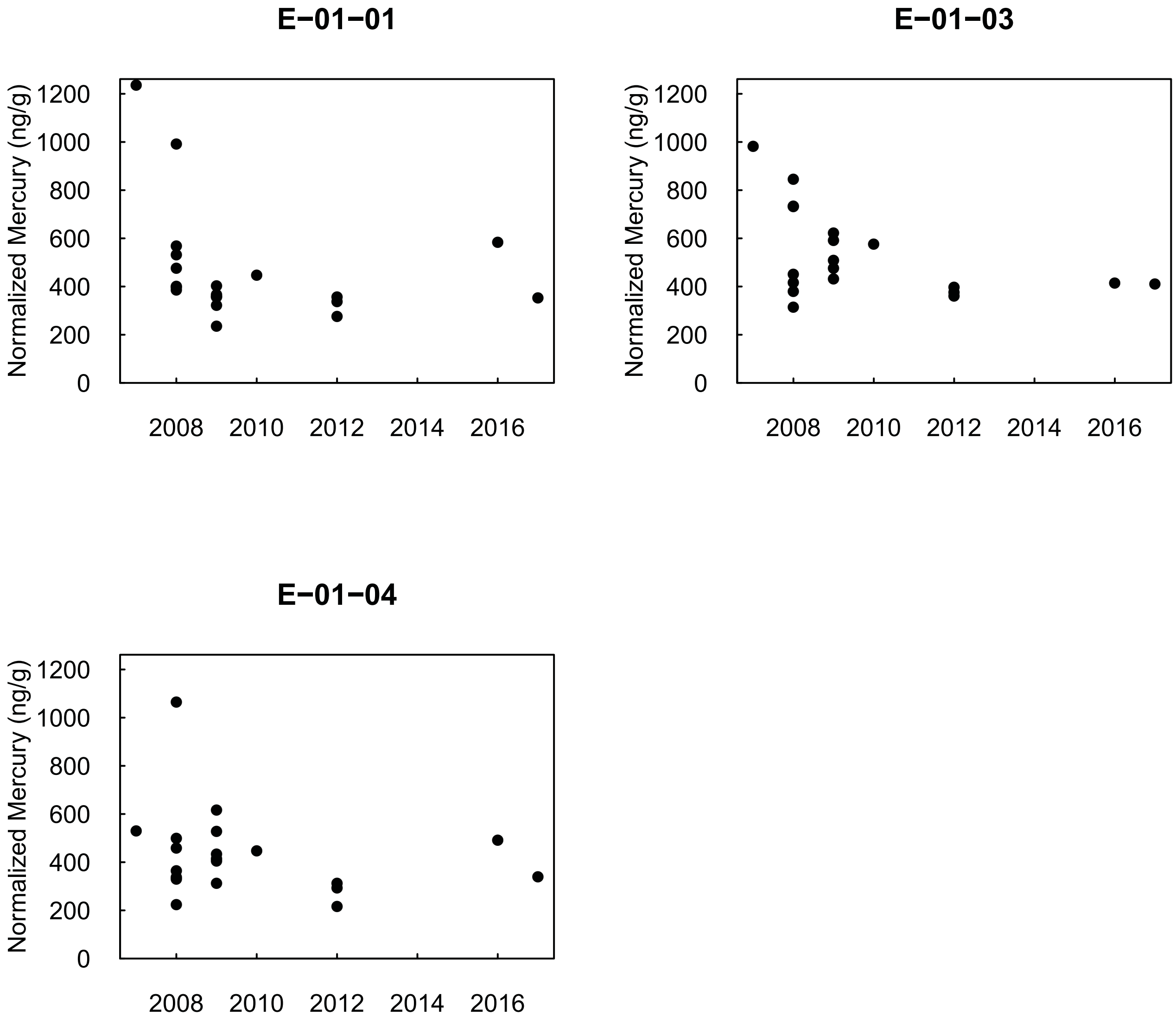
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−8
TEMPORAL SUBTIDAL SEDIMENT METHYL MERCURY



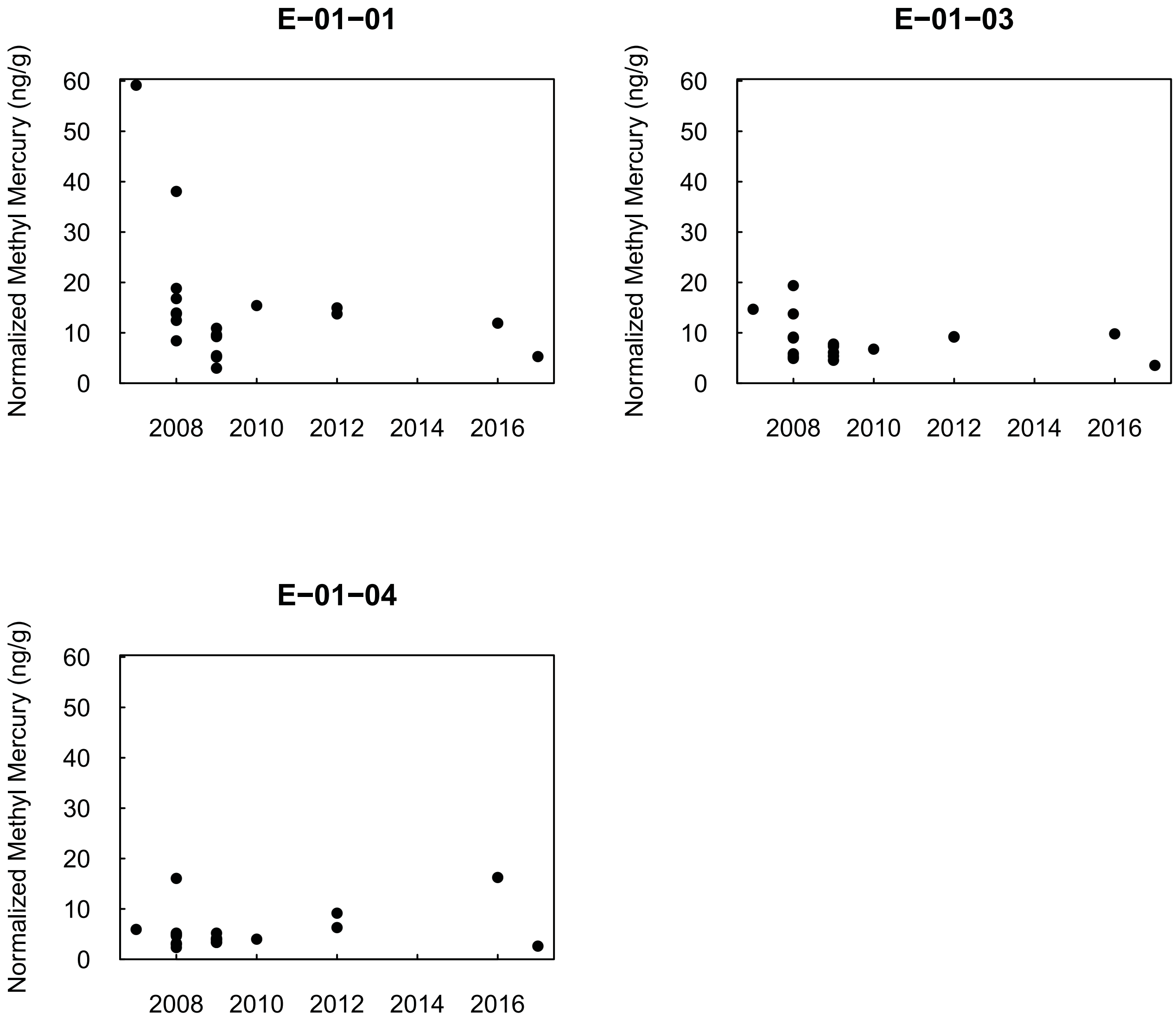
Line indicates regression slope is significantly different than 0 ($p<0.05$). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−9
TEMPORAL SUBTIDAL SEDIMENT NORMALIZED MERCURY



Line indicates regression slope is significantly different than 0 ($p<0.05$). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−10
TEMPORAL SUBTIDAL SEDIMENT NORMALIZED METHYL MERCURY



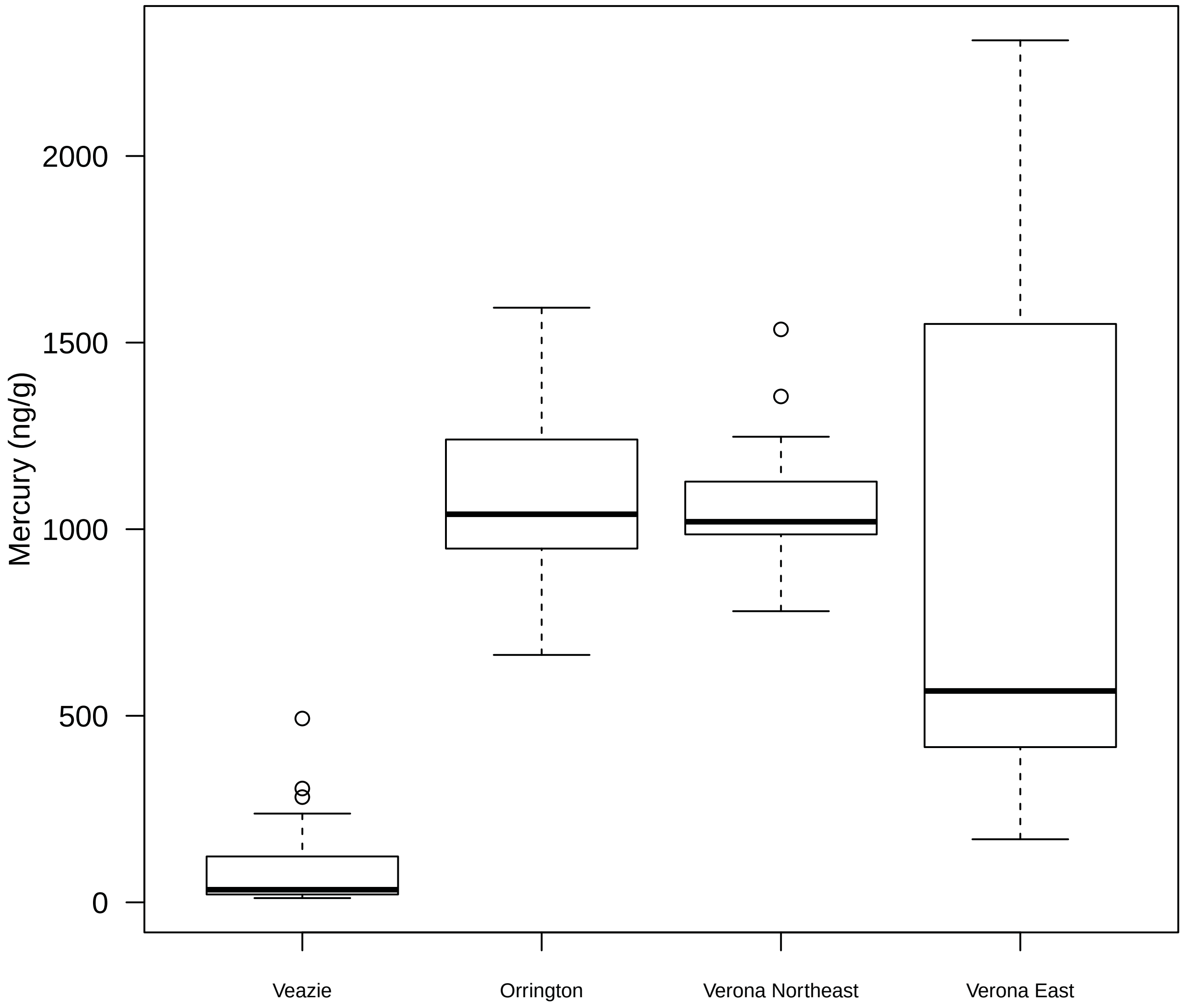
E−01−01

E−01−03

E−01−04

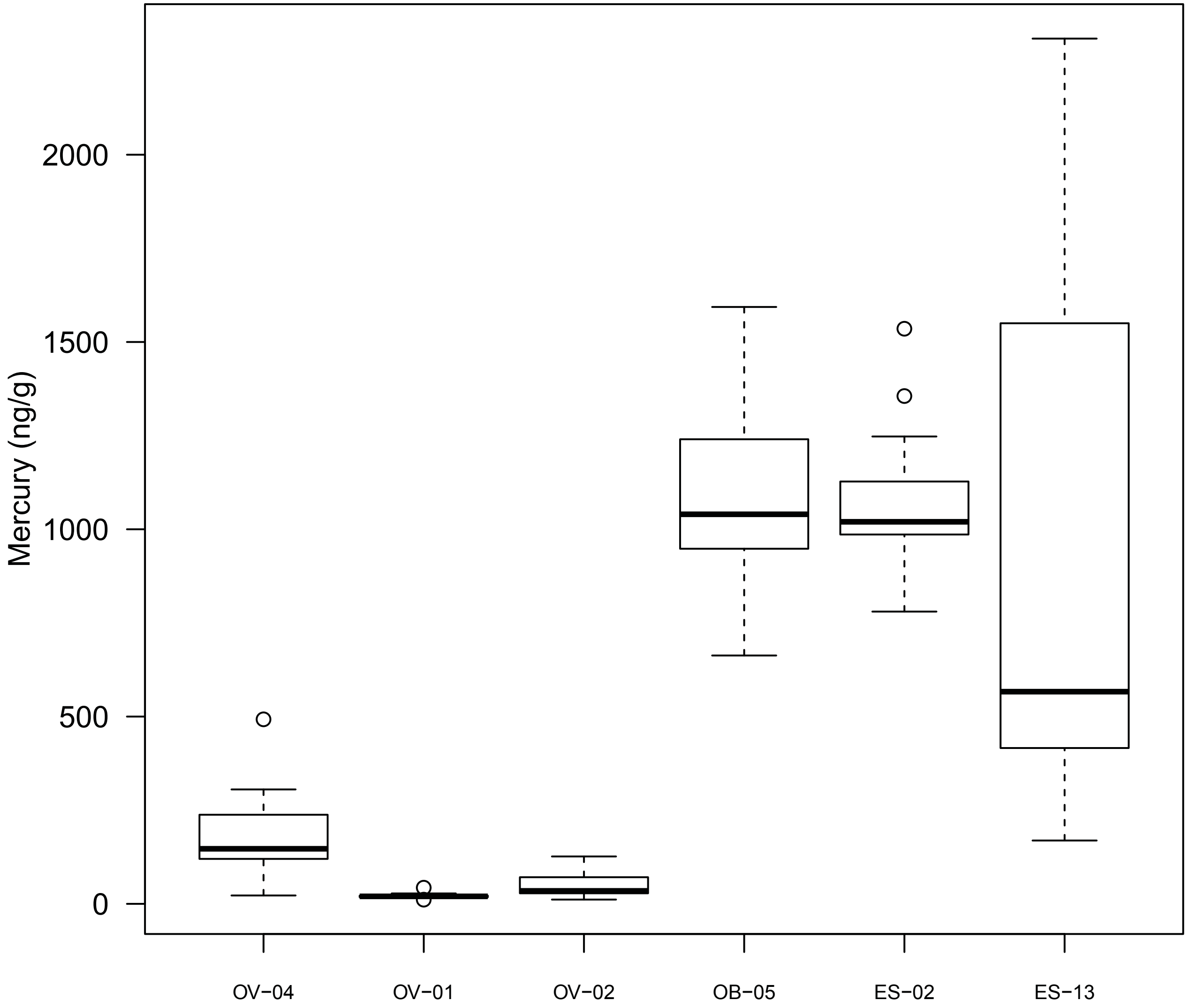
Line indicates regression slope is significantly different than 0 ($p<0.05$). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−11
INTERTIDAL SEDIMENT MERCURY BY RIVER REACH



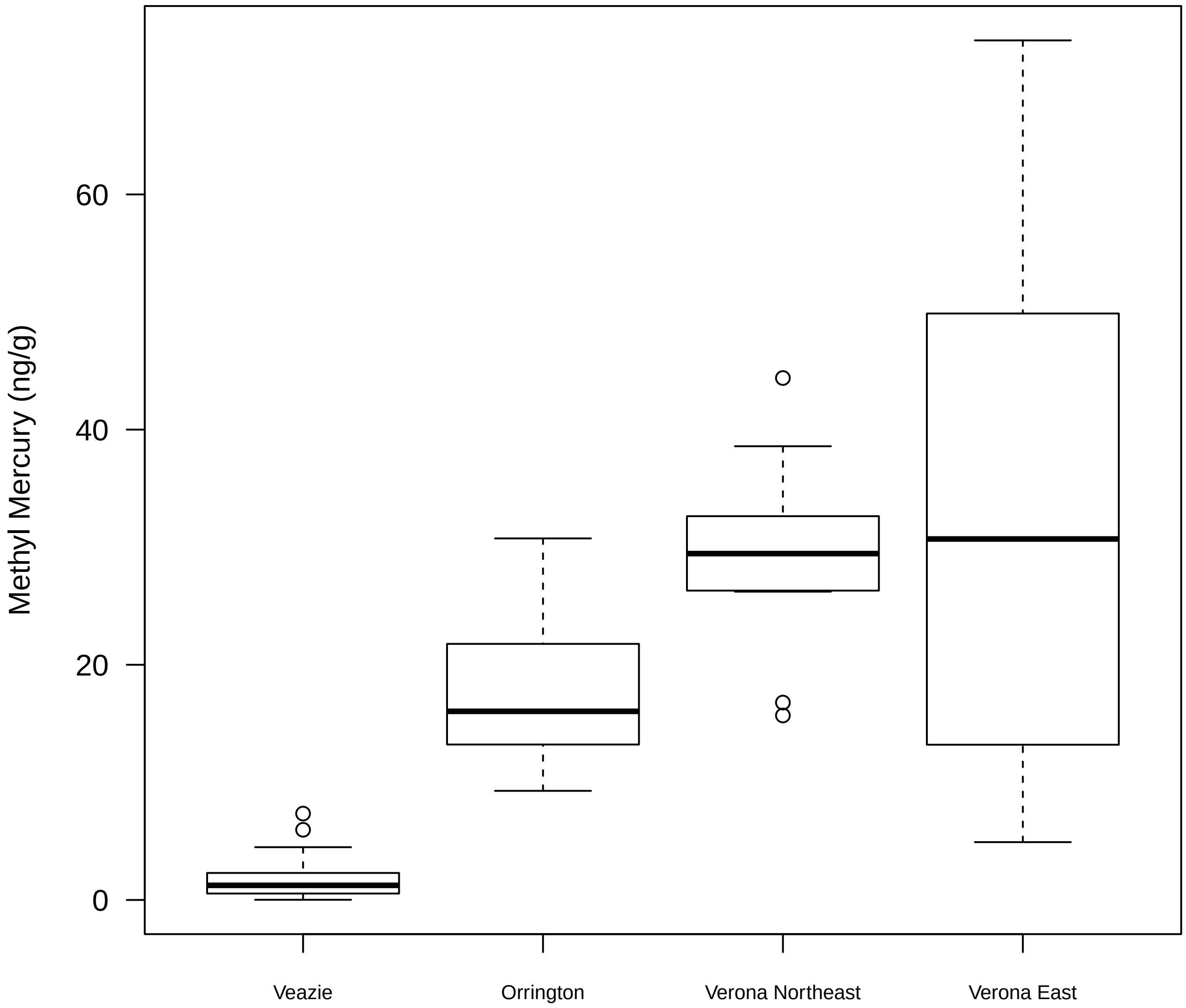
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−12
INTERTIDAL SEDIMENT MERCURY BY SAMPLE LOCATION



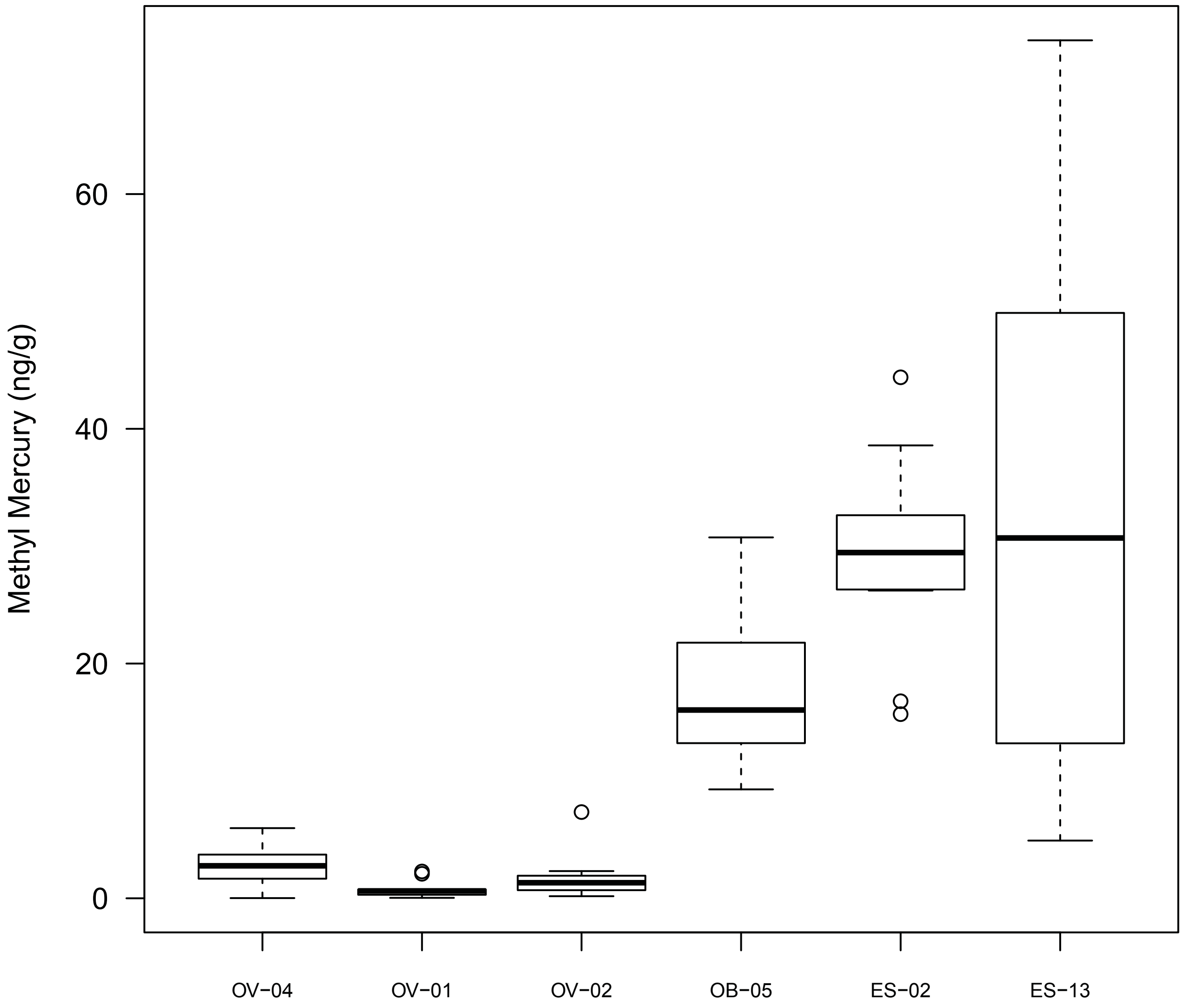
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−13
INTERTIDAL SEDIMENT METHYL MERCURY BY RIVER REACH



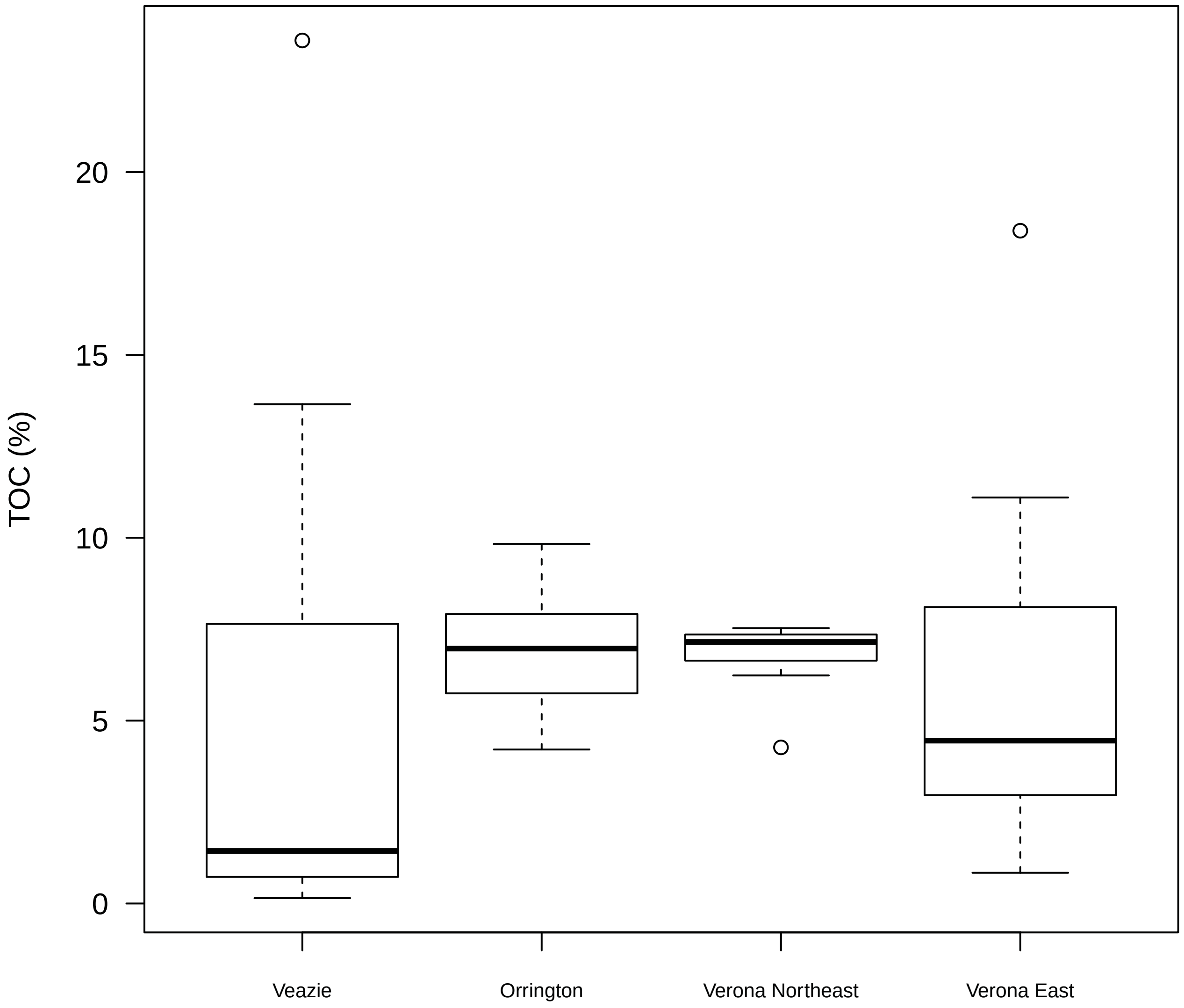
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−14
INTERTIDAL SEDIMENT METHYL MERCURY BY SAMPLE LOCATION



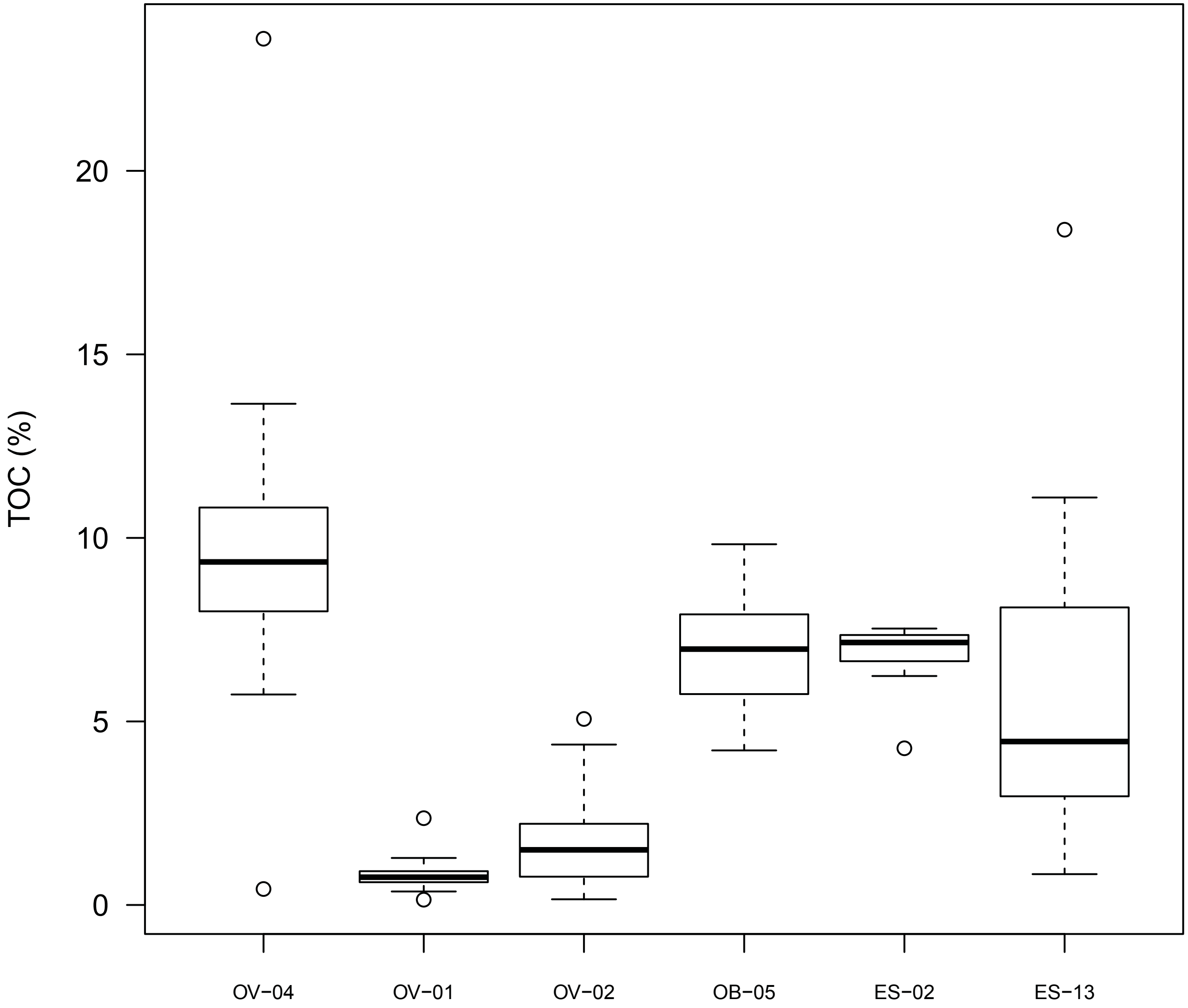
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−15
INTERTIDAL SEDIMENT TOTAL ORGANIC CARBON BY RIVER REACH



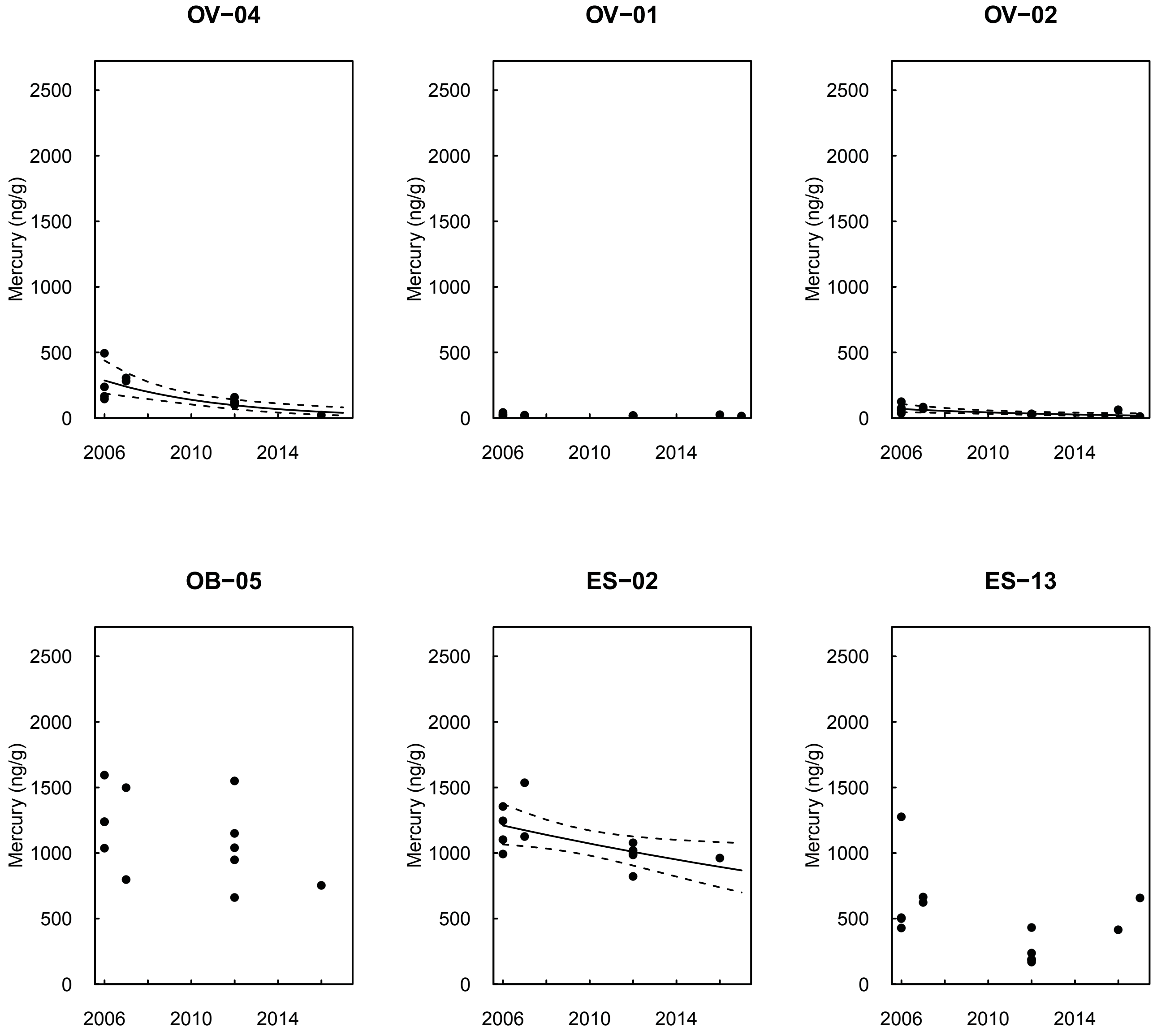
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−16
INTERTIDAL SEDIMENT TOTAL ORGANIC CARBON BY SAMPLE LOCATION



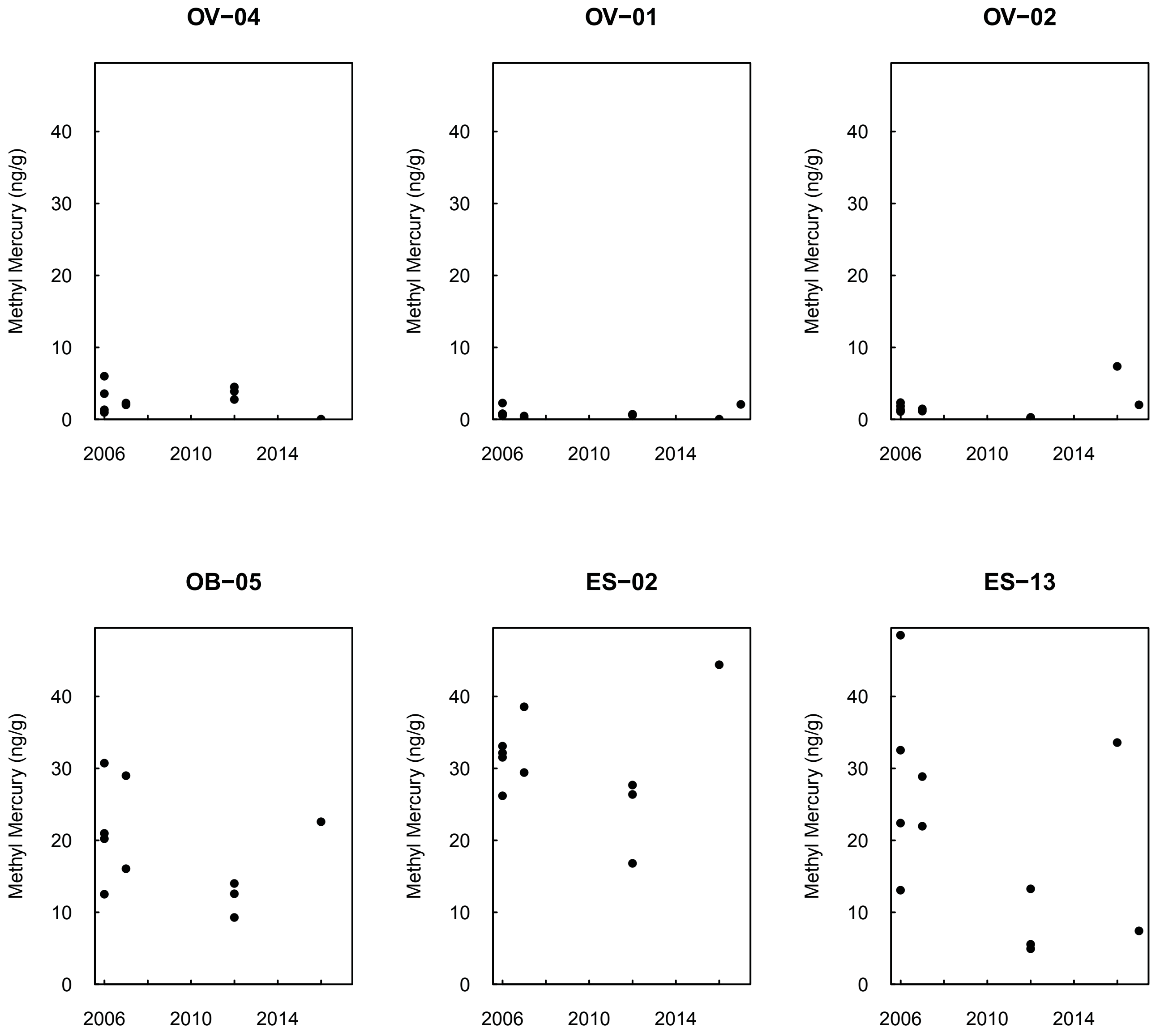
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−17
TEMPORAL INTERTIDAL SEDIMENT MERCURY



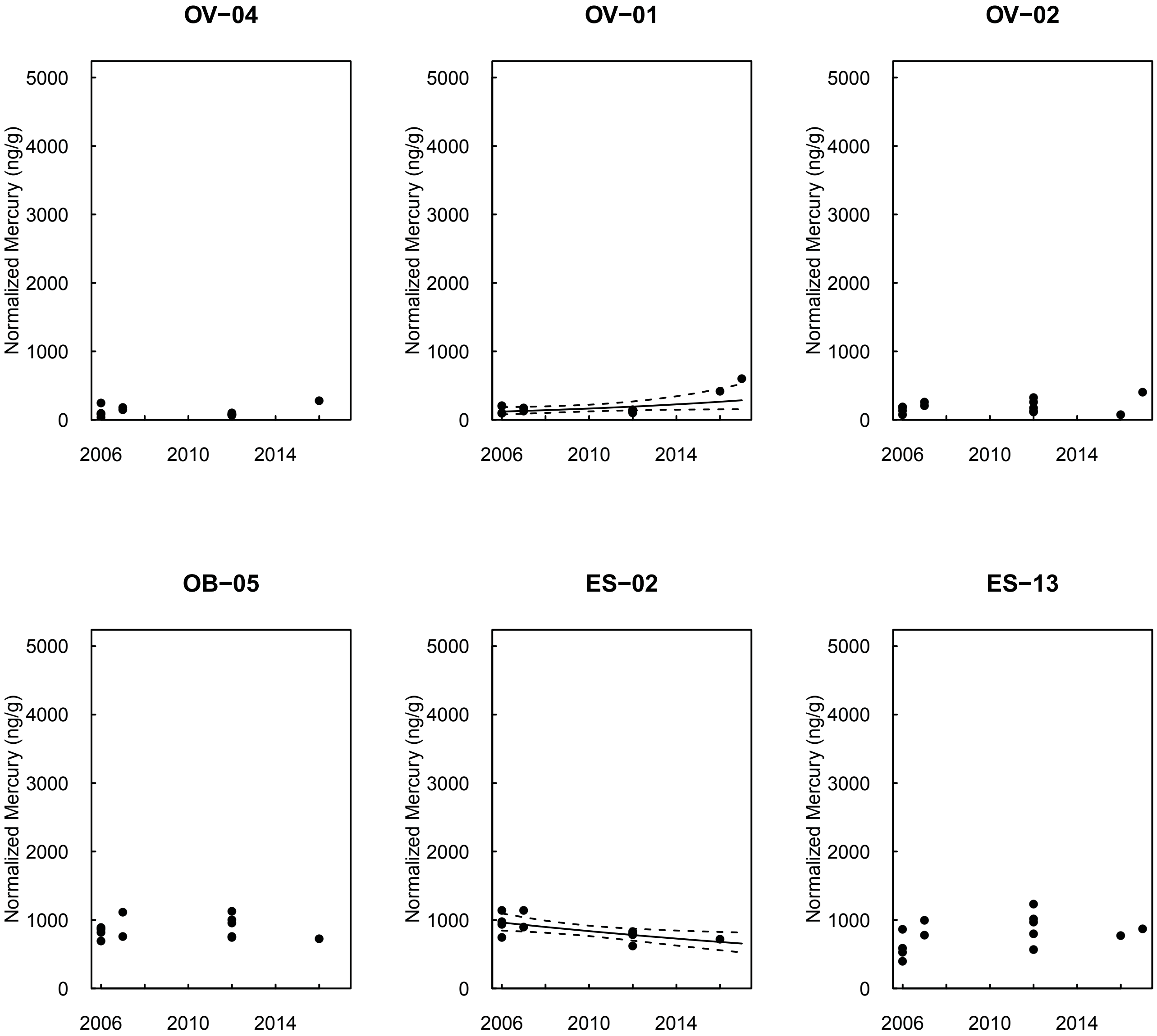
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−18
TEMPORAL INTERTIDAL SEDIMENT METHYL MERCURY



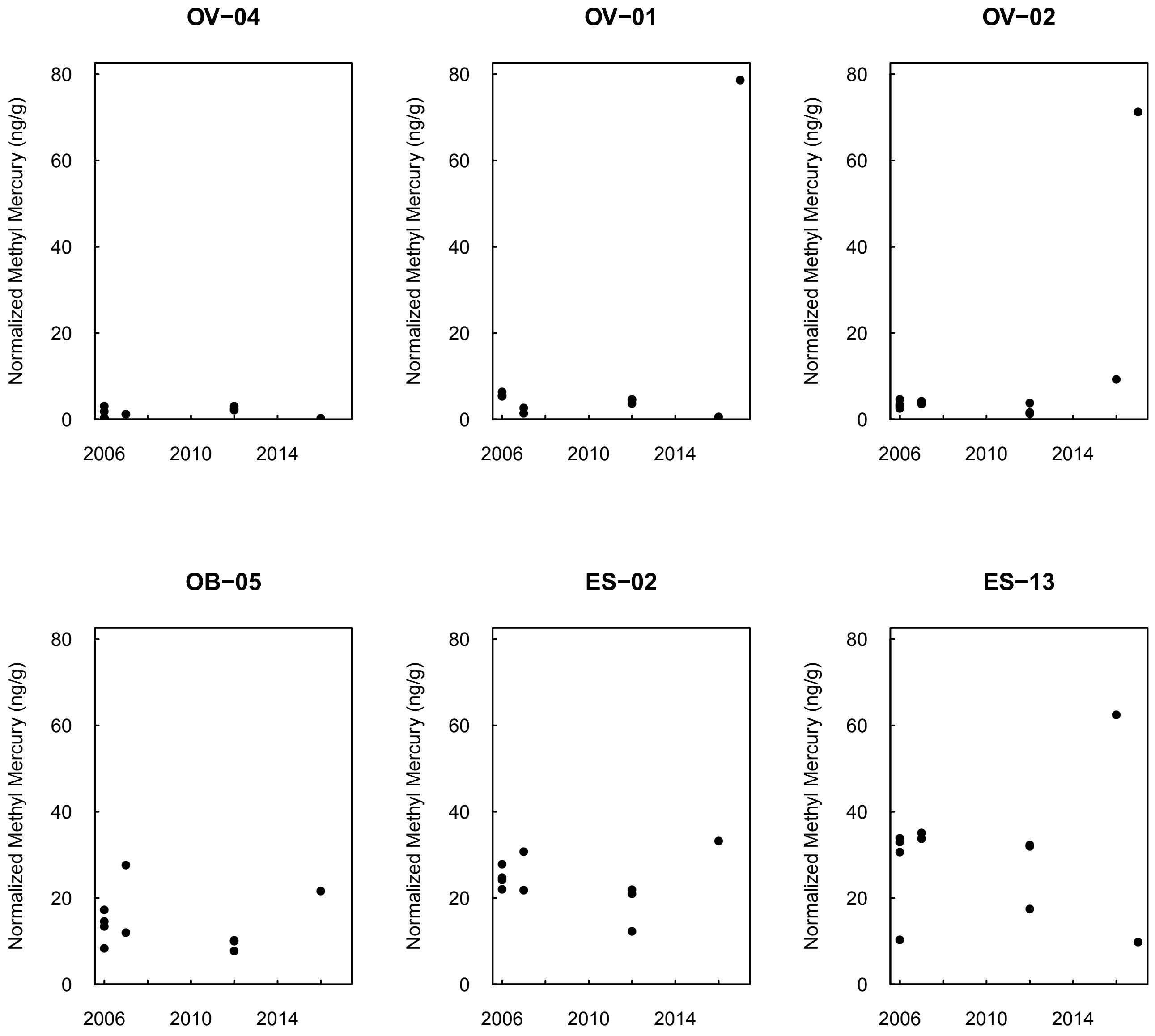
Line indicates regression slope is significantly different than 0 ($p<0.05$). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−19
TEMPORAL INTERTIDAL SEDIMENT NORMALIZED MERCURY



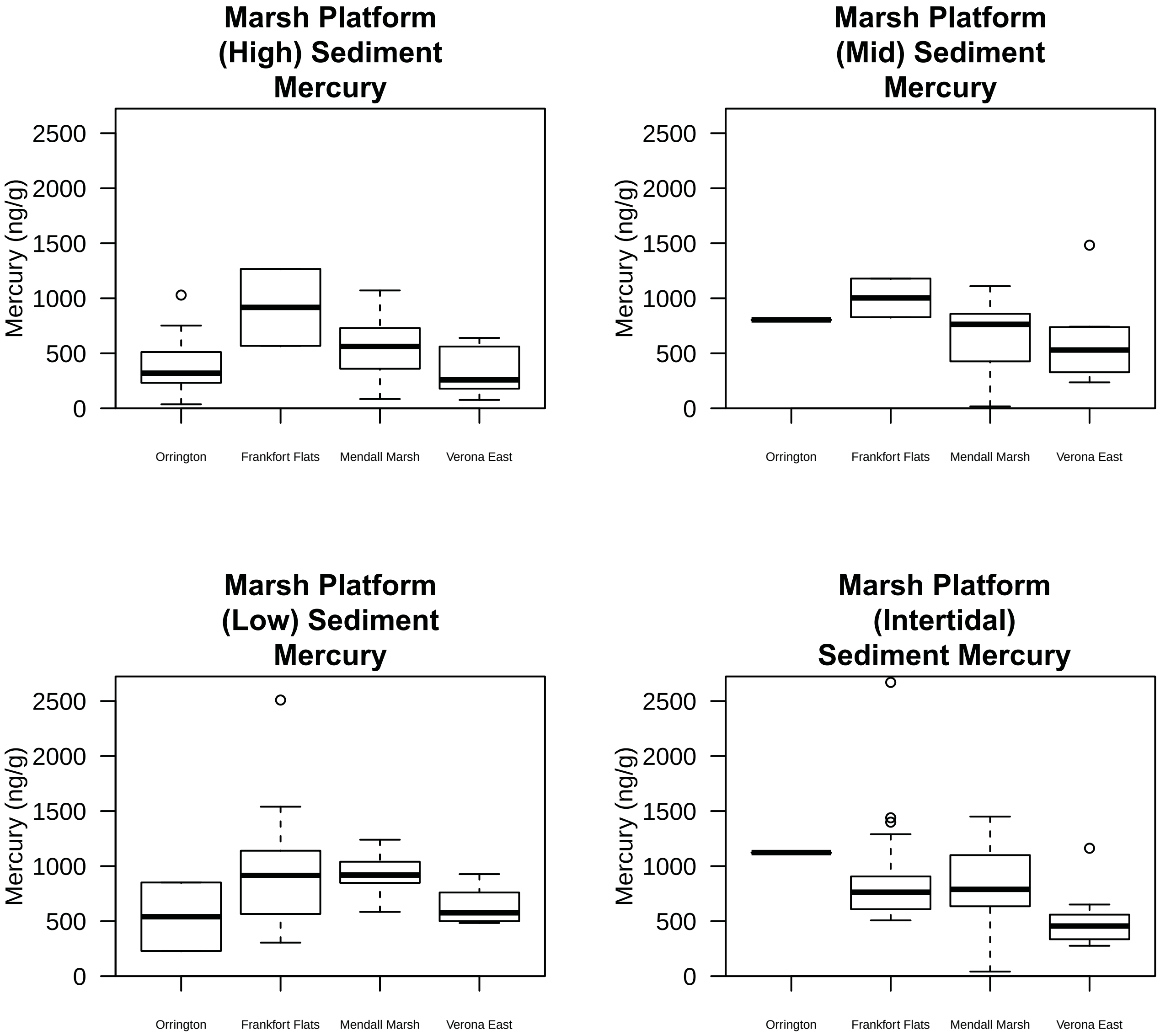
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−20
TEMPORAL INTERTIDAL SEDIMENT NORMALIZED METHYL MERCURY



Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−21
MARSH PLATFORM SEDIMENT MERCURY BY RIVER REACH


Marsh Platform (High) Sediment Mercury

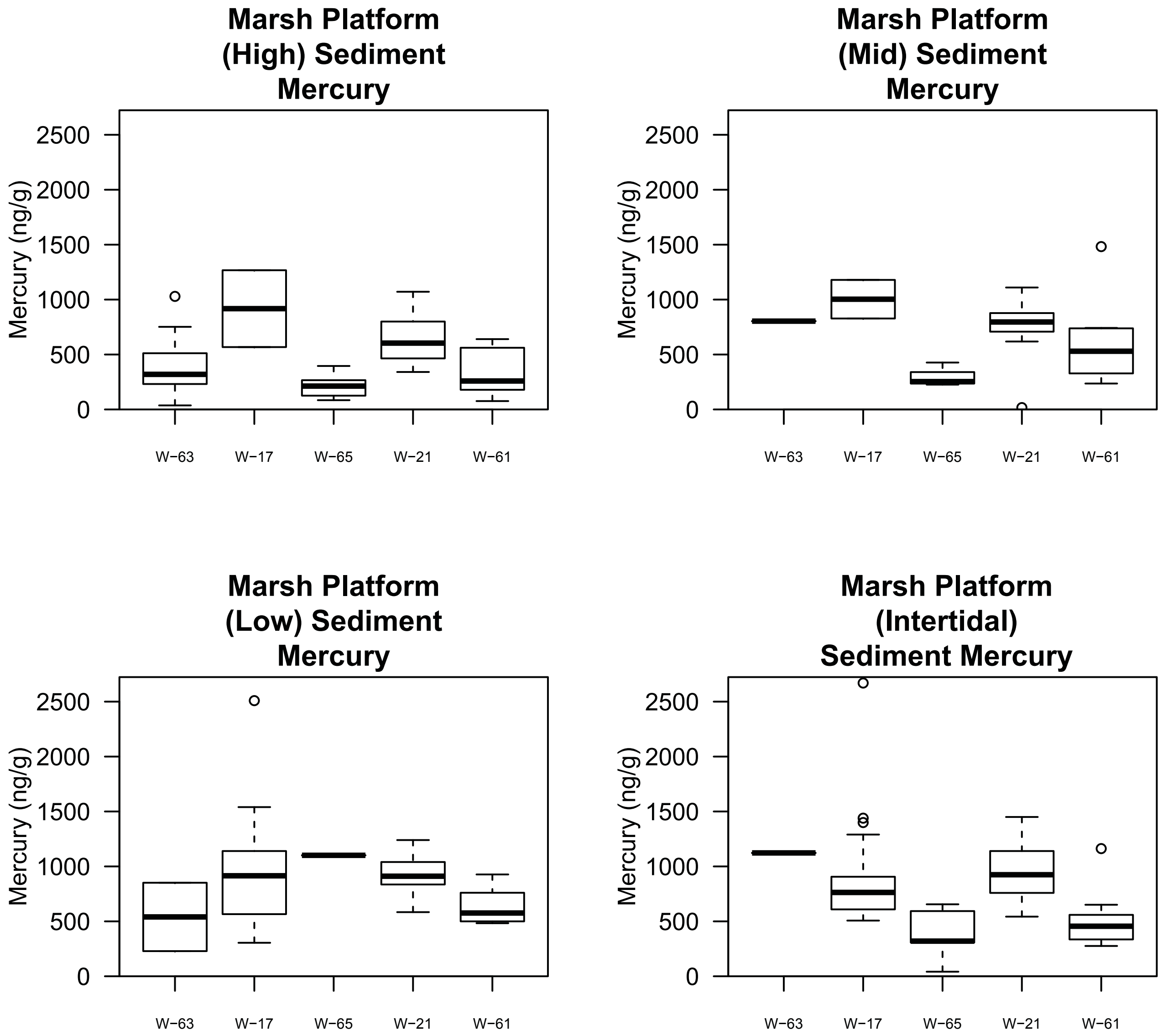
Marsh Platform (Mid) Sediment Mercury

Marsh Platform (Low) Sediment Mercury

Marsh Platform (Intertidal) Sediment Mercury

Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−22
MARSH PLATFORM SEDIMENT MERCURY BY SAMPLE LOCATION



Marsh Platform (High) Sediment Mercury

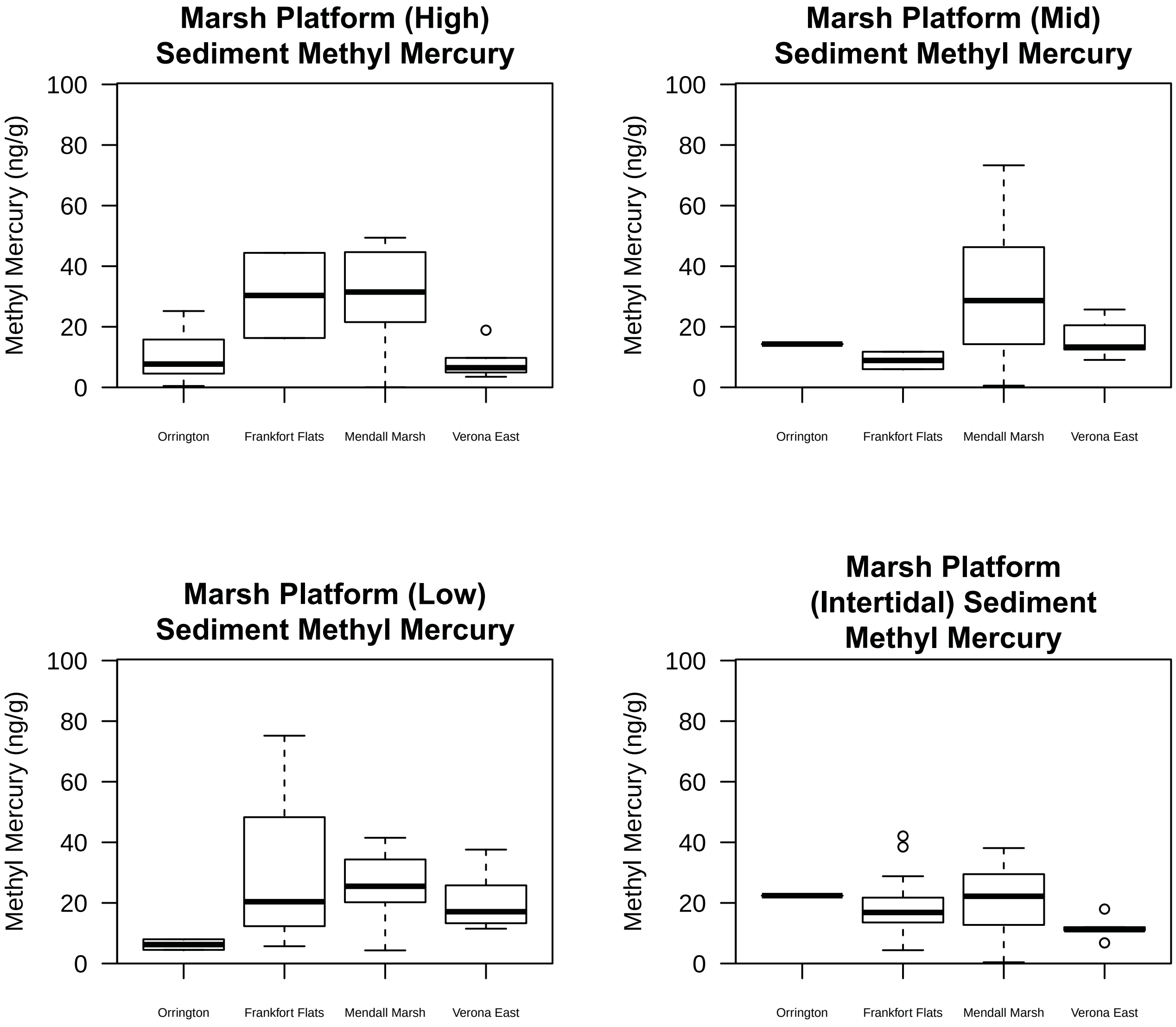
Marsh Platform (Mid) Sediment Mercury

Marsh Platform (Low) Sediment Mercury

Marsh Platform (Intertidal) Sediment Mercury

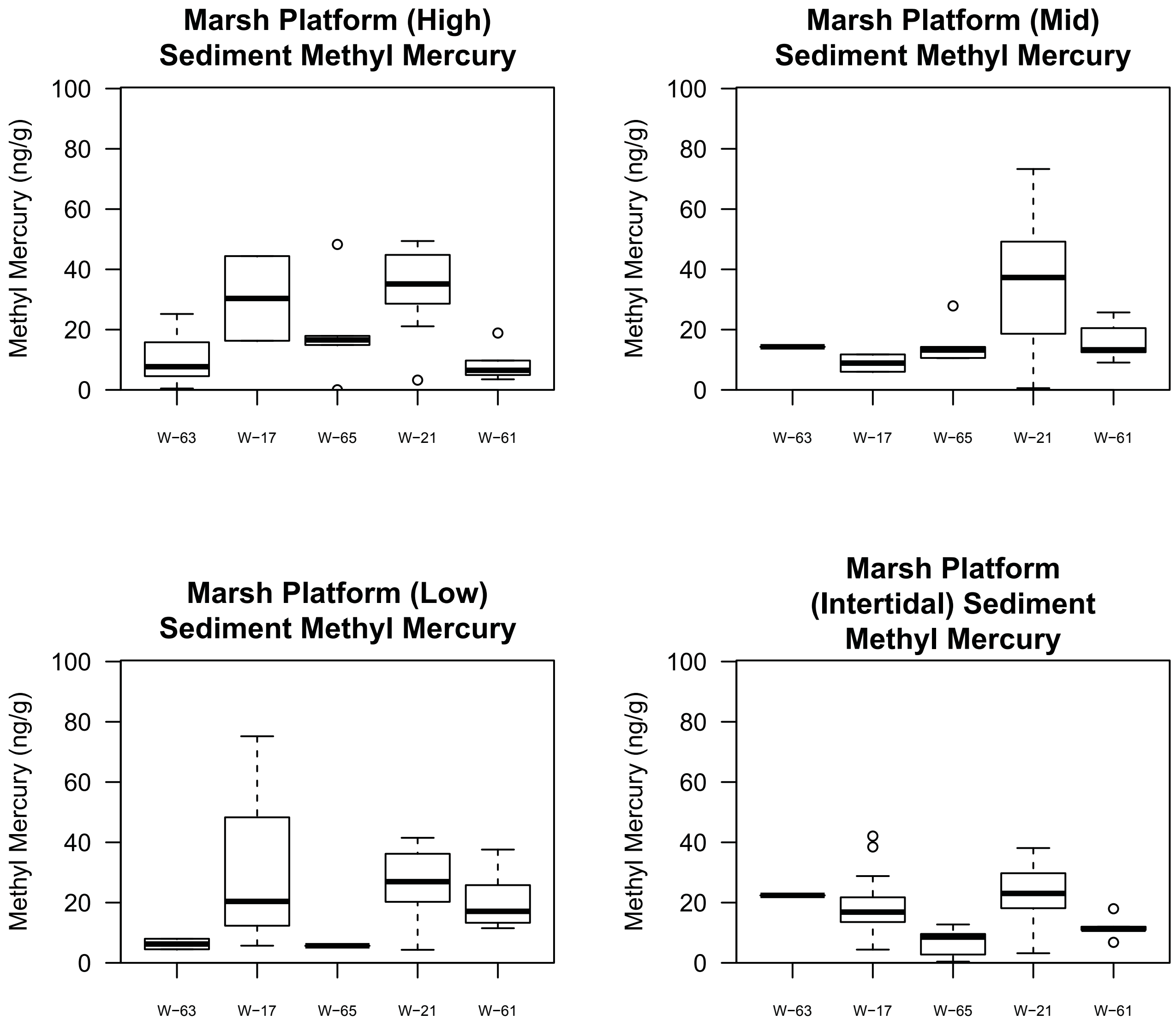
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−23
MARSH PLATFORM SEDIMENT METHYL MERCURY BY RIVER REACH



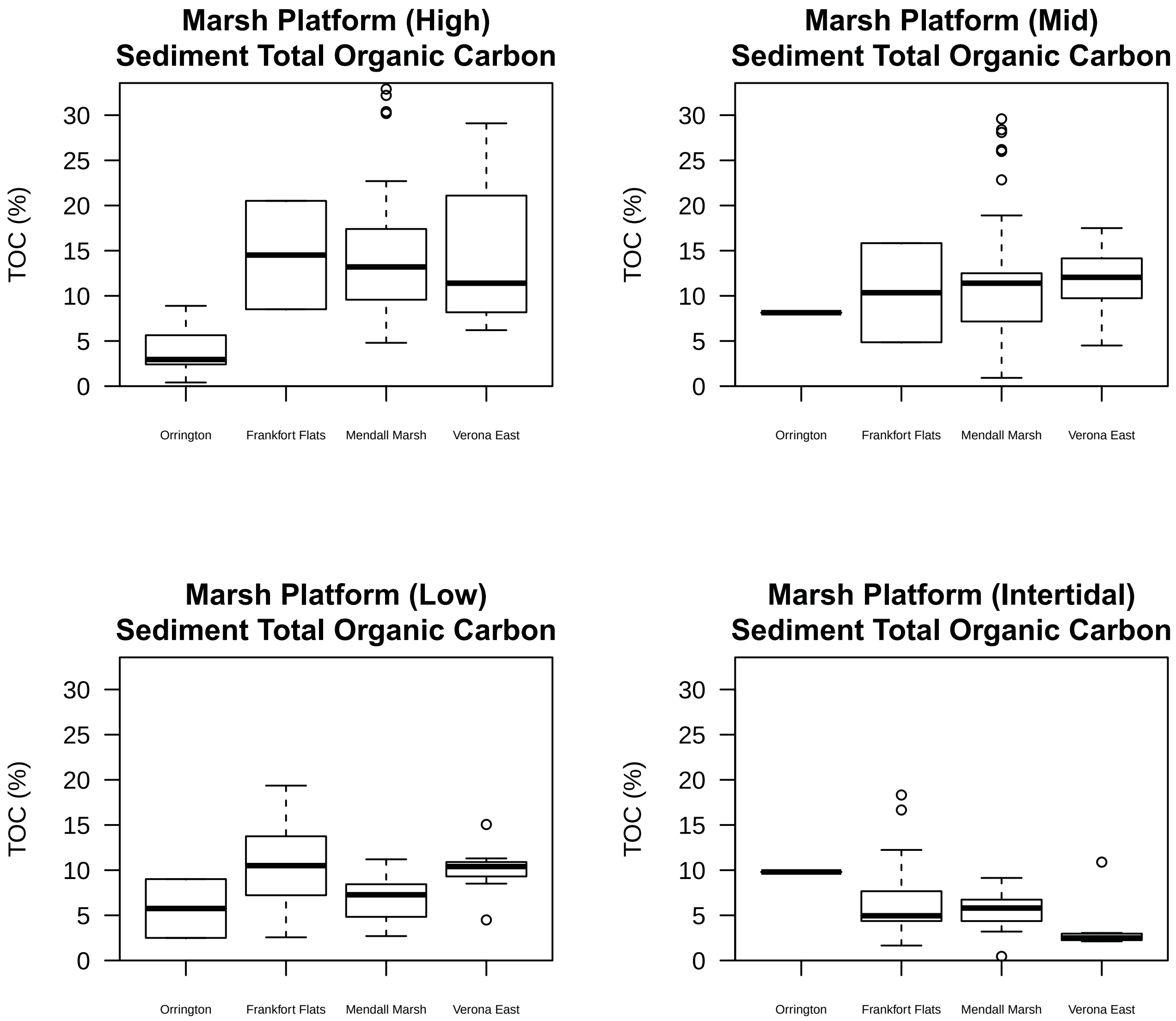
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−24
MARSH PLATFORM SEDIMENT METHYL MERCURY BY SAMPLE LOCATION



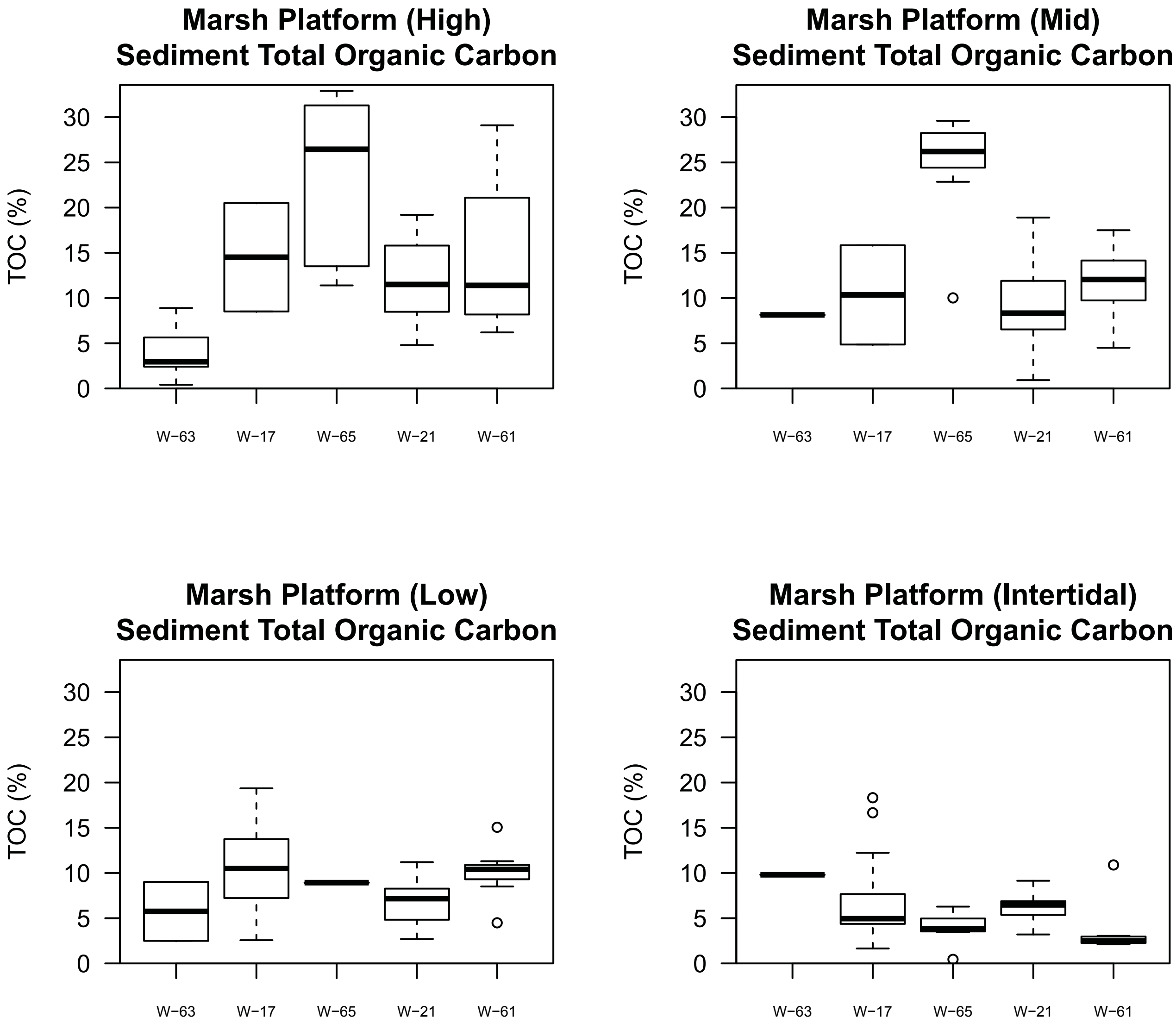
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−25
MARSH PLATFORM SEDIMENT TOTAL ORGANIC CARBON BY RIVER REACH



Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−26
MARSH PLATFORM SEDIMENT TOTAL ORGANIC CARBON BY SAMPLE LOCATION



Marsh Platform (High)
Sediment Total Organic Carbon

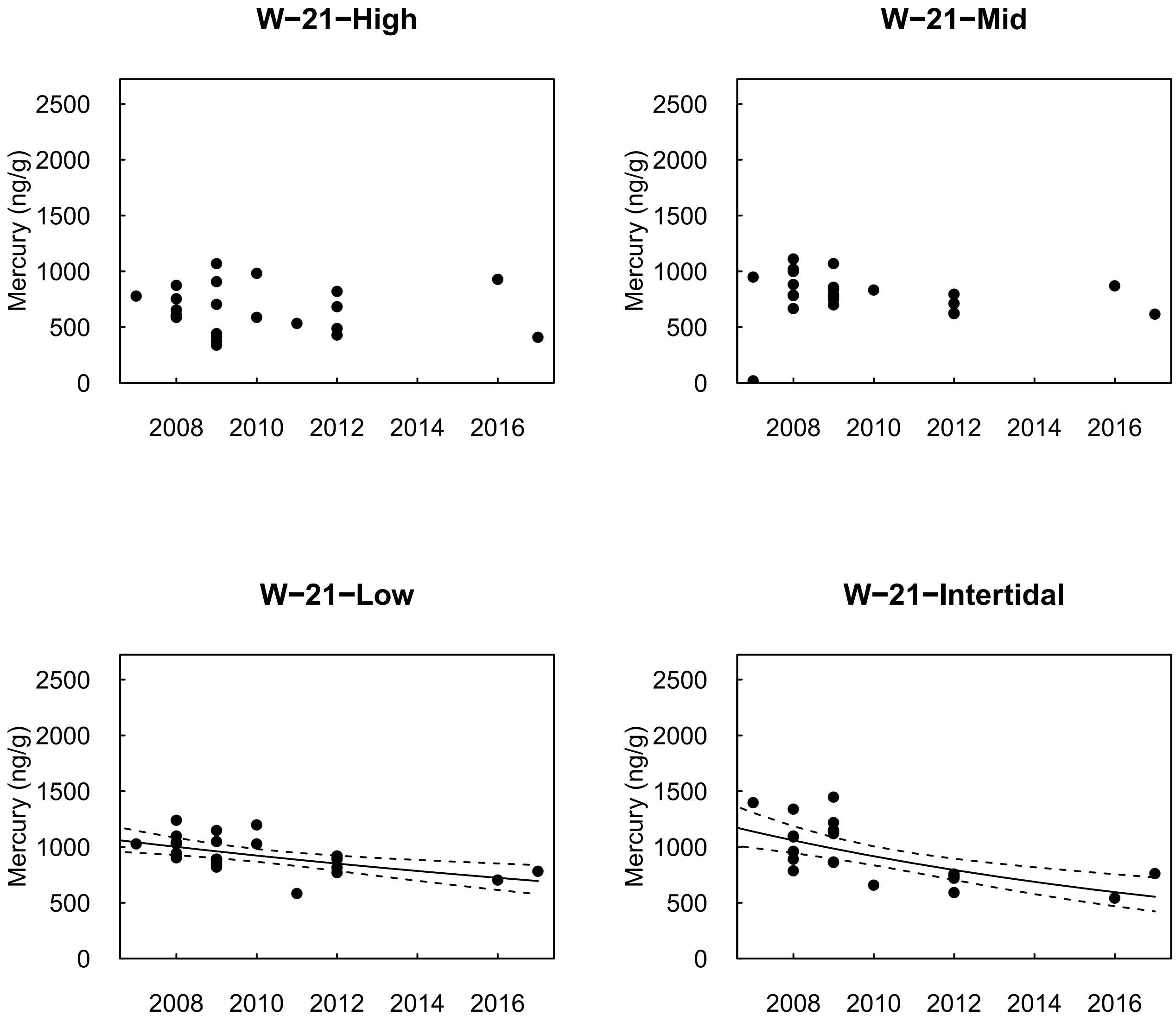
Marsh Platform (Mid)
Sediment Total Organic Carbon

Marsh Platform (Low)
Sediment Total Organic Carbon

Marsh Platform (Intertidal)
Sediment Total Organic Carbon

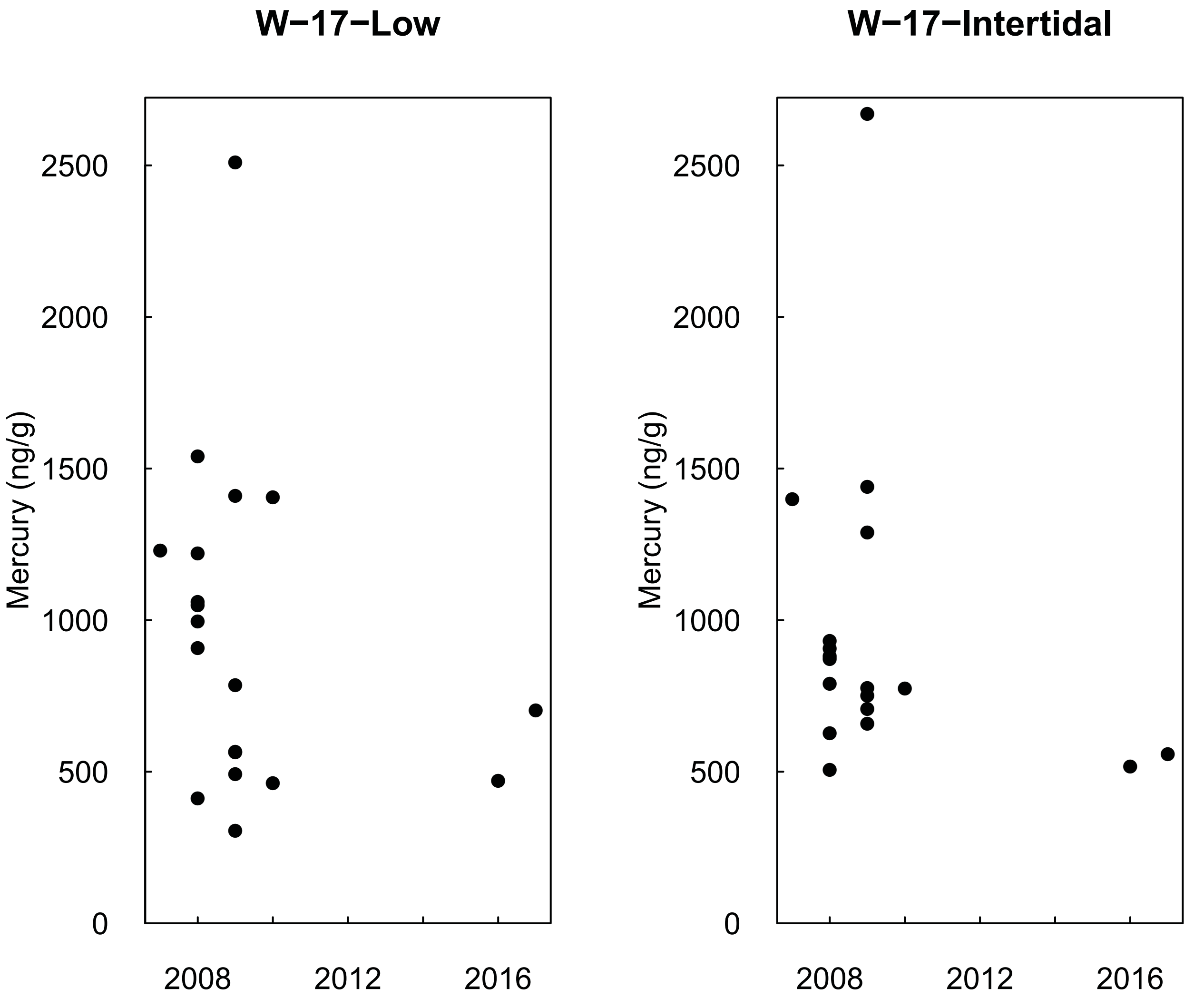
Note:
The box represents the interquartile range (IQR; 25%-75%) of the distribution in the data set.
The center bar line in the box represents the median of the distribution in the data set.
The (x) within the box plot represents the mean of the distribution in data set.
The whiskers represent the outer 25% beyond the IQR.
Points beyond the whiskers are considered outliers.
Results are reported in nanograms per gram (ng/g)

FIGURE 4−27
TEMPORAL MARSH PLATFORM SEDIMENT MERCURY



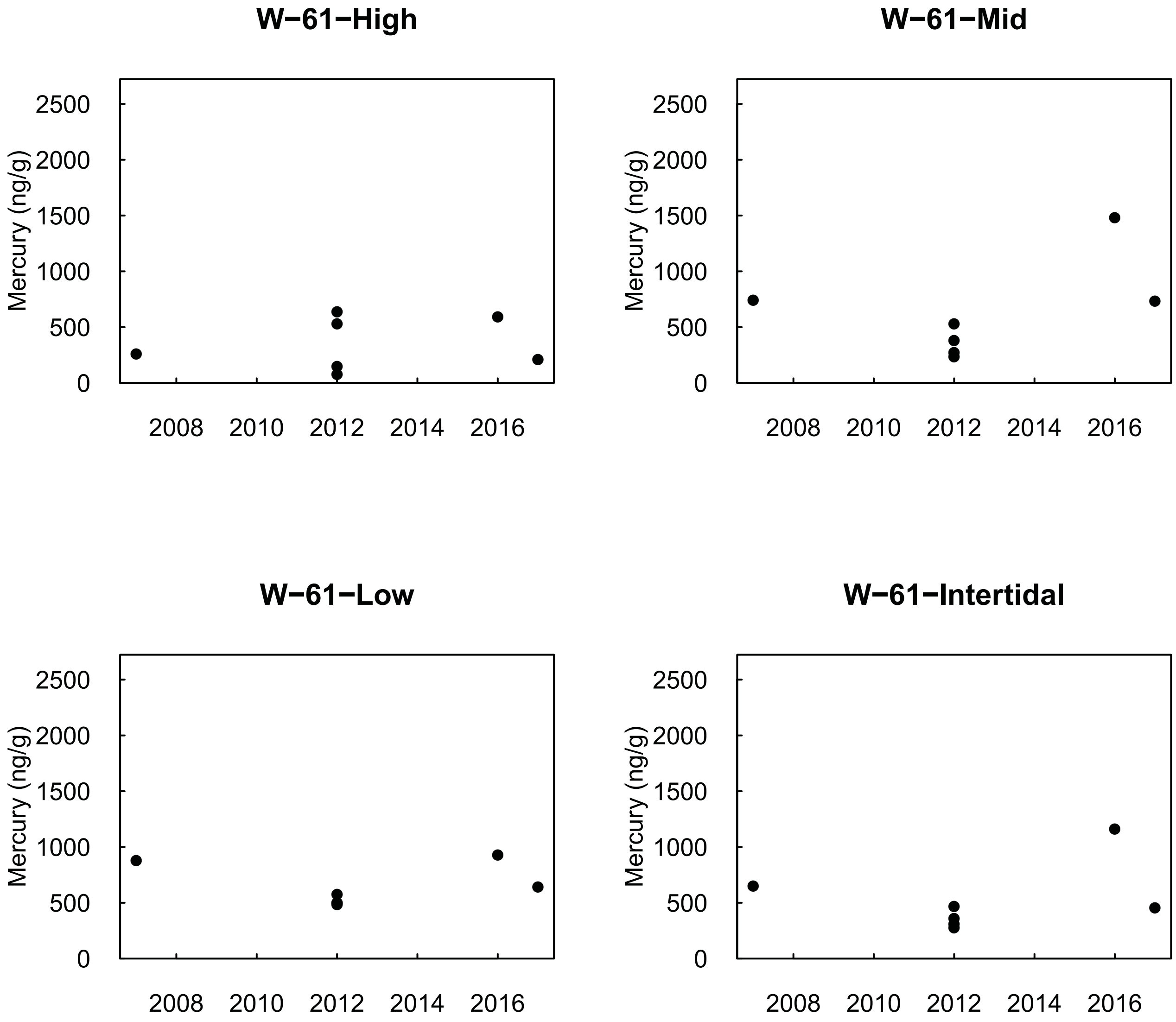
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−27 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT MERCURY



Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

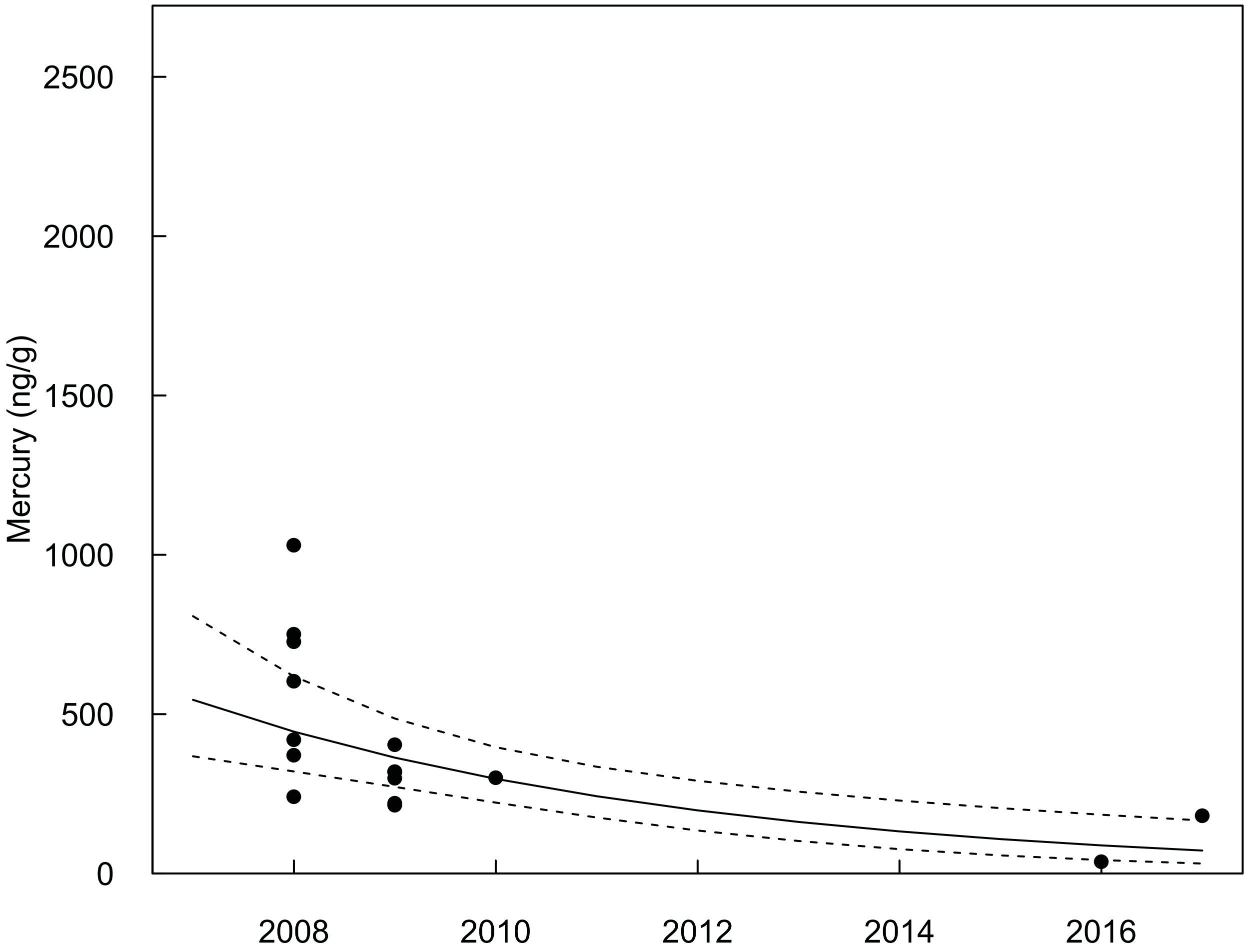
FIGURE 4−27 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT MERCURY


W−61−High
W−61−Mid
W−61−Low
W−61−Intertidal

Line indicates regression slope is significantly different than 0 ($p<0.05$). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

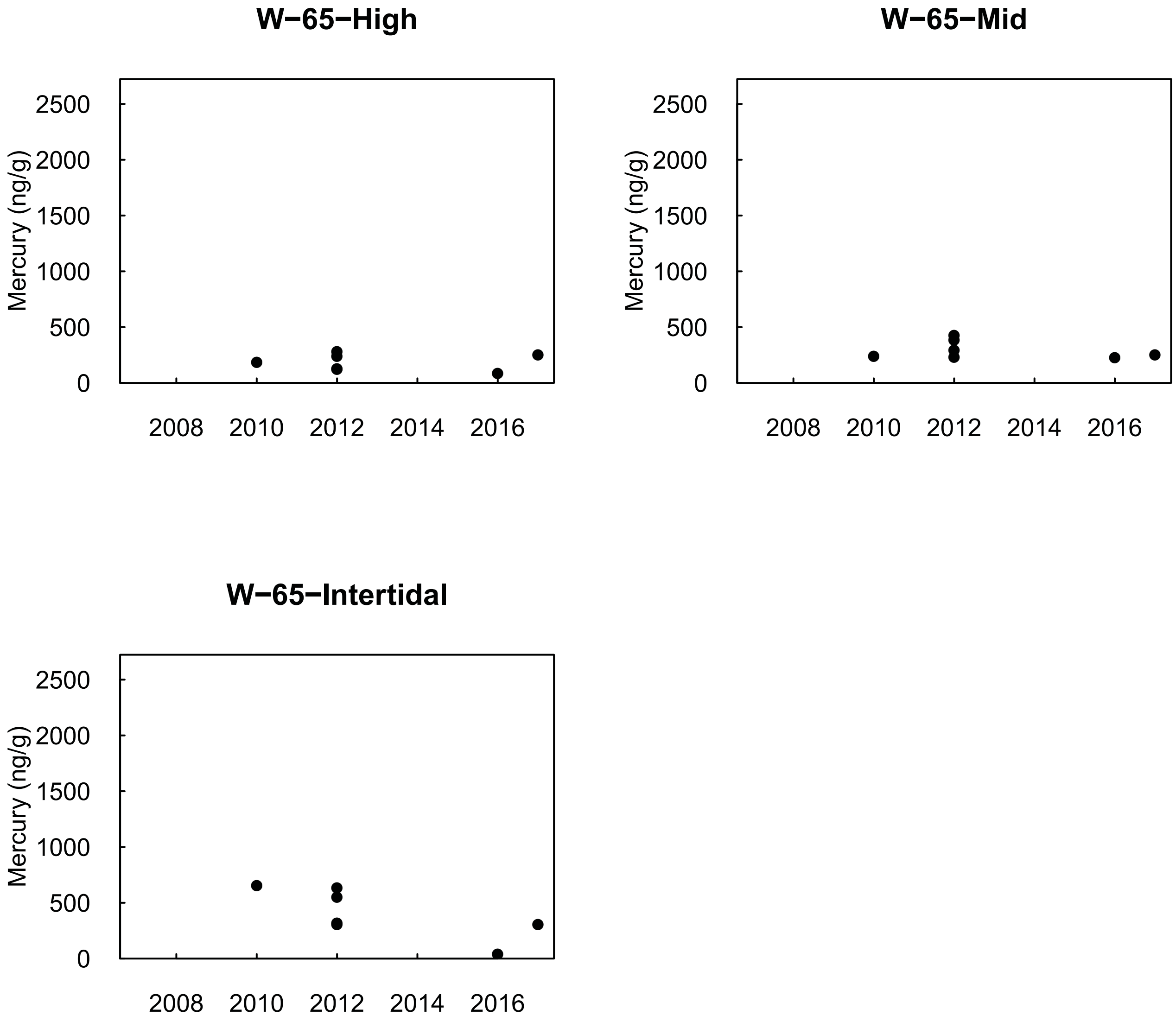
FIGURE 4−27 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT MERCURY

W−63−High



Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−27 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT MERCURY

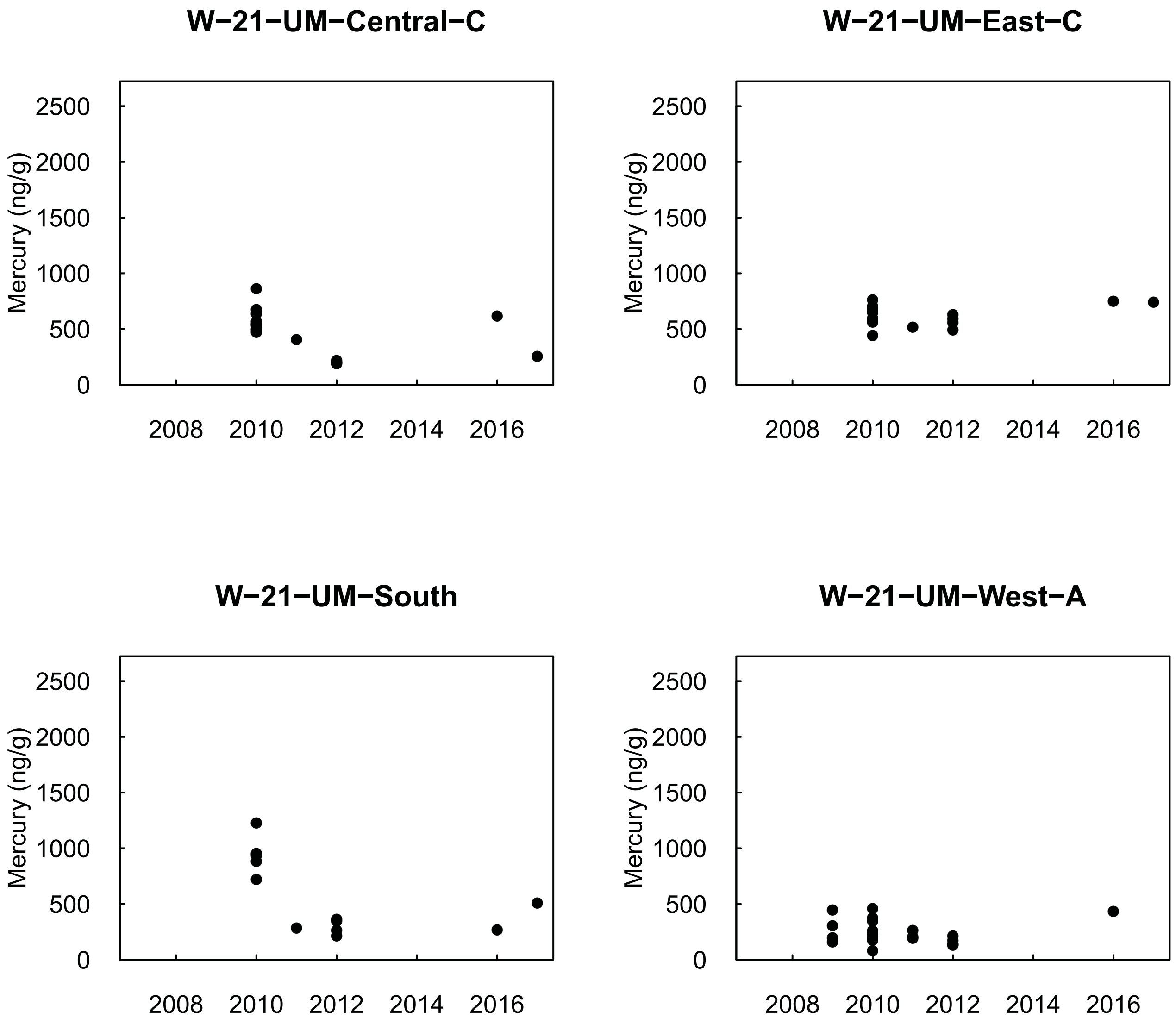

W−65−High

W−65−Mid

W−65−Intertidal

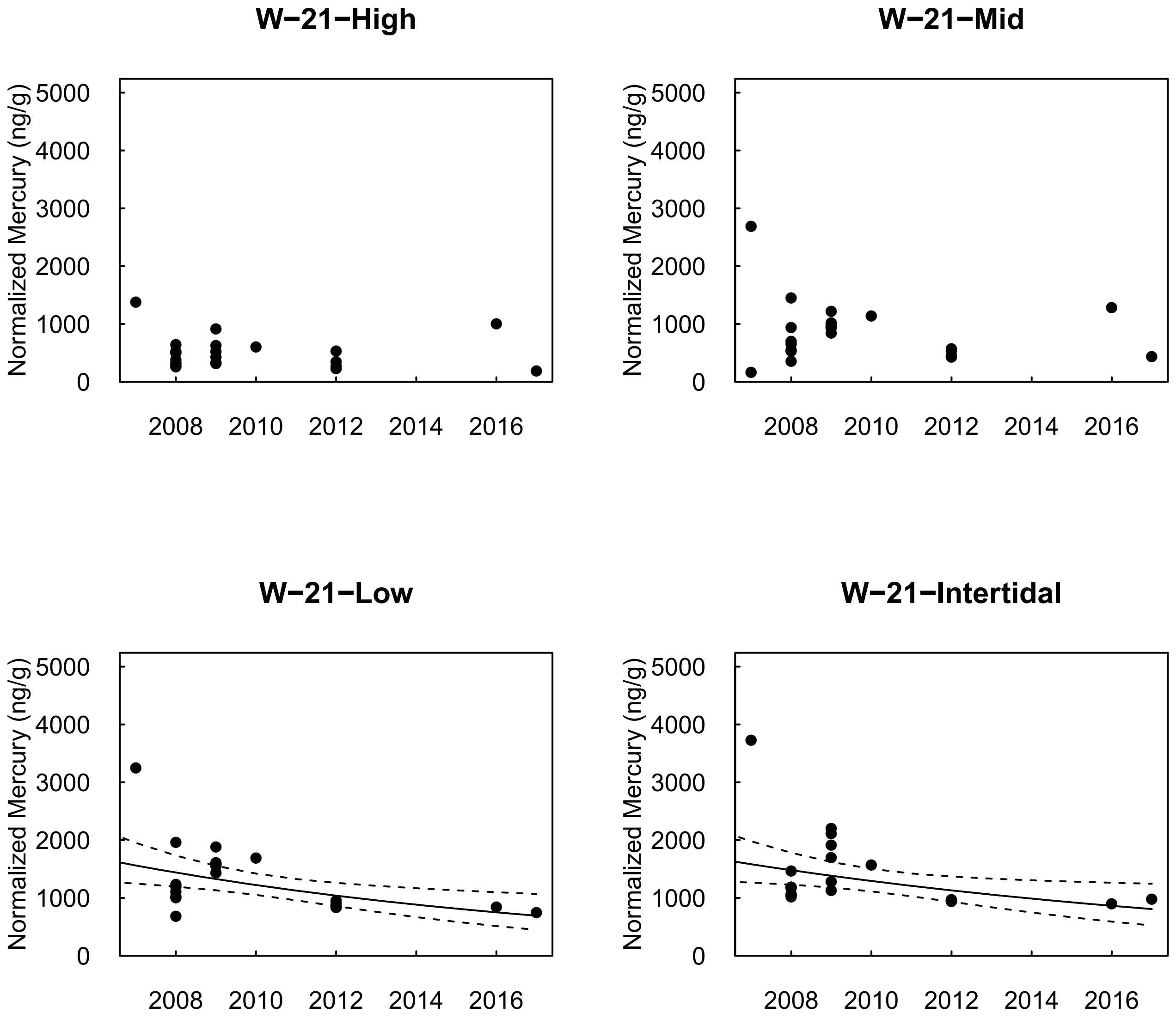
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−27 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT MERCURY



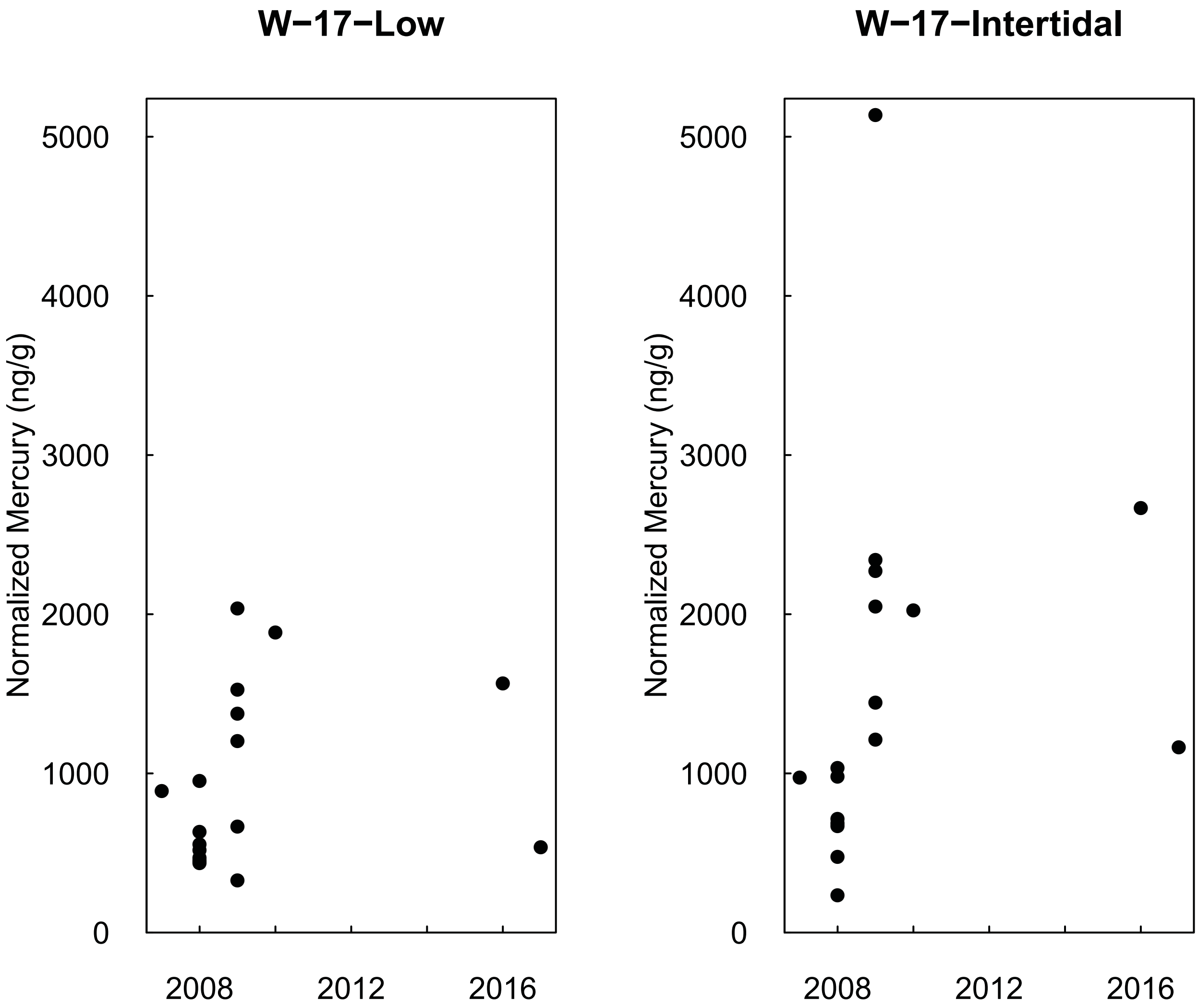
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−28
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED MERCURY



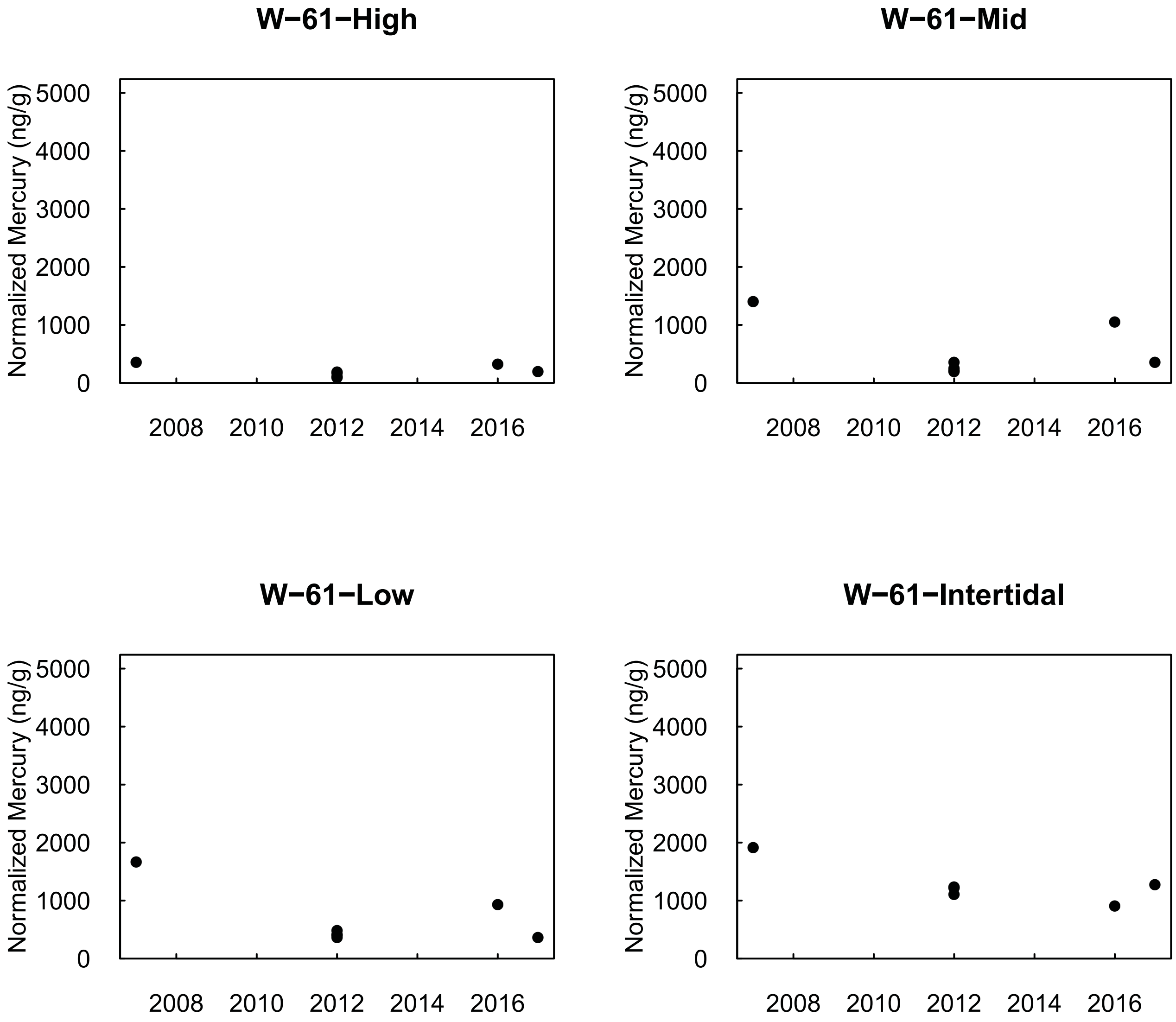
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−28 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED MERCURY



Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

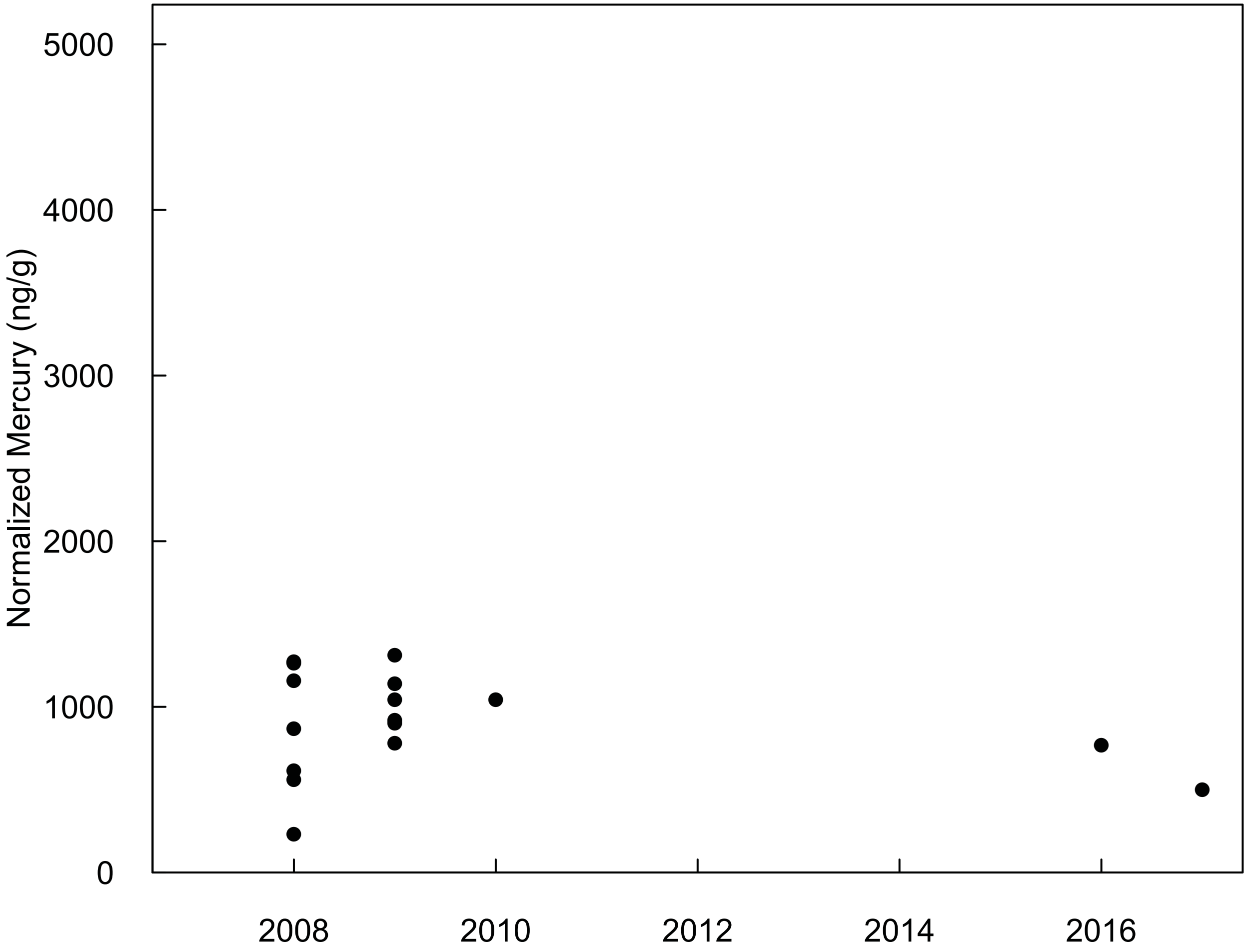
FIGURE 4−28 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED MERCURY



Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

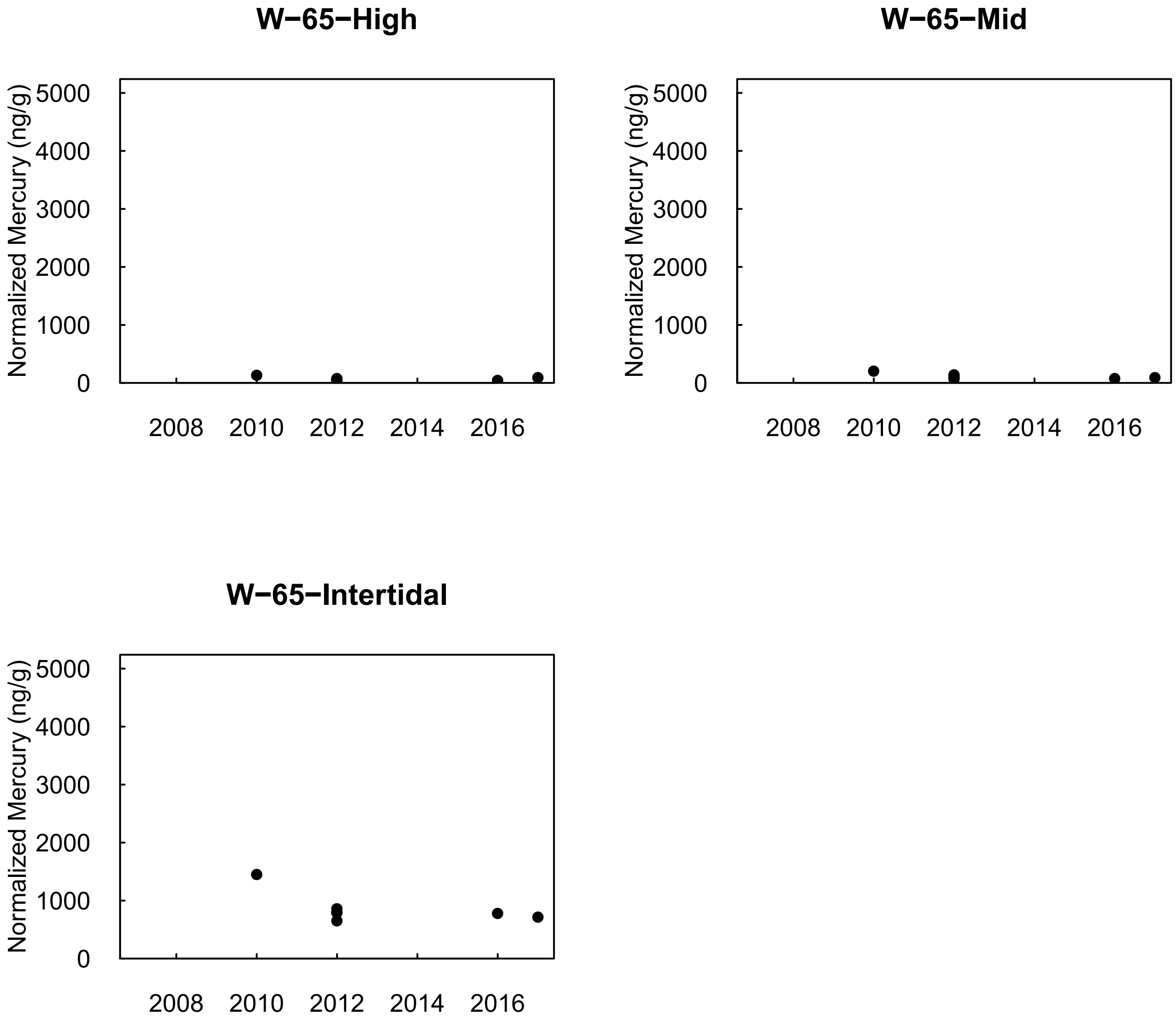
FIGURE 4−28 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED MERCURY

W−63−High



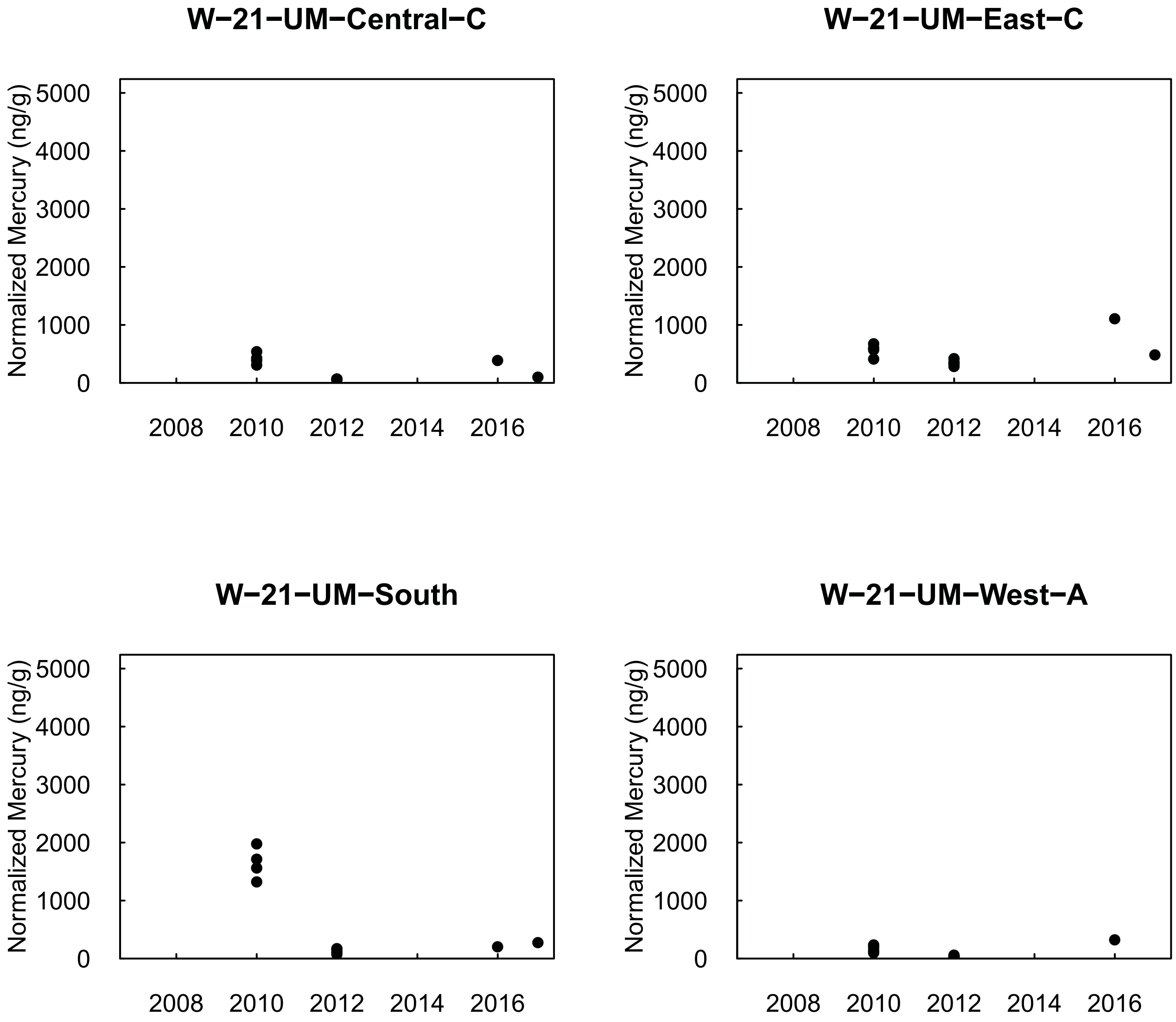
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−28 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED MERCURY



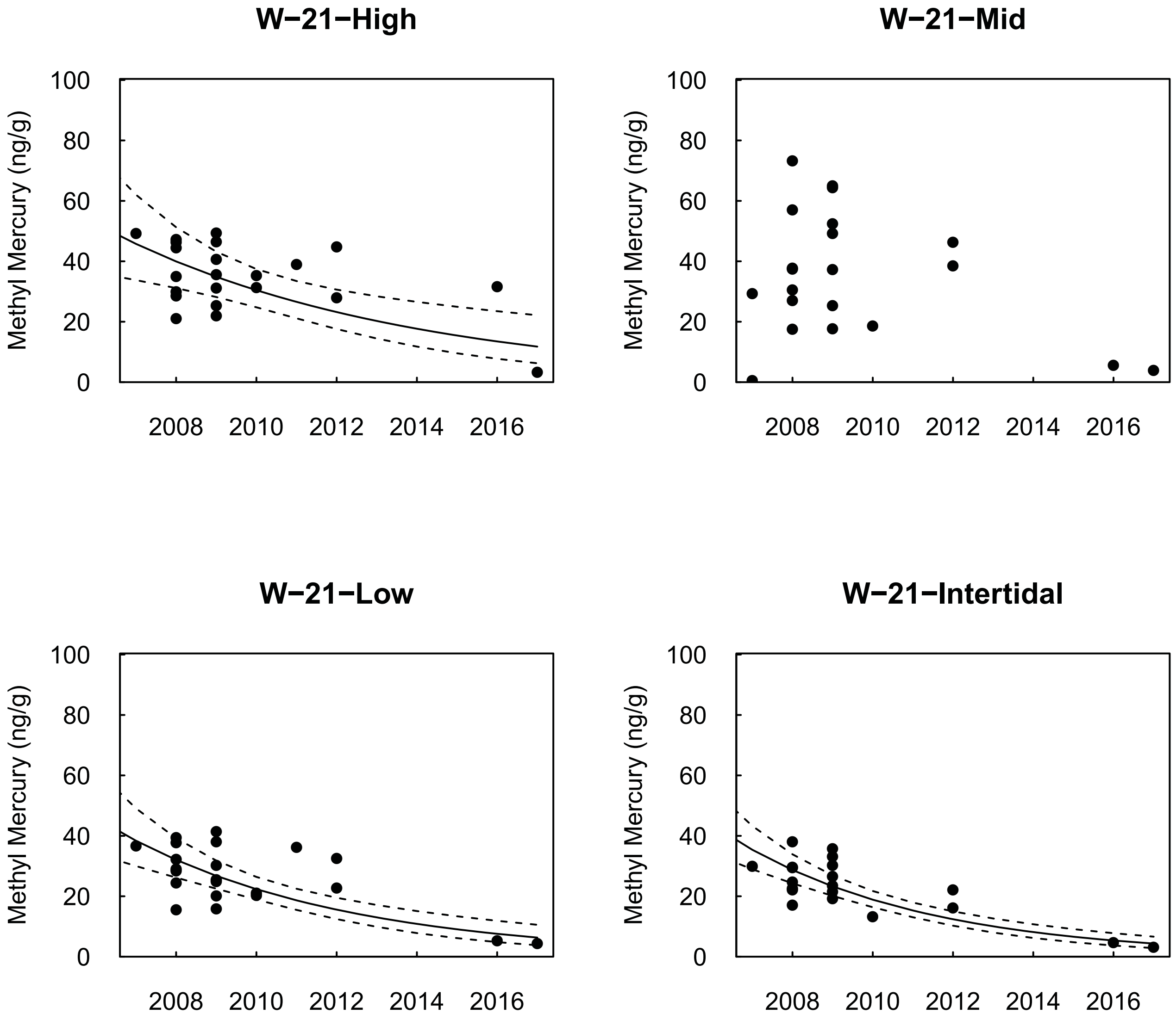
Line indicates regression slope is significantly different than 0 ($p<0.05$). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−28 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED MERCURY



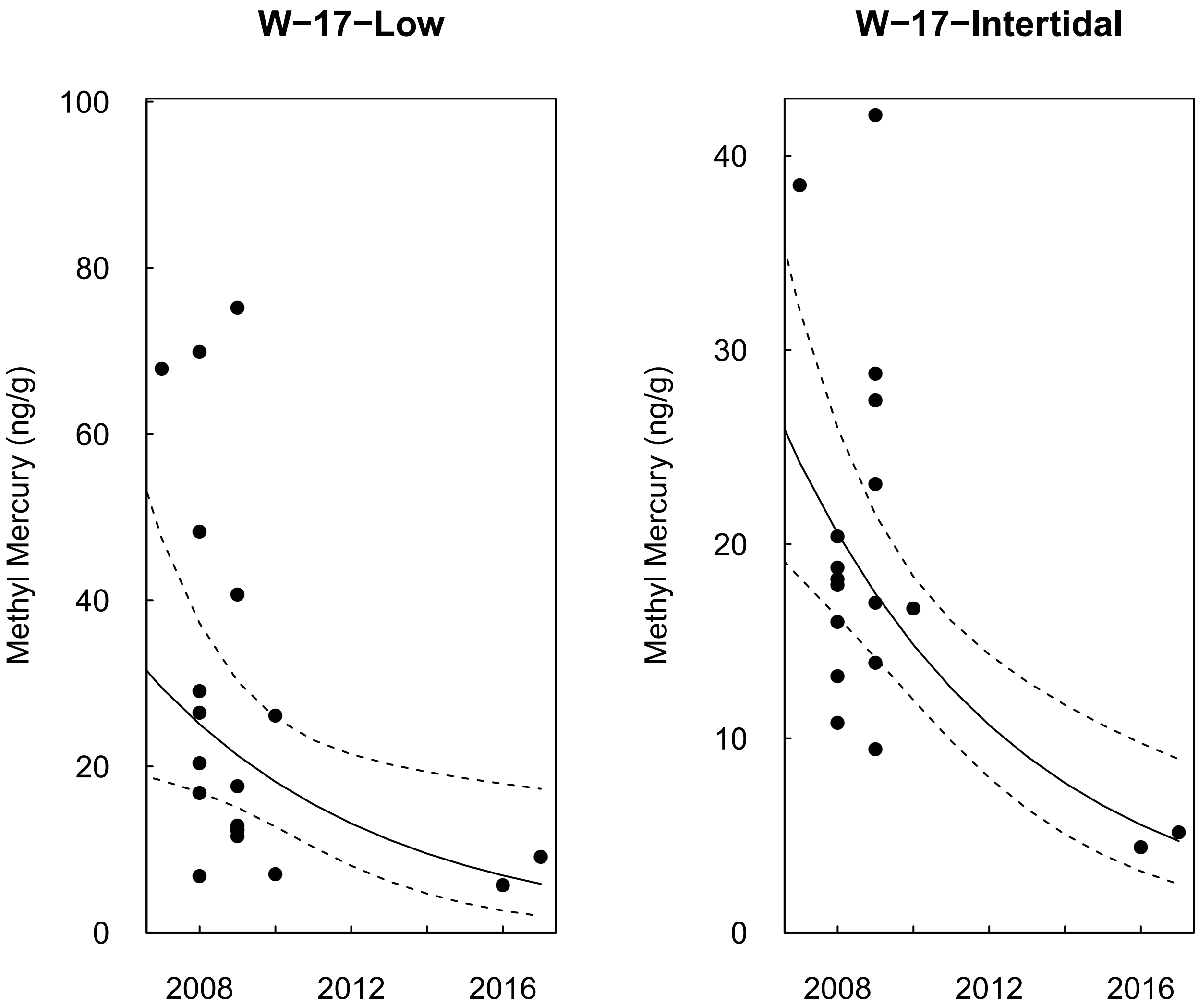
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−29
TEMPORAL MARSH PLATFORM SEDIMENT METHYL MERCURY



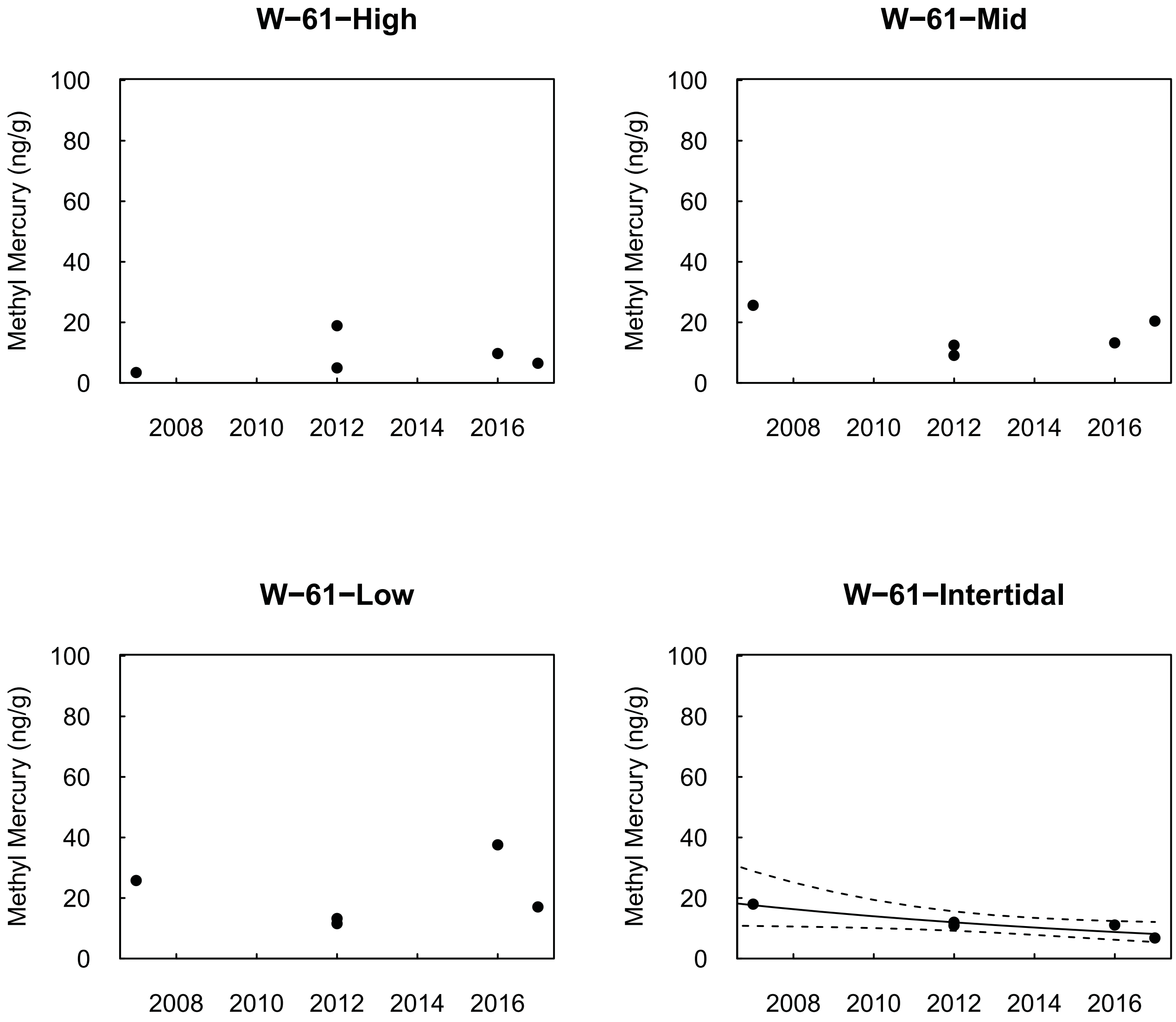
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−29 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT METHYL MERCURY



Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

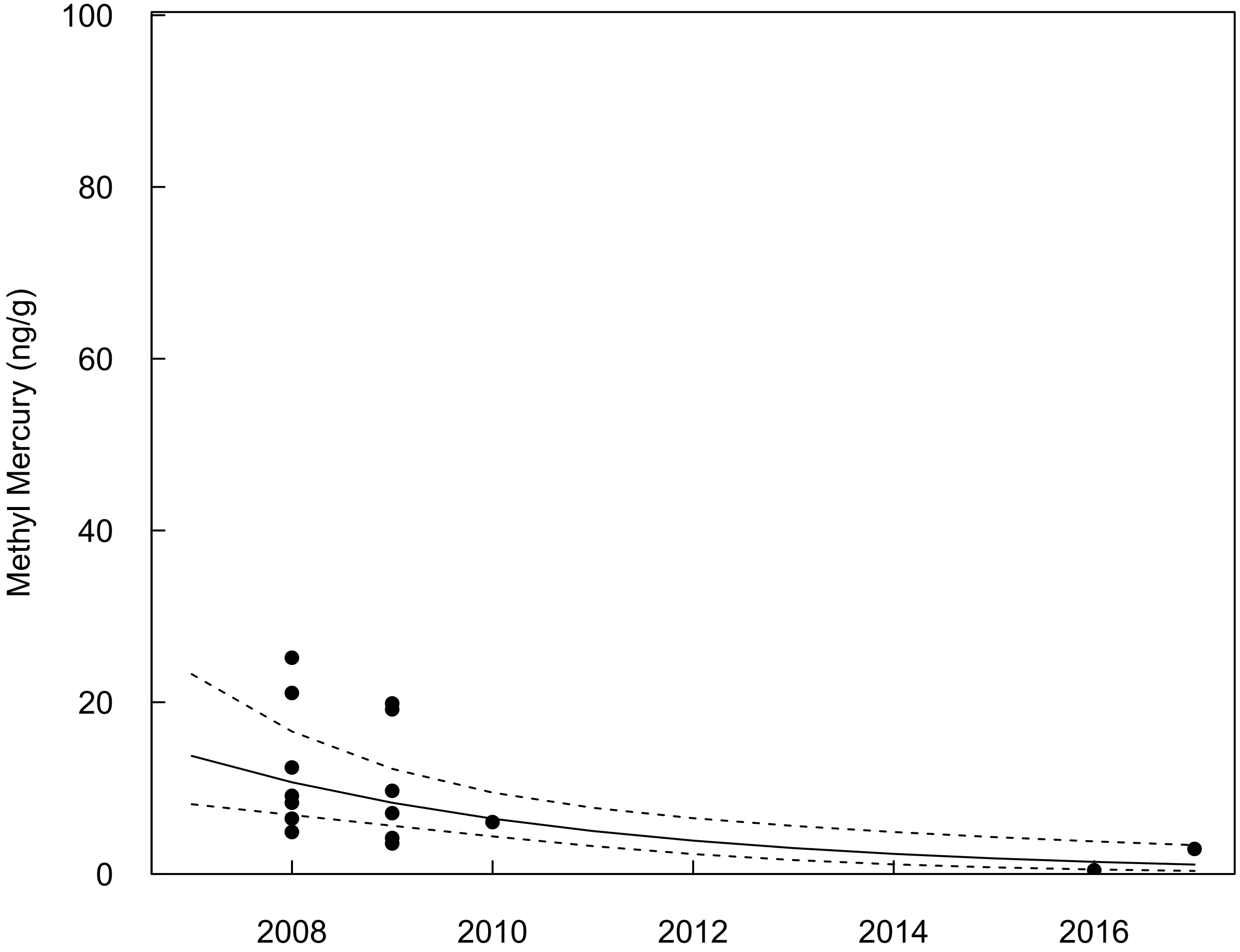
FIGURE 4−29 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT METHYL MERCURY



Line indicates regression slope is significantly different than 0 ($p<0.05$). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

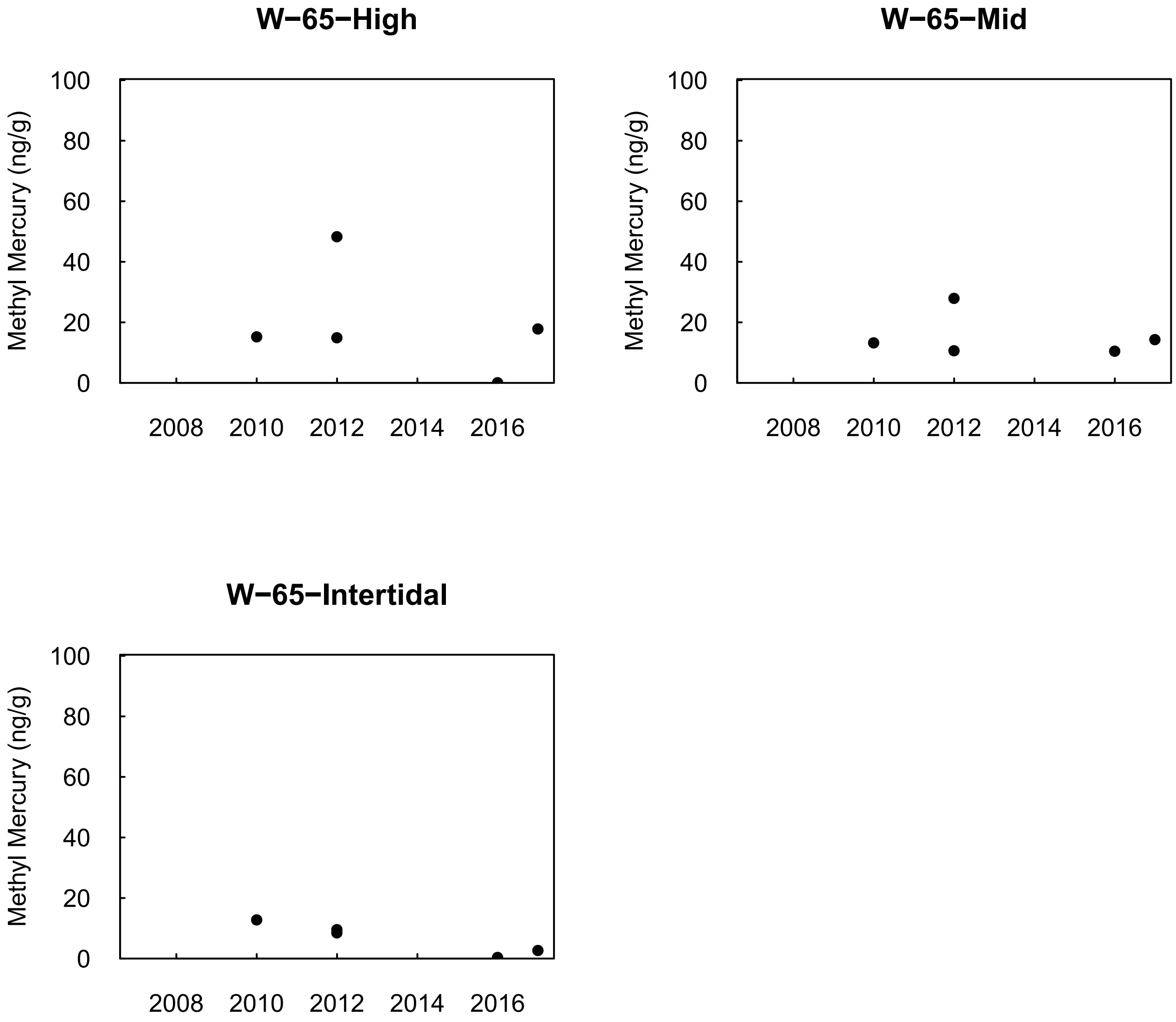
FIGURE 4−29 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT METHYL MERCURY

W−63−High



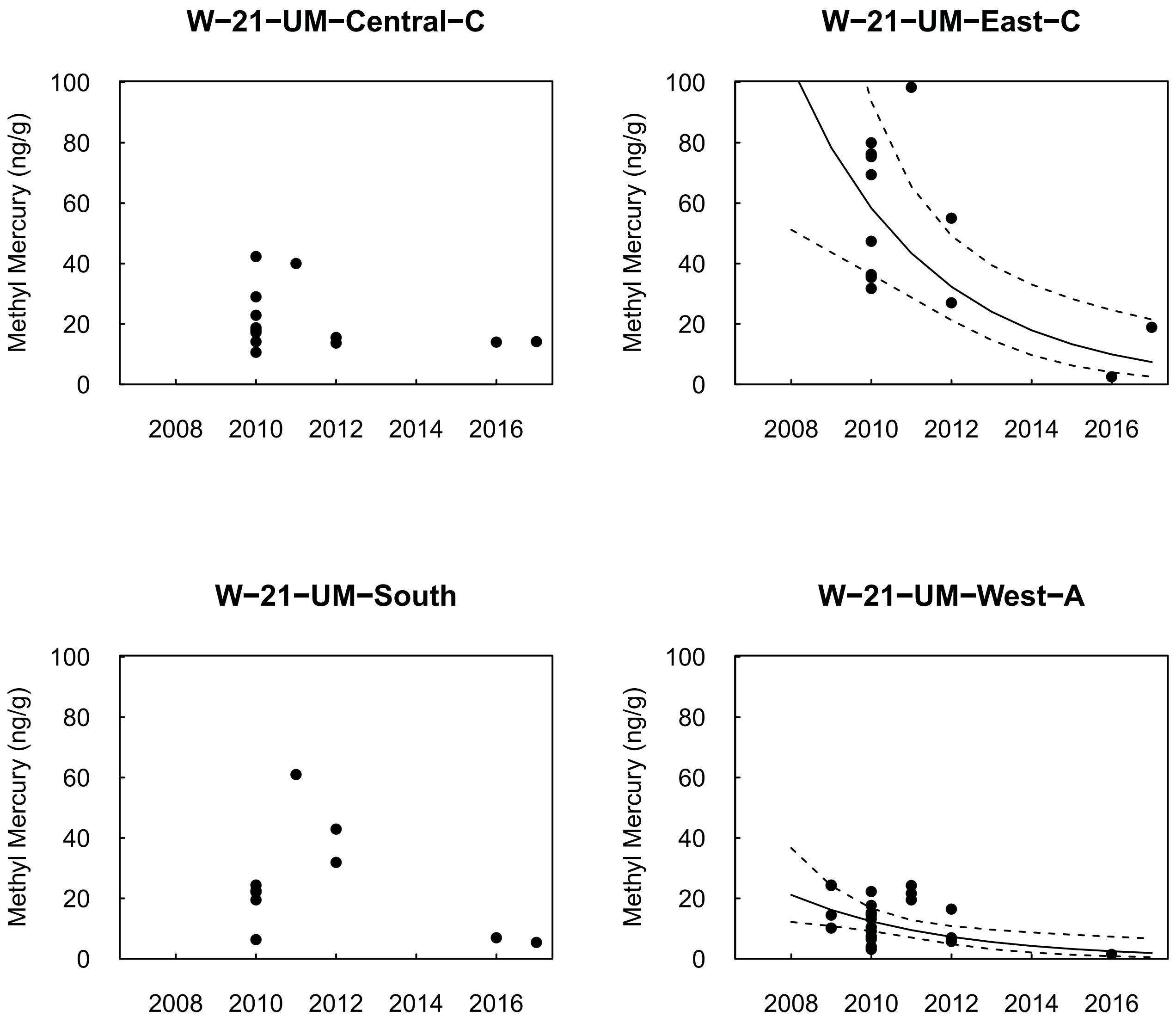
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−29 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT METHYL MERCURY



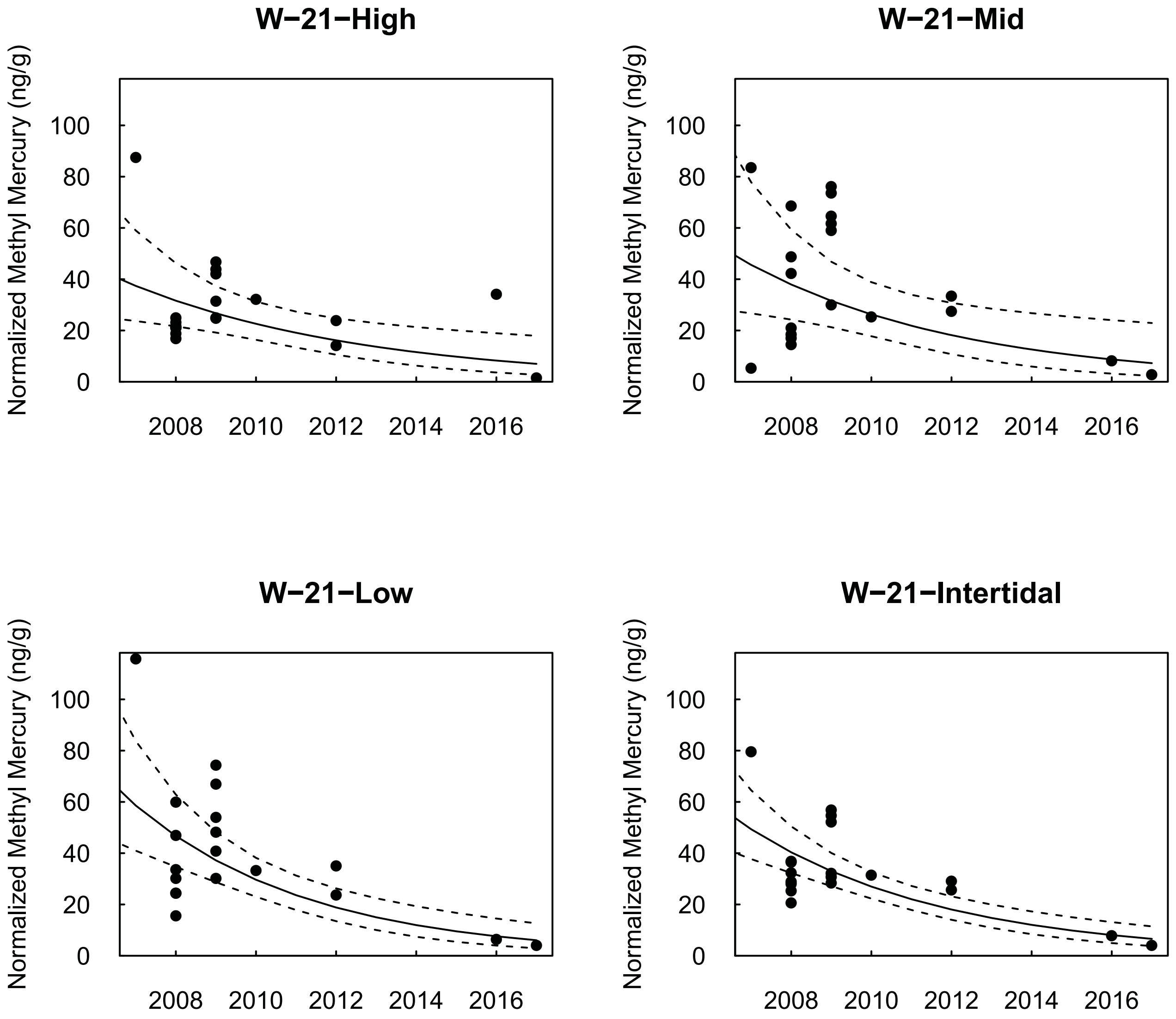
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−29 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT METHYL MERCURY



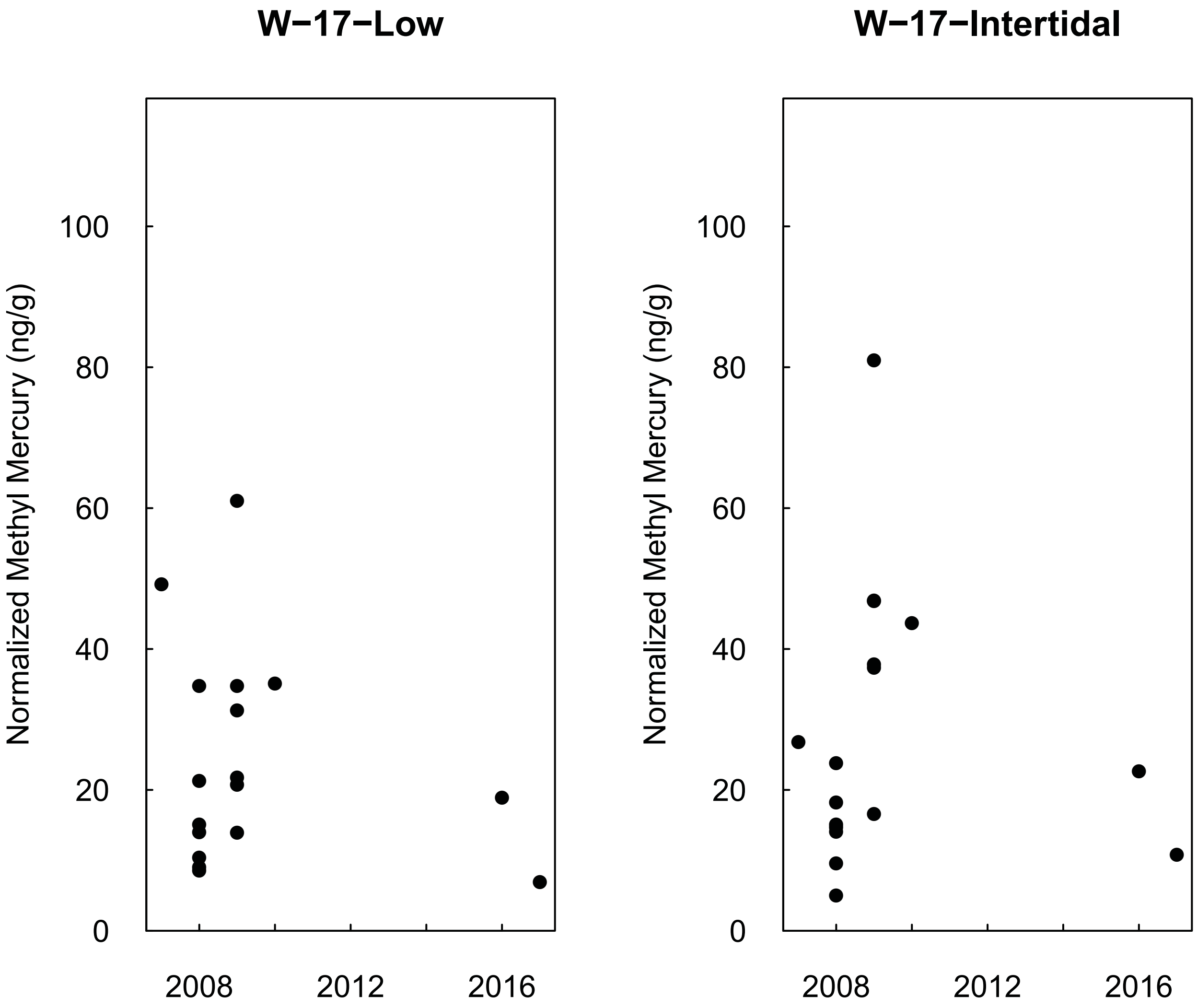
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−30
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED METHYL MERCURY



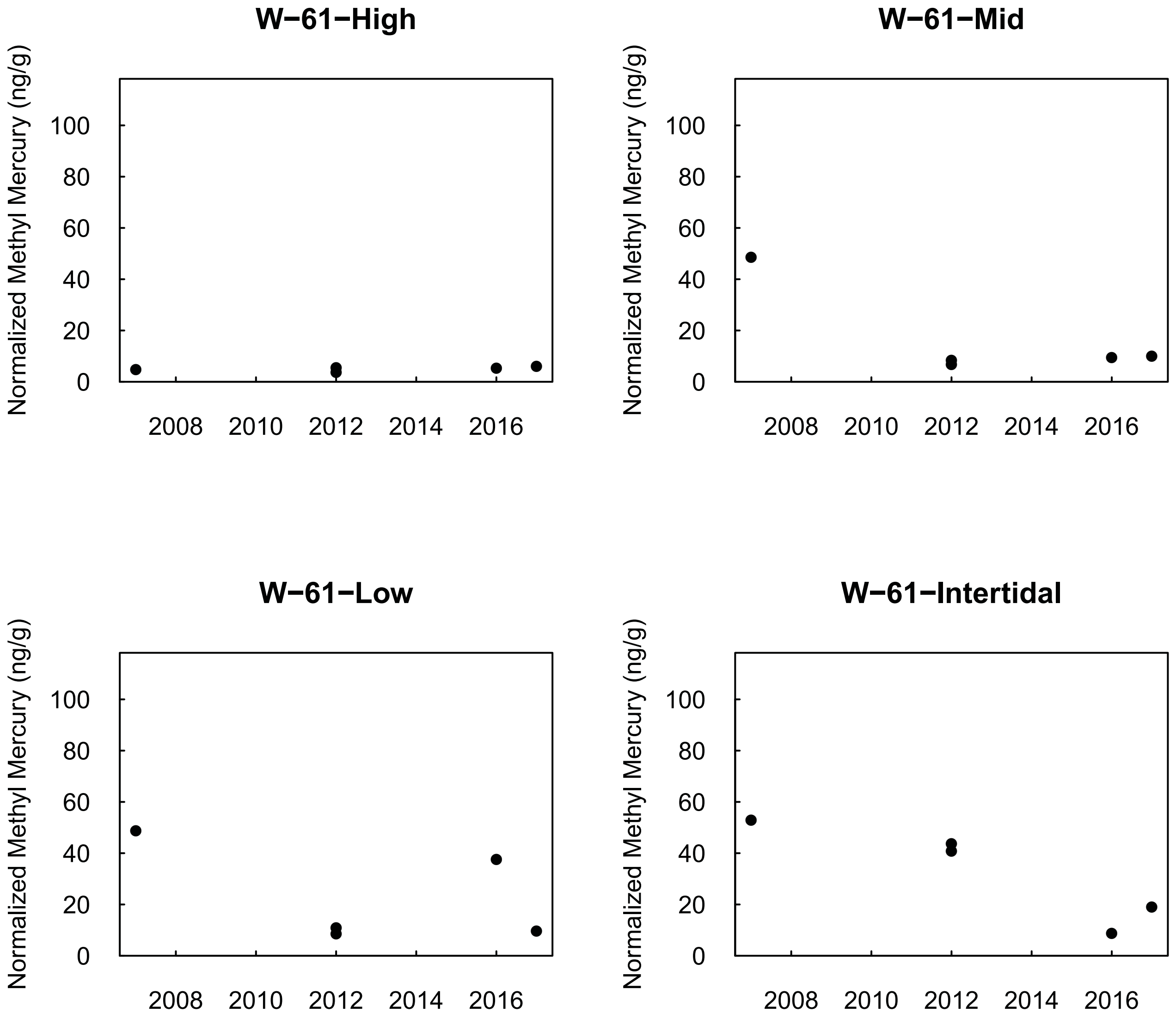
Line indicates regression slope is significantly different than 0 ($p<0.05$). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−30 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED METHYL MERCURY



Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

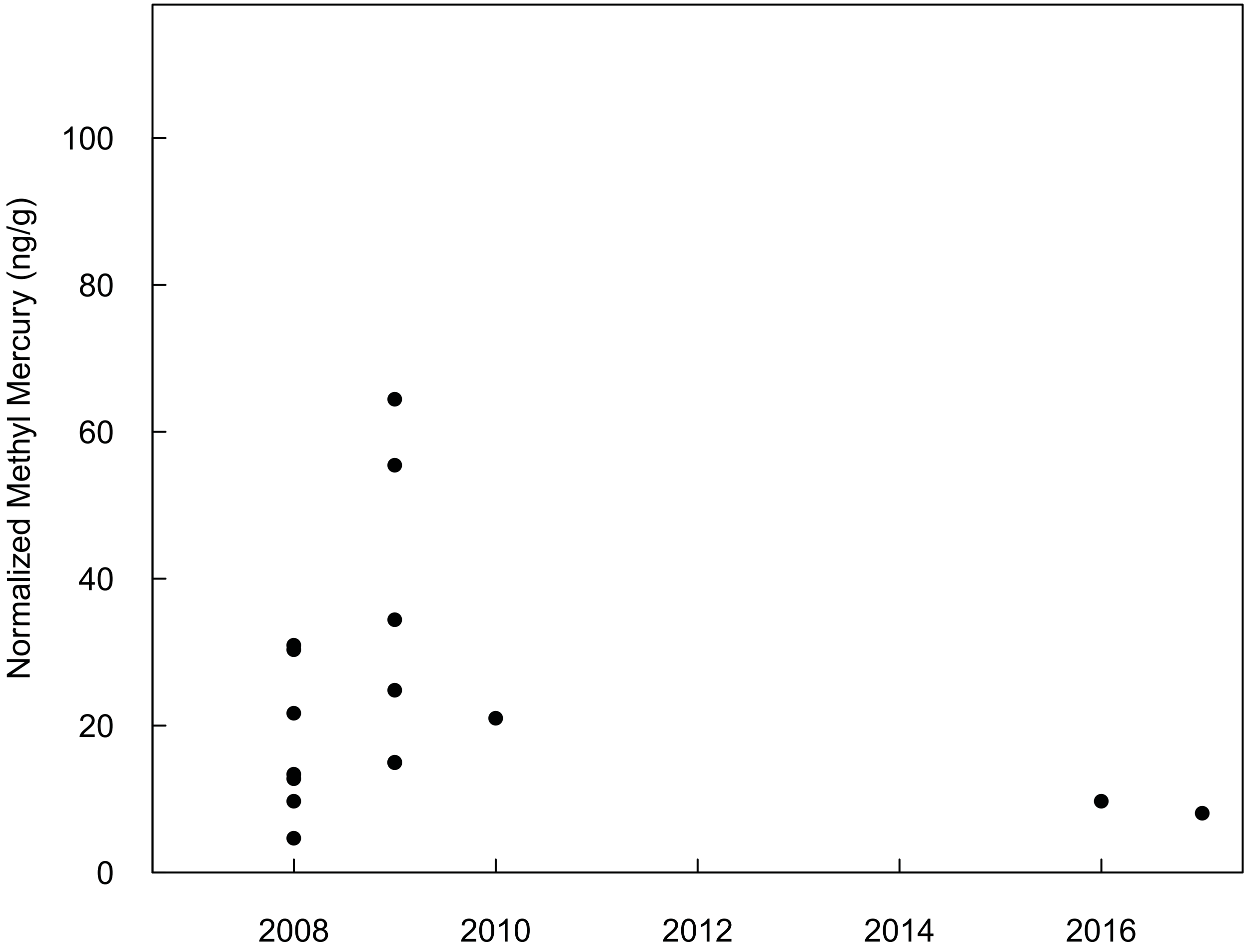
FIGURE 4−30 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED METHYL MERCURY



Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

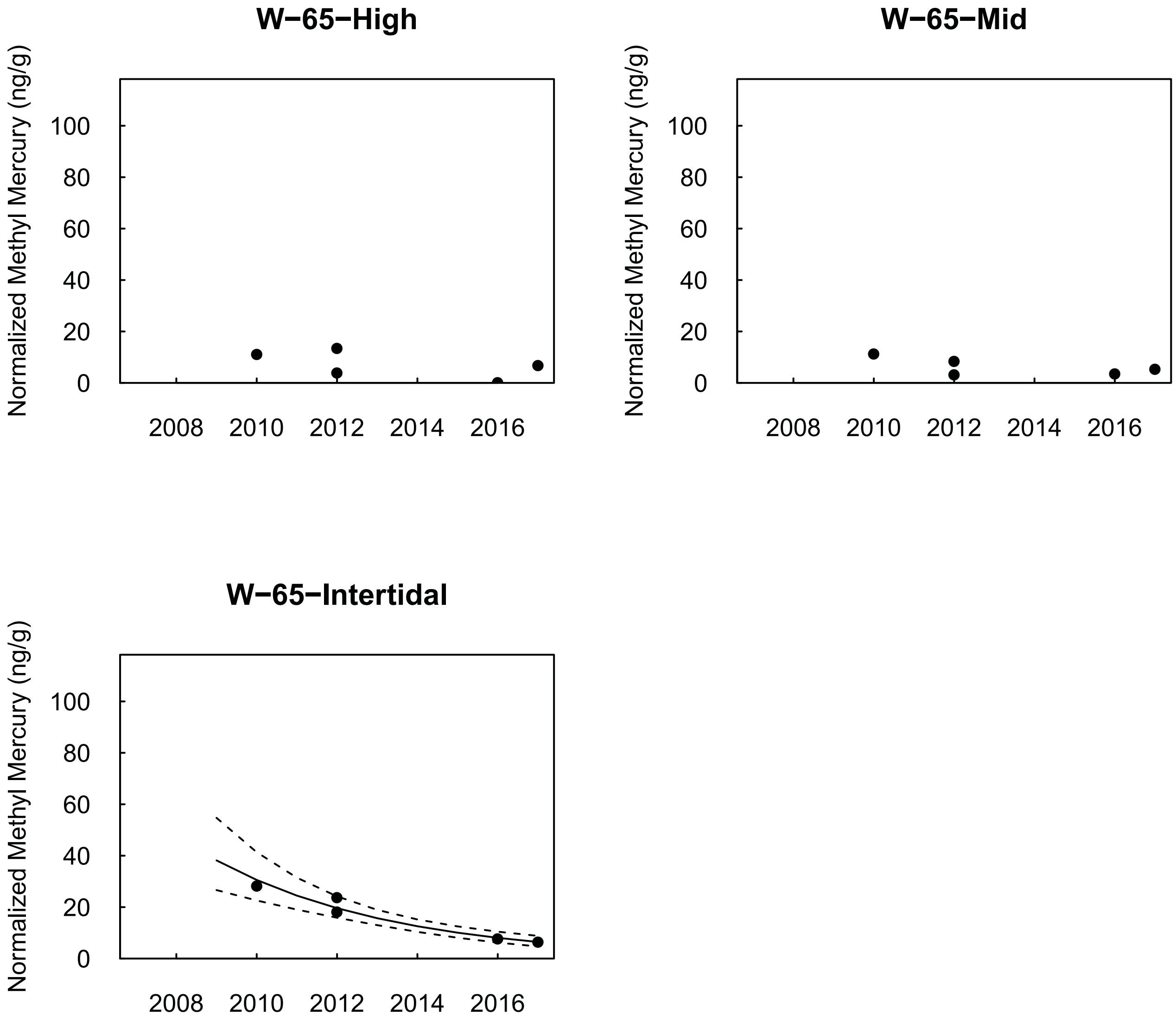
FIGURE 4−30 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED METHYL MERCURY

W−63−High



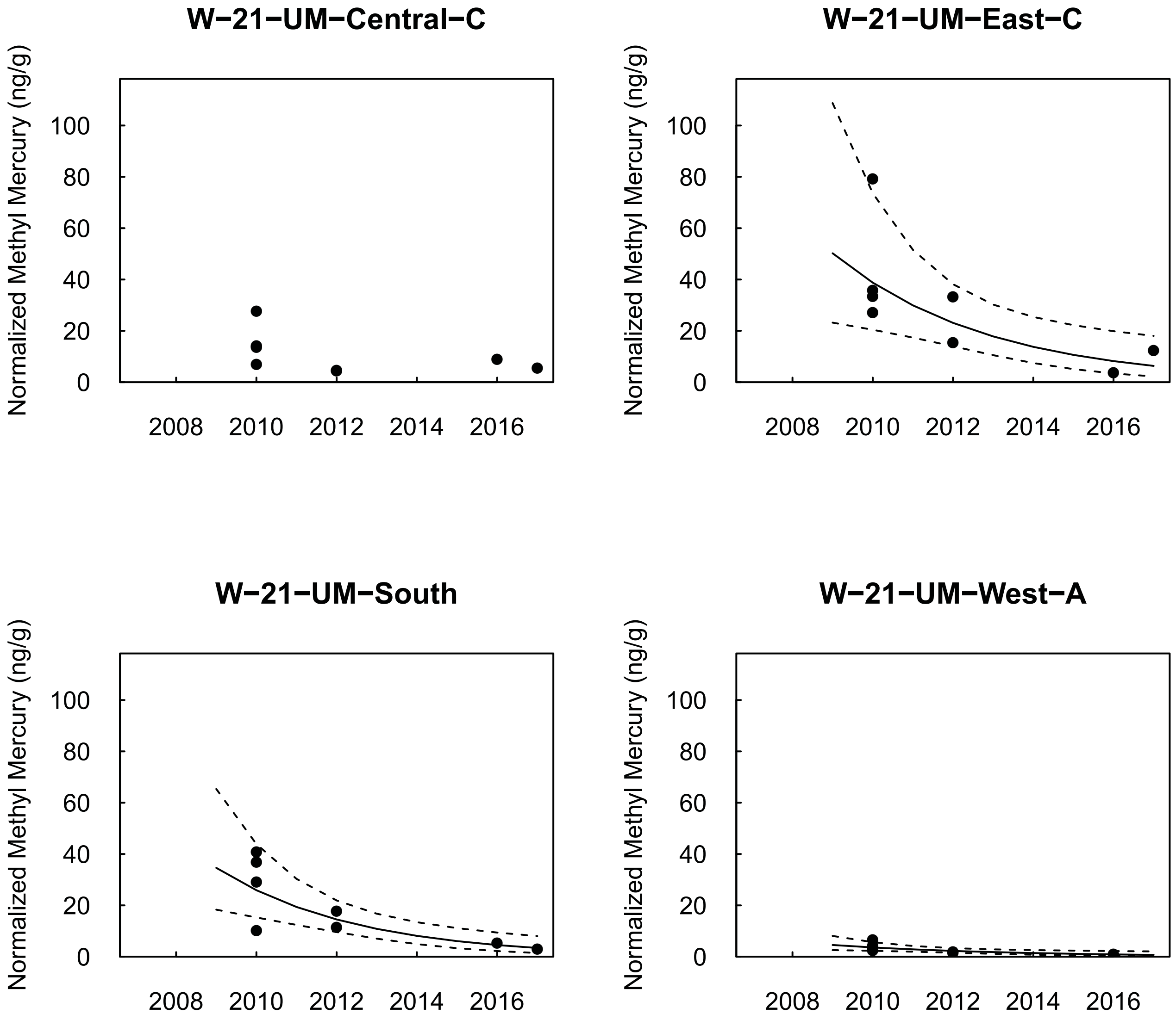
Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−30 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED METHYL MERCURY



Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

FIGURE 4−30 (cont.)
TEMPORAL MARSH PLATFORM SEDIMENT NORMALIZED METHYL MERCURY



Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of regression.
Regressions performed on log−transformed data, but data are presented un−transformed for clarity.

TABLES

TABLE 2-1
2017 SEDIMENT ANALYTICAL MATRIX

Penobscot River Phase III Engineering Study

										Sediment			
										Frontier/Eurofins		Alpha	Amec Foster Wheeler
Media	**River Reach/ Location**	**Location ID**	**Latitude/ Longitude**		**Collection Method**	**Field Sample ID**	**Sample Date**	**Analyte**		**Mercury**	**Methyl Mercury**	**Total Organic Carbon**	**Organic Content**
								Method		**1631e**	**1630**	**Lloyd-Kahn**	**ASTM D2974-C**
								Preservation		**4° C**	**Frozen**	**4° C**	**None**
								Top Depth (ft)	**Bottom Depth (ft)**				
Subtidal Sediment	Fort Point Cove	E-01-01	44.4823	-68.8281	Petite Ponar	E-01-01_072117_SED_00-03_R1	7/21/2017	0.0	0.3	1	1	1	1
						E-01-01_072117_SED_00-03_R2	7/21/2017	0.0	0.3	1	1	1	1
						E-01-01_072117_SED_00-03_R3	7/21/2017	0.0	0.3	1	1	1	1
	Upper Penobscot Bay	E-01-03	44.4826	-68.8084	Petite Ponar	E-01-03_072117_SED_00-03	7/21/2017	0.0	0.3	1	1	1	1
		E-01-04	44.4818	-68.7985	Petite Ponar	E-01-04_072117_SED_00-03_R1	7/21/2017	0.0	0.3	1	1	1	1
						E-01-04_072117_SED_00-03_R2	7/21/2017	0.0	0.3	1	1	1	1
						E-01-04_072117_SED_00-03_R3	7/21/2017	0.0	0.3	1	1	1	1
	Sears Island	ES-04	44.4544	-68.8940	Petite Ponar	ES-04_072817_SED_00-03	7/28/2017	0.0	0.3	1	1	1	1
Intertidal Sediment	Addison River*	ADD-02	44.6431	-67.7196	Push Core	ADD-02_072417_SED_00-01	7/24/2017	0.0	0.1	1	1	1	1
						ADD-02_072417_SED_01-03	7/24/2017	0.1	0.3	1	1	1	1
						ADD-02_072517_SED_03-05	7/25/2017	0.3	0.5	1		1	1
						ADD-02_072517_SED_05-10	7/25/2017	0.5	1	1		1	1
	Veazie	OV-01	44.8564	-68.6797	Petite Ponar	OV-01_072617_SED_00-03	7/26/2017	0.0	0.3	1	1	1	1
		OV-02	44.8376	-68.7015	Petite Ponar	OV-02_072617_SED_00-03	7/26/2017	0.0	0.3	1	1	1	1
		OV-04	44.8759	-68.6737	Push Core	OV-04_081517_SED_00-01	8/15/2017	0.0	0.1	1	1	1	1
						OV-04_081517_SED_01-03	8/15/2017	0.1	0.3	1	1	1	1
						OV-04_081717_SED_03-05	8/17/2017	0.3	0.5	1		1	1
						No volume for 0.5-1.0' samples							
	Bangor	BO-05	44.7628	-68.8013	Push Core	BO-05_072517_SED_00-01	7/25/2017	0.0	0.1	1	1	1	1
						BO-05_072517_SED_01-03	7/25/2017	0.1	0.3	1	1	1	1
						BO-05_072617_SED_03-05	7/26/2017	0.3	0.5	1		1	1
						BO-05_072617_SED_05-10	7/26/2017	0.5	1	1		1	1
	Orrington	OB-05	44.7063	-68.8379	Push Core	OB-05_080117_SED_00-01_R1	8/1/2017	0.0	0.1	1	1	1	1
						OB-05_080117_SED_00-01_R2	8/1/2017	0.0	0.1	1		1	1
						OB-05_080117_SED_00-01_R3	8/1/2017	0.0	0.1	1		1	1
						OB-05_080117_SED_01-03	8/1/2017	0.1	0.3	1	1	1	1
						OB-05_080317_SED_03-05	8/3/2017	0.3	0.5	1		1	1
						OB-05_080317_SED_05-10	8/3/2017	0.5	1	1		1	1
		W-63-Intertidal	44.7089	-68.8389	Push Core	W-63-Int_072517_SED_00-01	7/25/2017	0.0	0.1	1	1	1	1
						W-63-Int_072517_SED_01-03	7/25/2017	0.1	0.3	1	1	1	1
						W-63-Int_072617_SED_03-05	7/26/2017	0.3	0.5	1		1	1
						W-63-Int_072617_SED_05-10	7/26/2017	0.5	1	1		1	1
	Frankfort Flats	W-17-Intertidal	44.6185	-68.8558	Push Core	W-17-Intertidal_072517_SED_00-01	7/25/2017	0.0	0.1	1	1	1	1
						W-17-Intertidal_072517_SED_01-03	7/25/2017	0.1	0.3	1	1	1	1
						W-17-INTERTIDAL_072617_SED_03-05	7/26/2017	0.3	0.5	1		1	1
						W-17-INTERTIDAL_072617_SED_05-10_R1	7/26/2017	0.5	1	1		1	1
						W-17-INTERTIDAL_072617_SED_05-10_R2	7/26/2017	0.5	1	1		1	1
						W-17-INTERTIDAL_072617_SED_05-10_R3	7/26/2017	0.5	1	1		1	1

TABLE 2-1
2017 SEDIMENT ANALYTICAL MATRIX

Penobscot River Phase III Engineering Study

Media	River Reach/ Location	Location ID	Latitude/ Longitude		Collection Method	Field Sample ID	Sample Date			Sediment			
										Frontier/Eurofins		Alpha	Amec Foster Wheeler
									Analyte	Mercury	Methyl Mercury	Total Organic Carbon	Organic Content
									Method	1631e	1630	Lloyd-Kahn	ASTM D2974-C
									Preservation	4° C	Frozen	4° C	None
								Top Depth (ft)	Bottom Depth (ft)				
Intertidal Sediment	Mendall Marsh	W-65-Intertidal	44.5848	-68.8591	Push Core	W-65-Intertidal_072517_SED_00-01	7/25/2017	0.0	0.1	1	1	1	1
						W-65-Intertidal_072517_SED_01-03	7/25/2017	0.1	0.3	1	1	1	1
						W-65-INTERTIDAL_072617_SED_03-05	7/26/2017	0.3	0.5	1		1	1
						No volume for 0.5-1.0' samples		0.5	1				
		W-21-Intertidal	44.5808	-68.8573	Push Core	W-21-Intertidal_072517_SED_00-01	7/25/2017	0.0	0.1	1	1	1	1
						W-21-Intertidal_072517_SED_01-03	7/25/2017	0.1	0.3	1	1	1	1
						W-21-INTERTIDAL_072617_SED_03-05	7/26/2017	0.3	0.5	1		1	1
						W-21-INTERTIDAL_072617_SED_05-10	7/26/2017	0.5	1	1		1	1
	Verona Northeast	ES-02	44.5397	-68.7657	Petite Ponar	ES-02_073117_SED_00-03	7/31/2017	0.0	0.3	1	1	1	1
	Verona East	ES-13	44.5053	-68.7715	Push Core	ES-13_081517_SED_00-01	8/15/2017	0.0	0.1	1	1	1	1
						ES-13_081517_SED_01-03	8/15/2017	0.1	0.3	1	1	1	1
						ES-13_081717_SED_03-05	8/17/2017	0.3	0.5	1		1	1
						No volume for 0.5-1.0' samples							
		W-61-Intertidal	44.5056	-68.7725	Push Core	W-61-Intertidal_072417_SED_00-01	7/24/2017	0.0	0.1	1	1	1	1
						W-61-Intertidal_072417_SED_01-03	7/24/2017	0.1	0.3	1	1	1	1
						W-61-Intertidal_072517_SED_03-05	7/25/2017	0.3	0.5	1		1	1
						W-61-Intertidal_072517_SED_05-10	7/25/2017	0.5	1	1		1	1
Marsh Platform Sediment	Orrington	W-63-High	44.7091	-68.8381	Slide Hammer	W-63-High_071817_SED_00-01	7/18/2017	0.0	0.1	1	1	1	1
						W-63-High_071817_SED_01-03	7/18/2017	0.1	0.3	1	1	1	1
						W-63-High_071917_SED_03-05	7/19/2017	0.3	0.5	1		1	1
						W-63-HIGH_071917_SED_05-10	7/19/2017	0.5	1	1		1	1
		W-63-Mid	44.7092	-68.8381	Slide Hammer	W-63-Mid_071817_SED_00-01	7/18/2017	0.0	0.1	1	1	1	1
						W-63-Mid_071817_SED_01-03	7/18/2017	0.1	0.3	1	1	1	1
						W-63-MID_071917_SED_03-05	7/19/2017	0.3	0.5	1		1	1
						W-63-MID_071917_SED_05-10	7/19/2017	0.5	1	1		1	1
		W-63-Low	44.7091	-68.8385	Push Core	W-63-Low_080117_SED_00-01_R1	8/1/2017	0.0	0.1	1	1	1	1
						W-63-Low_080117_SED_00-01_R2	8/1/2017	0.0	0.1	1	1	1	1
						W-63-Low_080117_SED_00-01_R3	8/1/2017	0.0	0.1	1	1	1	1
						W-63-Low_080117_SED_01-03	8/1/2017	0.1	0.3	1	1	1	1
						W-63-Low_080317_SED_03-05	8/3/2017	0.3	0.5	1		1	1
						W-63-Low_080317_SED_05-10	8/3/2017	0.5	1	1		1	1
	Frankfort Flats	W-17-High	44.6187	-68.8567	Slide Hammer	W-17-High_072417_SED_00-01	7/24/2017	0.0	0.1	1	1	1	1
						W-17-High_072417_SED_01-03	7/24/2017	0.1	0.3	1	1	1	1
						W-17-High_072517_SED_03-05	7/25/2017	0.3	0.5	1		1	1
						W-17-High_072517_SED_05-10	7/25/2017	0.5	1	1		1	1
		W-17-Mid	44.6187	-68.8564	Slide Hammer	W-17-Mid_071817_SED_00-01	7/18/2017	0.0	0.1	1	1	1	1
						W-17-Mid_071817_SED_01-03	7/18/2017	0.1	0.3	1	1	1	1
						W-17-Mid_071917_SED_03-05	7/19/2017	0.3	0.5	1		1	1
						W-17-Mid_071917_SED_05-10	7/19/2017	0.5	1	1		1	1

TABLE 2-1
2017 SEDIMENT ANALYTICAL MATRIX

Penobscot River Phase III Engineering Study

										Sediment			
										Frontier/Eurofins		Alpha	Amec Foster Wheeler
Media	**River Reach/ Location**	**Location ID**	**Latitude/ Longitude**		**Collection Method**	**Field Sample ID**	**Sample Date**		**Analyte**	**Mercury**	**Methyl Mercury**	**Total Organic Carbon**	**Organic Content**
									Method	**1631e**	**1630**	**Lloyd-Kahn**	**ASTM D2974-C**
									Preservation	**4° C**	**Frozen**	**4° C**	**None**
								Top Depth (ft)	**Bottom Depth (ft)**				
Marsh Platform Sediment	Frankfort Flats	W-17-Low	44.6186	-68.8563	Slide Hammer	W-17-Low_071817_SED_00-01	7/18/2017	0.0	0.1	1	1	1	1
						W-17-Low_071817_SED_01-03	7/18/2017	0.1	0.3	1	1	1	1
						W-17-Low_071917_SED_03-05	7/19/2017	0.3	0.5	1		1	1
						W-17-Low_071917_SED_05-10	7/19/2017	0.5	1	1		1	1
	Mendall Marsh	W-21-High	44.5807	-68.8585	Slide Hammer	W-21-High_072517_SED_00-01	7/25/2017	0.0	0.1	1	1	1	1
						W-21-High_072517_SED_01-03	7/25/2017	0.1	0.3	1	1	1	1
						W-21-HIGH_072617_SED_03-05	7/26/2017	0.3	0.5	1		1	1
						W-21-HIGH_072617_SED_05-10	7/26/2017	0.5	1	1		1	1
		W-21-Mid	44.5808	-68.8578	Slide Hammer	W-21-Mid_072517_SED_00-01	7/25/2017	0.0	0.1	1	1	1	1
						W-21-Mid_072517_SED_01-03	7/25/2017	0.1	0.3	1	1	1	1
						W-21-MID_072617_SED_03-05	7/26/2017	0.3	0.5	1		1	1
						W-21-MID_072617_SED_05-10	7/26/2017	0.5	1	1		1	1
		W-21-Low	44.5810	-68.8578	Slide Hammer	W-21-Low_072517_SED_00-01	7/25/2017	0.0	0.1	1	1	1	1
						W-21-Low_072517_SED_01-03	7/25/2017	0.1	0.3	1	1	1	1
						W-21-LOW_072617_SED_03-05	7/26/2017	0.3	0.5	1		1	1
						W-21-LOW_072617_SED_05-10	7/26/2017	0.5	1	1		1	1
		W-21-UM-Central-C	44.5803	-68.8609	Slide Hammer	W-21-UM-Central-C_071817_SED_00-01	7/18/2017	0.0	0.1	1	1	1	1
						W-21-UM-Central-C_071817_SED_01-03	7/18/2017	0.1	0.3	1	1	1	1
						W-21-UM-CENTRAL-C_071917_SED_03-05	7/19/2017	0.3	0.5	1		1	1
						W-21-UM-CENTRAL-C_071917_SED_05-10	7/19/2017	0.5	1	1		1	1
		W-21-UM-East-C	44.5806	-68.8577	Slide Hammer	W-21-UM-Central-E_072517_SED_00-01	7/25/2017	0.0	0.1	1	1	1	1
						W-21-UM-Central-E_072517_SED_01-03	7/25/2017	0.1	0.3	1	1	1	1
						W-21-UM-Central-E_072617_SED_03-05	7/26/2017	0.3	0.5	1		1	1
						W-21-UM-Central-E_072617_SED_05-10	7/26/2017	0.5	1	1		1	1
		W-21-UM-South	44.5565	-68.8584	Slide Hammer	W-21-UM-South_080117_SED_00-01	8/1/2017	0.0	0.1	1	1	1	1
						W-21-UM-South_080117_SED_01-03	8/1/2017	0.1	0.3	1	1	1	1
						W-21-UM-South_080317_SED_03-05	8/3/2017	0.3	0.5	1		1	1
						W-21-UM-South_080317_SED_05-10	8/3/2017	0.5	1	1		1	1
		W-21-UM-West-A	44.5808	-68.8615	Slide Hammer	W-21-UM-West-A_072517_SED_00-01	7/25/2017	0.0	0.1	1	1	1	1
						W-21-UM-West-A_072517_SED_01-03	7/25/2017	0.1	0.3	1	1	1	1
						No volume for 0.3-0.5' samples							
						No volume for 0.5-1.0' samples							
		W-65-High	44.5855	-68.8574	Slide Hammer	W-65-High_071817_SED_00-01	7/18/2017	0.0	0.1	1	1	1	1
						W-65-High_071817_SED_01-03	7/18/2017	0.1	0.3	1	1	1	1
						W-65-High_071917_SED_03-05	7/19/2017	0.3	0.5	1		1	1
						W-65-HIGH_071917_SED_05-10	7/19/2017	0.5	1	1		1	1
		W-65-Mid	44.5855	-68.8579	Slide Hammer	W-65-Mid_071817_SED_00-01	7/18/2017	0.0	0.1	1	1	1	1
						W-65-Mid_071817_SED_01-03	7/18/2017	0.1	0.3	1	1	1	1
						W-65-Mid_071917_SED_03-05	7/19/2017	0.3	0.5	1		1	1
						W-65-Mid_071917_SED_05-10	7/19/2017	0.5	1	1		1	1

TABLE 2-1
2017 SEDIMENT ANALYTICAL MATRIX

Penobscot River Phase III Engineering Study

										Sediment			
										Frontier/Eurofins		Alpha	Amec Foster Wheeler
Media	River Reach/ Location	Location ID	Latitude/ Longitude		Collection Method	Field Sample ID	Sample Date		Analyte	Mercury	Methyl Mercury	Total Organic Carbon	Organic Content
									Method	1631e	1630	Lloyd-Kahn	ASTM D2974-C
									Preservation	4° C	Frozen	4° C	None
								Top Depth (ft)	Bottom Depth (ft)				
Marsh Platform Sediment	Mendall Marsh	W-65-Low	44.5850	-68.8591	Slide Hammer	W-65-Low_071817_SED_00-01	7/18/2017	0.0	0.1	1	1	1	1
						W-65-Low_071817_SED_01-03	7/18/2017	0.1	0.3	1	1	1	1
						W-65-Low_071917_SED_03-05	7/19/2017	0.3	0.5	1		1	1
						W-65-LOW_071917_SED_05-10	7/19/2017	0.5	1	1		1	1
	Verona East	W-61-High	44.5059	-68.7729	Slide Hammer	W-61-High_072417_SED_00-01	7/24/2017	0.0	0.1	1	1	1	1
						W-61-High_072417_SED_01-03	7/24/2017	0.1	0.3	1	1	1	1
						W-61-HIGH_072517_SED_03-05	7/25/2017	0.3	0.5	1		1	1
						W-61-High_072517_SED_05-10	7/25/2017	0.5	1	1		1	1
		W-61-Mid	44.5059	-68.7728	Slide Hammer	W-61-Mid_072417_SED_00-01	7/24/2017	0.0	0.1	1	1	1	1
						W-61-Mid_072417_SED_01-03	7/24/2017	0.1	0.3	1	1	1	1
						W-61-Mid_072517_SED_03-05	7/25/2017	0.3	0.5	1		1	1
						W-61-Mid_072517_SED_05-10	7/25/2017	0.5	1	1		1	1
		W-61-Low	44.5059	-68.7728	Push Core	W-61-Low_072417_SED_00-01	7/24/2017	0.0	0.1	1	1	1	1
						W-61-Low_072417_SED_01-03	7/24/2017	0.1	0.3	1	1	1	1
						W-61-Low_072517_SED_03-05	7/25/2017	0.3	0.5	1		1	1
						W-61-Low_072517_SED_05-10	7/25/2017	0.5	1	1		*	*

Notes

* = Reference location
Triple replicates are indicated by field sample IDs ending in R1, R2, and R3.
MS/MSD samples were collected at a rate of one per 20 field samples.

Prepared by: MKM 12/11/2017
Checked by: BPW 12/12/2017

TABLE 2-2
2017 WATER QUALITY MONITORING ANALYTICAL MATRIX

Penobscot River Phase III Engineering Study

					Surface Water								
				Analyte	**Mercury**		**Methyl Mercury**		**TOC**	**DOC**	**TSS**	**SSC**	**Salinity/pH/Temp/ Cond/DO/ORP**
				Method	**Total Unfiltered 1631e**	**Dissolved Field Filtered 1631e**	**Total Unfiltered 1630**	**Dissolved Field Filtered 1630**	**Total Unfiltered SW-846 9060**	**Dissolved Field Filtered SW-846 9060**	**Modified Method 2450D**	**Total Unfiltered D3977-97B**	**YSI 556**
Location ID	**Latitude/ Longitude**		**Field Sample ID**	**Preservation**	**4° C**	**4° C**	**H_2SO_4/4° C**	**H_2SO_4/4° C**	**H_2SO_4/4° C**	**H_2SO_4/4° C**	**4° C**	**4° C**	**N/A**
				Sample Date									
OV-02	44.8373	-68.7016	OV-02_041917_SW_10_R1	4/19/2017	1	1	1	1	1	1	1		1
			OV-02_041917_SW_10_R2		1	1	1	1	1	1	1		1
			OV-02_041917_SW_10_R3		1	1	1	1	1	1	1		1
OV-02	44.8374	-68.7016	OV-02_050817_SW_10_R1	5/8/2017	1	1	1	1	1	1	1	1	1
			OV-02_050817_SW_10_R2		1	1	1	1	1	1	1	1	1
			OV-02_050817_SW_10_R3		1	1	1	1	1	1	1	1	1
QC	44.8431	-68.6965	TURB_050817_SW_50_R1	5/8/2017							1	1	
			TURB_050817_SW_50_R2								1	1	
			TURB_050817_SW_50_R3								1	1	
OV-02	44.8372	-68.7015	OV-02_052417_SW_10_R1	5/24/2017	1	1	1	1	1	1	1	1	1
			OV-02_052417_SW_10_R2		1	1	1	1	1	1	1	1	1
			OV-02_052417_SW_10_R3		1	1	1	1	1	1	1	1	1

Notes:
1. A 0.45 micron disposable filter was used for field filtration

Abbreviations:
C = Celsius
DO = Dissolved Oxygen
DOC = Dissolved Organic Content
L = Liter
mL = Milliliter
N/A = Not applicable
ORP = Oxidation Reduction Potential
SSC = Suspended Sediment Concentration
Temp = Temperature
TOC = Total Organic Carbon
TSS = Total Suspended Solids

Prepared by: BPW 12/08/17
Checked by: DRP 12/11/17

TABLE 3-1
2017 SEDIMENT MONITORING ANALYTICAL RESULTS

Penobscot River Phase III Engineering Study

						Parameter	Mercury		Methyl Mercury		Percent Methyl Mercury	Percent Solids		Organic Content at 550 C		Total Organic Carbon		USCS Visual Classification
						Units	ng/g		ng/g		Percent	Percent		Percent		Percent		
Media	**River Reach/ Location**	**Location ID**	**Field Sample ID**	**Sample Date**	**Top Depth (ft)**	**Bottom Depth (ft)**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**
Subtidal Sediment	Fort Point Cove	E-01-01	E-01-01_072117_SED_00-03	7/21/2017	0	0.3	612	Z	9.1	Z	1.5	32.8	JZ	12.5	Z	4.94	Z	OL
	Upper Penobscot Bay	E-01-03	E-01-03_072117_SED_00-03	7/21/2017	0	0.3	475		4.1		0.9	42.9	J	8.50		3.30		OL
		E-01-04	E-01-04_072117_SED_00-03	7/21/2017	0	0.3	293	Z	2.3	JZ	0.8	52.5	JZ	6.70	Z	2.47	Z	CL
	Sears Island	ES-04	ES-04_072817_SED_00-03	7/28/2017	0	0.3	266		3.0	J	1.1	35.8	J	8.30		3.76		CL
Intertidal Sediment	Addison River*	ADD-02	ADD-02_072417_SED_00-01	7/24/2017	0	0.1	35.1		4.0	U	(-)	41.0	J	7.70		2.81		CL
			ADD-02_072417_SED_01-03	7/24/2017	0.1	0.3	35.8		4.3	U	(-)	44.6	J	23.6		3.06		CL
			ADD-02_072517_SED_03-05	7/25/2017	0.3	0.5	35.9	J	(-)		(-)	48.2	J	9.10		0.05	U	OL
			ADD-02_072517_SED_05-10	7/25/2017	0.5	1	33.0		(-)		(-)	55.7	J	7.20		3.07		OL
	Veazie	OV-01	OV-01_072617_SED_00-03	7/26/2017	0	0.3	16.1		2.1	U	(-)	83.1	J	2.90		0.15		SM
		OV-02	OV-02_072617_SED_00-03	7/26/2017	0	0.3	11.4		2.0	U	(-)	85.1	J	0.90		0.15		SM
		OV-04	OV-04_081517_SED_00-01	8/15/2017	0	0.1	81.6		0.6	J	0.7	36.0	J	15.9		5.67		OL
			OV-04_081517_SED_01-03	8/15/2017	0.1	0.3	109		0.4	U	(-)	36.3	J	18.3		7.58		OL
			OV-04_081717_SED_03-05	8/17/2017	0.3	0.5	90.5		(-)		(-)	38.2	J	17.8		7.18		OL
	Bangor	BO-05	BO-05_072517_SED_00-01	7/25/2017	0	0.1	191	J	4.5	J	2.4	40.7	J	9.80		4.61		CL
			BO-05_072517_SED_01-03	7/25/2017	0.1	0.3	70.9		1.5	J	2.1	58.5	J	8.20		2.73		SM
			BO-05_072617_SED_03-05	7/26/2017	0.3	0.5	30.6		(-)		(-)	77.5	J	2.00		1.05		SM
			BO-05_072617_SED_05-10	7/26/2017	0.5	1	97.8		(-)		(-)	75.8	J	2.70		1.30		SC
	Orrington	OB-05	OB-05_080117_SED_00-01	8/1/2017	0	0.1	1,080		5.7		0.5	26.7	J	16.0		7.58		CL
			OB-05_080117_SED_01-03	8/1/2017	0.1	0.3	913		5.8		0.6	39.0	J	13.6		6.67		CL
			OB-05_080317_SED_03-05	8/3/2017	0.3	0.5	1,000		(-)		(-)	38.4	J	16.1		8.16		SC
			OB-05_080317_SED_05-10	8/3/2017	0.5	1	1,627	Z	(-)		(-)	37.8	JZ	17.6	Z	6.49	JZ	SC
		W-63-Intertidal	W-63-INT_072517_SED_00-01	7/25/2017	0	0.1	1,280		22.4		1.8	22.1	JZ	19.9		8.72	Z	CL
			W-63-INT_072517_SED_01-03	7/25/2017	0.1	0.3	1,080		15.1		1.4	32.4	J	17.6		8.24		CL
			W-63-INT_072617_SED_03-05	7/26/2017	0.3	0.5	962		(-)		(-)	41.9	J	17.9		9.41		CL
			W-63-INT_072617_SED_05-10	7/26/2017	0.5	1	2,190	Z	(-)		(-)	36.4	JZ	23.6		11.3	Z	CL
	Frankfort Flats	W-17-Intertidal	W-17-Intertidal_072517_SED_00-01	7/25/2017	0	0.1	510		4.1		0.8	57.4	J	7.30		2.65		CL
			W-17-Intertidal_072517_SED_01-03	7/25/2017	0.1	0.3	583		5.7		1.0	46.2	J	12.4		4.81		CL
			W-17-Intertidal_072617_SED_03-05	7/26/2017	0.3	0.5	637		(-)		(-)	46.2	J	10.0		5.03		CL
			W-17-Intertidal_072617_SED_05-10	7/26/2017	0.5	1	1,520		(-)		(-)	46.6	J	10.3		5.07		CL
	Mendall Marsh	W-65-Intertidal	W-65-Intertidal_072517_SED_00-01	7/25/2017	0	0.1	571		5.3		0.9	39.4	J	11.7		4.65		CL
			W-65-Intertidal_072517_SED_01-03	7/25/2017	0.1	0.3	174		1.5	J	0.9	58.0	J	7.20		3.13		CL
			W-65-Intertidal_072617_SED_03-05	7/26/2017	0.3	0.5	32.1		(-)		(-)	57.7	J	6.40		2.84		OL
		W-21-Intertidal	W-21-Intertidal_072517_SED_00-01	7/25/2017	0	0.1	827		3.4		0.4	35.1	J	14.9		6.93		CL
			W-21-Intertidal_072517_SED_01-03	7/25/2017	0.1	0.3	730		3.1		0.4	42.7	J	13.1		6.47		SC
			W-21-Intertidal_072617_SED_03-05	7/26/2017	0.3	0.5	807		(-)		(-)	44.5	J	11.8		6.76		SC
			W-21-Intertidal_072617_SED_05-10	7/26/2017	0.5	1	734		(-)		(-)	49.8	J	9.70		4.80		SC

TABLE 3-1
2017 SEDIMENT MONITORING ANALYTICAL RESULTS

Penobscot River Phase III Engineering Study

						Parameter	Mercury		Methyl Mercury		Percent Methyl Mercury	Percent Solids		Organic Content at 550 C		Total Organic Carbon		USCS Visual Classification
						Units	ng/g		ng/g		Percent	Percent		Percent		Percent		
Media	**River Reach/ Location**	**Location ID**	**Field Sample ID**	**Sample Date**	**Top Depth (ft)**	**Bottom Depth (ft)**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**
Intertidal Sediment	Verona Northeast	ES-02	ES-02_073117_SED_00-03	7/31/2017	0	0.3	683		11.0		1.6	37.3	J	12.7		6.01		SM
	Verona East	ES-13	ES-13_081517_SED_00-01	8/15/2017	0	0.1	702		6.9		1.0	43.2	J	11.2		3.90		CL
			ES-13_081517_SED_01-03	8/15/2017	0.1	0.3	637		7.7		1.2	47.6	J	9.20		4.32		CL
			ES-13_081717_SED_03-05	8/17/2017	0.3	0.5	476		(-)		(-)	49.6	J	10.8		5.62		SC
		W-61-Intertidal	W-61-Intertidal_072417_SED_00-01	7/24/2017	0	0.1	343		5.3		1.5	58.4	J	7.50		2.44		OL
			W-61-Intertidal_072417_SED_01-03	7/24/2017	0.1	0.3	512		7.6		1.5	53.5	J	8.80		3.35		SC
			W-61-Intertidal_072517_SED_03-05	7/25/2017	0.3	0.5	639		(-)		(-)	53.7	J	(+)		3.75		(+)
			W-61-Intertidal_072517_SED_05-10	7/25/2017	0.5	1	472		(-)		(-)	58.3	J	(+)		(+)		(+)
Marsh Platform Sediment	Orrington	W-63-High	W-63-High_071817_SED_00-01	7/18/2017	0	0.1	209		5.4		2.6	61.3	J	8.30		3.85		CL
			W-63-High_071817_SED_01-03	7/18/2017	0.1	0.3	168		1.7	J	1.0	71.7	J	5.30		2.72		SM
			W-63-High_071917_SED_03-05	7/19/2017	0.3	0.5	351		(-)		(-)	66.5	J	7.80		3.52		SC
			W-63-High_071917_SED_05-10	7/19/2017	0.5	1	65.3		(-)		(-)	76.8	J	3.80		1.01		SC
		W-63-Mid	W-63-Mid_071817_SED_00-01	7/18/2017	0	0.1	839		19.9		2.4	39.3	J	15.6		7.15		CL
			W-63-Mid_071817_SED_01-03	7/18/2017	0.1	0.3	786		11.5		1.5	37.8	J	17.0		8.63		SC
			W-63-Mid_071917_SED_03-05	7/19/2017	0.3	0.5	1,240		(-)		(-)	40.4	J	17.5		8.35		SC
			W-63-Mid_071917_SED_05-10	7/19/2017	0.5	1	986		(-)		(-)	44.8	J	15.8		8.02		OL
		W-63-Low	W-63-Low_080117_SED_00-01	8/1/2017	0	0.1	906	Z	7.6	JZ	0.8	28.2	JZ	17.9	Z	8.89	Z	CL
			W-63-Low_080117_SED_01-03	8/1/2017	0.1	0.3	824		8.2		1.0	35.6	J	19.4		9.08		CL
			W-63-Low_080317_SED_03-05	8/3/2017	0.3	0.5	1,240		(-)		(-)	41.3	J	17.0		10.8		OL
			W-63-Low_080317_SED_05-10	8/3/2017	0.5	1	1,250		(-)		(-)	41.0	J	18.0		10.0		OL
	Frankfort Flats	W-17-High	W-17-High_072417_SED_00-01	7/24/2017	0	0.1	513		33.7		6.6	28.9	J	40.0		18.7		OL
			W-17-High_072417_SED_01-03	7/24/2017	0.1	0.3	595		7.6		1.3	28.7	J	52.9		21.5		OL
			W-17-High_072517_SED_03-05	7/25/2017	0.3	0.5	1,780		(-)		(-)	26.9	J	41.7		23.4		OL
			W-17-High_072517_SED_05-10	7/25/2017	0.5	1	620		(-)		(-)	28.0	J	38.4		23.6		OL
		W-17-Mid	W-17-Mid_071817_SED_00-01	7/18/2017	0	0.1	592		18.7		3.2	31.4	J	31.6		18.0	J	CL
			W-17-Mid_071817_SED_01-03	7/18/2017	0.1	0.3	946		8.3		0.9	29.8	J	32.8		14.8		OL
			W-17-Mid_071917_SED_03-05	7/19/2017	0.3	0.5	1,930		(-)		(-)	27.8	J	39.5		15.5		CL
			W-17-Mid_071917_SED_05-10	7/19/2017	0.5	1	3,220		(-)		(-)	25.5	J	39.6		19.3		SC
		W-17-Low	W-17-Low_071817_SED_00-01	7/18/2017	0	0.1	620		17.1		2.8	35.8	J	21.3		9.92		CL
			W-17-Low_071817_SED_01-03	7/18/2017	0.1	0.3	745		5.1	J	0.7	33.2	J	23.7		11.8		OL
			W-17-Low_071917_SED_03-05	7/19/2017	0.3	0.5	1,440		(-)		(-)	33.2	J	25.8		11.9		SC
			W-17-Low_071917_SED_05-10	7/19/2017	0.5	1	3,890		(-)		(-)	33.5	J	24.1		14.1		OL
	Mendall Marsh	W-21-High	W-21-High_072517_SED_00-01	7/25/2017	0	0.1	206		7.2		3.5	27.2	J	35.1		14.6		OL
			W-21-High_072517_SED_01-03	7/25/2017	0.1	0.3	511		1.3	J	0.3	23.1	J	44.7		20.4		OL
			W-21-High_072617_SED_03-05	7/26/2017	0.3	0.5	1,390		(-)		(-)	23.8	J	34.9		16.7		OL
			W-21-High_072617_SED_05-10	7/26/2017	0.5	1	183		(-)		(-)	28.7	J	20.6		10.8		OL

TABLE 3-1
2017 SEDIMENT MONITORING ANALYTICAL RESULTS

Penobscot River Phase III Engineering Study

						Parameter	Mercury		Methyl Mercury		Percent Methyl Mercury	Percent Solids		Organic Content at 550 C		Total Organic Carbon		USCS Visual Classifi-cation
						Units	ng/g		ng/g		Percent	Percent		Percent		Percent		
Media	**River Reach/ Location**	**Location ID**	**Field Sample ID**	**Sample Date**	**Top Depth (ft)**	**Bottom Depth (ft)**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**
Marsh Platform Sediment	Mendall Marsh	W-21-Mid	W-21-Mid_072517_SED_00-01	7/25/2017	0	0.1	515		3.3		0.6	33.5	J	7.90		11.7		OL
			W-21-Mid_072517_SED_01-03	7/25/2017	0.1	0.3	670		4.2		0.6	33.0	J	29.1		12.3		OL
			W-21-Mid_072617_SED_03-05	7/26/2017	0.3	0.5	1,390		(-)		(-)	30.1	J	26.5		14.2		OL
			W-21-Mid_072617_SED_05-10	7/26/2017	0.5	1	2,660		(-)		(-)	31.4	J	26.3		14.0		OL
		W-21-Low	W-21-Low_072517_SED_00-01	7/25/2017	0	0.1	804		7.2		0.9	38.6	J	20.6		8.89		OL
			W-21-Low_072517_SED_01-03	7/25/2017	0.1	0.3	771		2.9		0.4	40.1	J	20.0		9.00		OL
			W-21-Low_072617_SED_03-05	7/26/2017	0.3	0.5	1,010		(-)		(-)	42.1	J	19.2		12.4	J	OL
			W-21-Low_072617_SED_05-10	7/26/2017	0.5	1	2600		(-)		(-)	38.1	J	21.9		8.63	J	OL
		W-21-UM-Central-C	W-21-UM-Central-C_071817_SED_00-01	7/18/2017	0	0.1	155		19.3		12.5	18.6	J	50.1		20.8		OL
			W-21-UM-Central-C_071817_SED_01-03	7/18/2017	0.1	0.3	306		11.6		3.8	18.7	J	59.7		22.3	J	OL
			W-21-UM-Central-C_071917_SED_03-05	7/19/2017	0.3	0.5	279		(-)		(-)	25.8	J	33.0		15.8		SC
			W-21-UM-Central-C_071917_SED_05-10	7/19/2017	0.5	1	28.1		(-)		(-)	27.7	J	23.3		14.5		SC
		W-21-UM-East-C	W-21-UM-East-C_072517_SED_00-01	7/25/2017	0	0.1	525		15.2		2.9	31.8	J	28.4		12.3		OL
			W-21-UM-East-C_072517_SED_01-03	7/25/2017	0.1	0.3	848		20.8		2.5	30.2	J	33.1		13.4		OL
			W-21-UM-East-C_072617_SED_03-05	7/26/2017	0.3	0.5	1,410		(-)		(-)	30.3	J	27.9		15.5		OL
			W-21-UM-East-C_072617_SED_05-10	7/26/2017	0.5	1	1,210		(-)		(-)	28.1	J	23.0		13.5		OL
		W-21-UM-South	W-21-UM-South_080117_SED_00-01	8/1/2017	0	0.1	312		3.8		1.2	29.7	J	32.4		14.9		OL
			W-21-UM-South_080117_SED_01-03	8/1/2017	0.1	0.3	605		6.2		1.0	24.0	J	34.8		16.0		OL
			W-21-UM-South_080317_SED_03-05	8/3/2017	0.3	0.5	286		(-)		(-)	30.4	J	29.7		12.7		OL
			W-21-UM-South_080317_SED_05-10	8/3/2017	0.5	1	45.4		(-)		(-)	33.7	J	22.3		12.1		OL
		W-21-UM-West-A	W-21-UM-West-A_072517_SED_00-01	7/25/2017	0	0.1	90.4		2.9		3.2	13.6	J	59.0		26.3		OL
			W-21-UM-West-A_072517_SED_01-03	7/25/2017	0.1	0.3	203		3.2	J	1.6	17.3	J	50.4		24.9		OL
		W-65-High	W-65-High_071817_SED_00-01	7/18/2017	0	0.1	259		22.2		8.6	17.8	J	54.6		21.8		OL
			W-65-High_071817_SED_01-03	7/18/2017	0.1	0.3	251		15.7		6.3	18.7	J	53.5		23.2		OL
			W-65-High_071917_SED_03-05	7/19/2017	0.3	0.5	122		(-)		(-)	23.3	J	37.5		18.8		SC
			W-65-High_071917_SED_05-10	7/19/2017	0.5	1	24.3		(-)		(-)	24.5	J	36.6		17.3		OL
		W-65-Mid	W-65-Mid_071817_SED_00-01	7/18/2017	0	0.1	350		32.6		9.3	18.7	J	58.8		20.3		OL
			W-65-Mid_071817_SED_01-03	7/18/2017	0.1	0.3	205		5.1	J	2.5	24.0	J	48.6		24.2		OL
			W-65-Mid_071917_SED_03-05	7/19/2017	0.3	0.5	23.1		(-)		(-)	30.1	J	28.0		13.8		OL
			W-65-Mid_071917_SED_05-10	7/19/2017	0.5	1	22.2		(-)		(-)	31.0	J	22.4		10.7		SC
		W-65-Low	W-65-Low_071817_SED_00-01	7/18/2017	0	0.1	623		7.8		1.3	41.2	J	24.9		10.7		CL
			W-65-Low_071817_SED_01-03	7/18/2017	0.1	0.3	1,340		4.6	J	0.3	38.1	J	18.8		8.07		OL
			W-65-Low_071917_SED_03-05	7/19/2017	0.3	0.5	970		(-)		(-)	43.9	J	30.8		11.4		SC
			W-65-Low_071917_SED_05-10	7/19/2017	0.5	1	65.6		(-)		(-)	36.1	J	25.1		13.1		SC

TABLE 3-1
2017 SEDIMENT MONITORING ANALYTICAL RESULTS

Penobscot River Phase III Engineering Study

						Parameter	Mercury		Methyl Mercury		Percent Methyl Mercury	Percent Solids		Organic Content at 550 C		Total Organic Carbon		USCS Visual Classifi-cation
						Units	ng/g		ng/g		Percent	Percent		Percent		Percent		
Media	**River Reach/ Location**	**Location ID**	**Field Sample ID**	**Sample Date**	**Top Depth (ft)**	**Bottom Depth (ft)**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**
Marsh Platform Sediment	Verona East	W-61-High	W-61-High_072417_SED_00-01	7/24/2017	0	0.1	209		10.1		4.8	28.1	J	38.9		20.4		OL
			W-61-High_072417_SED_01-03	7/24/2017	0.1	0.3	212		4.7		2.2	49.2	J	12.0		3.60		CL
			W-61-High_072517_SED_03-05	7/25/2017	0.3	0.5	99.6		(-)		(-)	70.6	J	5.30		2.05		CL
			W-61-High_072517_SED_05-10	7/25/2017	0.5	1	15.5	J	(-)		(-)	78.2	J	3.50		0.74		CL
		W-61-Mid	W-61-Mid_072417_SED_00-01	7/24/2017	0	0.1	835		39.5		4.7	23.5	J	42.4		25.6		OL
			W-61-Mid_072417_SED_01-03	7/24/2017	0.1	0.3	684		11.0		1.6	35.2	J	31.6		13.5		OL
			W-61-Mid_072517_SED_03-05	7/25/2017	0.3	0.5	679		(-)		(-)	36.0	J	28.1		16.7		OL
			W-61-Mid_072517_SED_05-10	7/25/2017	0.5	1	1,660		(-)		(-)	39.1	J	22.0		9.85		OL
		W-61-Low	W-61-Low_072417_SED_00-01	7/24/2017	0	0.1	417		9.3		2.2	29.6	J	39.4		16.4		OL
			W-61-Low_072417_SED_01-03	7/24/2017	0.1	0.3	752		21.0		2.8	33.6	J	28.9		14.4		SC
			W-61-Low_072517_SED_03-05	7/25/2017	0.3	0.5	1,150		(-)		(-)	30.5	J	23.4		13.1		OL
			W-61-Low_072517_SED_05-10	7/25/2017	0.5	1	605		(-)		(-)	33.0	J	(+)		(+)		(+)

Prepared by: DRP 12/11/2017
Checked by: LMT 12/12/2017

Notes:
1. (-) = Interval not sampled for methyl mercury; or USCS classification not conducted
2. (+) = Insufficient sample volume to conduct the analysis
3. * = Reference location
4. Data qualifiers are as follows:
   J = Reported value is estimated
   U = Reported value is non-detect
   Z = average result of three replicate sample concentrations

Abbreviations:
CL - Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
I - Intertidal
M - Marsh
ML - Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
MM - Mendall Marsh
ng/g = nanograms per gram
OL - Organic silts and organic silty clays of low plasticity
ORL - Orland River
PF - Pocket and Fringe Marshes
SC - Clayey sands, sand-silt mixtures
SM - Silty sands, sand-clay mixture

TABLE 3-2
2017 SEDIMENT MONITORING STATISTICS

Penobscot River Phase III Engineering Study

				Mercury Results (ng/g)		Methyl Mercury Results (ng/g)		% MeHg	% Solids		% OC		% TOC	
Media	**Top Depth (feet)**	**Bottom Depth (feet)**	**Count**	**Range**	**Mean[1]**	**Range**	**Mean[1]**	**Mean[1]**	**Range**	**Mean[1]**	**Range**	**Mean[1]**	**Range**	**Mean[1]**
Subtidal Sediment	0	0.3	4	266 - 612	412	2.30 - 9.10	4.60	1.10	32.8 - 52.5	41.0	6.7 - 12.5	9.0	2.47 - 4.94	3.62
Intertidal Sediment*	0	0.1	8	191 - 1,280	688	3.4-22.4	7.62	1.20	22.1 - 58.4	40.0	7.3 - 19.9	12.3	2.44 - 8.72	5.27
	0.1	0.3	8	70.9 - 1,080	598	1.5 - 15.1	6.56	1.20	32.4 - 58.5	46.1	7.2 - 17.6	11.4	2.73 - 8.24	5.08
	0.3	0.5	6	30.6 - 1,000	564	(-)	(-)	(-)	38.4 - 77.5	51.2	2 - 17.9	10.7	1.05 - 9.41	5.33
	0.5	1	6	97.8 - 2,190	1,107	(-)	(-)	(-)	36.4 - 75.8	50.8	2.7 - 23.6	12.8	1.30 - 11.3	5.79
Marsh Sediment	0	0.1	19	90.4 - 906	473	2.9 - 39.5	14.9	3.90	13.6 - 61.3	30.4	7.9 - 59	33.0	3.85 - 26.3	15.3
	0.1	0.3	19	168 - 1,340	601	1.30 - 21.0	8.1	1.70	17.3 - 71.7	32.7	5.3 - 59.7	32.4	2.72 - 24.9	14.4
	0.3	0.5	18	23.1 - 1,930	933	(-)	(-)	(-)	23.3 - 70.6	36.3	5.3 - 41.7	26.3	2.05 - 23.4	13.1
	0.5	1	18	15.5 - 3,890	1,064	(-)	(-)	(-)	24.5 - 78.2	37.7	3.5 - 39.6	22.7	0.735 - 23.6	11.8

Notes:

* - excludes background location ADD-02 and OV locations that are upstream of tidal influence.
1 - Mean values are calculated from individual data points.
% = percent
(-) = Interval not sampled for methyl mercury
mean = artithmetic mean
ng/g = nanograms per gram
Range of concentrations and mean concentrations include 0.0-0.3 ft samples in both the 0.0-0.1 ft and 0.1-0.3 ft depth intervals for intertidal sediment

Prepared by: DRP 12/14/17
Checked by: BPW 12/14/17

TABLE 3-3
2017 WATER QUALITY MONITORING ANALYTICAL RESULTS

Penobscot River Phase III Engineering Study

				Parameter	Mercury						Methyl mercury						Dissolved Organic Carbon		Total Organic Carbon		Total Suspended Solids		Suspended Sediment		Temper-ature	pH (units)	Specific Electrical Conduct-ance	DO	ORP	Turbidity	Salinity
					Dissolved		Total		Particulate		Dissolved		Total		Particulate																
				Method Code	E1631		E1631		Calc*		EPA 1630		EPA 1630		Calc*		9060A		9060A		2540D		D3977								
				Units	ng/L		ng/L		ng/g		ng/L		ng/L		ng/g		mg/L		mg/L		mg/L		mg/L		°C	units	mS/cm	mg/L	mV	NTU	ppt
Location ID	River Reach	Sample Date	Sample ID	QC Code	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Result	Result	Result	Result	Result	Result
OV-02	Veazie	04/19/17	OV-02_041917_SW_10	FS	3.43		4.87		232		0.05	U	0.08		4.8		6.6		6.6		6.2		NA		5.19	6.7	0.029	26.67	167.5	5.17	0.01
OV-02	Veazie	04/19/17	OV-02_041917_SW_DUP	FD	3.34		4.81		267		0.058		0.085		4.9		6.6		6.6		5.5		NA		5.19	6.7	0.029	26.67	167.5	5.17	0.01
OV-02	Veazie	05/08/17	OV-02_050817_SW_10	FS	3.24	J	3.62	J	131		0.093	J	0.098	J	1.7		7.1	J	6.6	J	2.9		2.7		10.09	4.76	0.034	21.10	292.9	2.77	0.01
OV-02	Veazie	05/08/17	OV-02_050817_SW_DUP	FD	3.17	J	3.86	J	223		0.101	J	0.105	J	1.3		7	J	6.5	J	3.1		2.8		10.09	4.76	0.034	21.10	292.9	2.77	0.01
OV-02	Veazie	05/24/17	OV-02_052417_SW_10	FS	2.46		2.98		242		0.126	UJ	0.141	UJ	7.0	a	6.45		6		2.2		1.9		16.79	6.97	0.037	23.25	179.7	2.30	0.02
OV-02	Veazie	05/24/17	OV-02_052417_SW_DUP	FD	2.53		2.97		210		0.128	UJ	0.143	UJ	7.1	a	6.3		6.1		2.1		2		16.79	6.97	0.037	23.25	179.7	2.30	0.02

Notes:
* Particulate Hg/MeHg concentrations (ng/g) were calculated using the following equation: Particulate Hg/MeHg Concentration (ng/g) = (Total Hg/MeHg [ng/L] - Dissolved Hg/MeHg [ng/L]) / Total Suspended Solids * 1000 mg/g
Results for dissolved and total mercury and methyl mercury, as well as DOC, TOC, TSS, and SSC are the average of field triplicate results.
°C = Degrees celsius
DO = Dissolved Oxygen
FD = field duplicate
FS = field sample
mg/L = milligrams per liter
mS/cm - Microsiemens per centimeter
mV - Millivolt
NA = Not Analyzed
ng/L = nanograms per liter
NTU = Nephelometric Turbidity Unit
ORP = Oxygen Reduction Potential
ppt = parts per trillion

Prepared by: BCG 11/15/17
Checked by: LMT 12/14/17

Flags:
a = Particulate Hg/MeHg concentration calculated using one or more non-detect surface water Hg/MeHg concentration(s); 1/2 reporting limit used for non-detect concentrations.
J = Estimated value
U = Value not detected above reporting limit

TABLE 3-4
2017 PENOBSCOT RIVER STAGE DATA - USGS GAGING STATION 01036390

Penobscot River Phase III Engineering Study

DATE	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17
1	4.09	4.49	7.24	4.62	12.01	5.17	3.74	2.57	2.42	2.67	7.9
2	3.91	4.31	7.37	4.59	11.77	4.35	4.15	2.76	2.43	2.62	6.99
3	---	4.16	7.63	4.7	12.23	4.09	4.27	2.81	2.46	2.26	6.48
4	---	4.01	7.88	4.9	12.62	4.31	4.3	2.45	2.58	2.33	6.46
5	3.91	3.86	7.7	--	12.62	4.63	3.86	2.51	2.56	2.3	6.22
6	3.9	3.78	7.25	5.12	12.23	4.68	3.64	2.51	2.79	2.36	6.1
7	3.93	3.76	6.75	5.66	11.66	4.65	3.4	2.39	2.75	2.62	6.04
8	4.03	3.82	6.38	7.87	11.23	4	3.17	2.62	3.06	2.41	6.11
9	4.15	3.88	6.24	9.49	10.43	3.32	3.18	2.56	3.41	2.4	5.76
10	4.29	6.17	6.21	9.97	10.19	3.66	3.34	2.55	3.37	2.71	5.38
11	4.07	6.72	5.94	10.73	10.16	3.43	3.69	2.48	3.23	2.99	5.13
12	4.03	5.94	5.59	12.08	10.38	3.49	4.26	2.41	3.19	3.04	4.94
13	4.44	9.6	5.31	13.26	9.86	3.66	4.05	2.42	2.85	2.96	4.65
14	4.96	12.16	5.12	13.91	8.61	3.75	3.55	2.65	2.94	3.03	4.52
15	5.31	11.67	4.87	13.76	8.39	3.77	3.59	2.64	2.89	2.93	4.35
16	5.25	10.79	4.61	13.47	9.54	3.63	3.97	2.41	2.94	2.97	4.36
17	4.91	9.83	4.55	13.8	9.54	3.52	4.09	2.39	2.77	2.96	4.34
18	4.57	8.51	4.51	14.94	9.34	3.13	3.63	2.35	2.89	2.72	4.49
19	4.44	--	4.43	14.75	8.85	3.16	3.64	2.37	2.86	2.8	4.53
20	4.36	6.46	4.37	13.74	8.49	3.38	3.26	2.33	2.7	2.73	4.9
21	4.16	5.25	4.38	12.86	8.27	4.08	3.42	2.39	2.47	2.7	5.68
22	4.05	4.56	4.29	12.27	7.57	4.71	3.3	2.52	2.59	2.65	5.65
23	4.01	4.15	4.32	11.91	6.16	4.63	3.1	2.74	2.57	2.51	5.63
24	4.04	3.89	4.55	11.45	5.37	4.37	3.02	2.72	2.95	2.67	5.88
25	4.19	4.25	4.5	10.93	4.93	4.18	3.02	2.62	3.07	2.93	5.68
26	4.6	4.74	4.49	10.56	4.63	3.9	2.86	2.56	2.74	3.53	5.42
27	5.13	6.05	4.42	11.12	5.09	3.74	2.84	2.62	2.49	6.9	5.3
28	5.19	6.93	4.44	12.12	6.39	3.63	2.82	2.49	2.48	8.93	5.02
29	5.03		4.41	12.28	6.83	3.78	2.66	2.47	2.73	8.18	4.81
30	4.82		4.43	12.30	6.38	3.57	2.48	2.29	2.64	7.47	4.63
31	4.69		4.56		5.59		2.72	2.31		7.56	
COUNT days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**
MAX Gage Ht (ft)	**5.31**	**12.16**	**7.88**	**14.94**	**12.62**	**5.17**	**4.30**	**2.81**	**3.41**	**8.93**	**7.90**
MAX Estimated Discharge (ft³/s)	14,560	57,994	28,102	81,783	61,752	13,917	10,142	4,558	6,673	34,586	28,220
MIN Gage Ht (ft)	**3.90**	**3.76**	**4.29**	**4.59**	**4.63**	**3.13**	**2.48**	**2.29**	**2.42**	**2.26**	**4.34**
MIN Estimated Discharge (ft³/s)	8,534	7,990	10,101	11,358	11,529	5,664	3,472	2,871	3,280	2,778	10,308

Gage Height (ft)	River Flow* (ft³/s)
2	2891
2.5	3614
3	4337
3.5	6594
4	8904
4.5	10811
5	13481
5.5	14829
6	17865
6.5	21180
7	22810
7.5	26546
8	28316
8.5	32472
9	34382
9.5	38960
10	41010
10.5	46008
11	48199
11.5	53618
12	55949
12.5	61788
13	64260
13.5	72854
14	75552
15	82180
16	88808
17	95436
18	102064
19	108692
20	115320
21	121948
22	128576
23	135203
24	141831
25	148459
26	155087
27	161715

Notes:
Flow rate = Channel area (ft²) *river velocity (ft/s)
ft - Feet
s - Second
ft³/s - Cubic Feet Per Second
* - estimated on historical USGS river measurements
Blue shaded cells represent days when monthly surface water monitoring was conducted

Data Source:
http://waterdata.usgs.gov/usa/nwis/uv?01036390; data is provisional and subject to revision
USGS Gauging Station 01036390 Penobscot River at Eddington, Maine Coordinates: Lat. 44°49'36", Long. 68°41'48" (NAD83)

Prepared by: TNG 12/11/2017
Checked by: LMT 12/11/2017

TABLE 3-5
2017 TURBIDITY DATA

Penobscot River Phase III Engineering Study

DATE	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17
1	0.009	0.045	10.470	3.158	--	17.994	0.160	0.599	0.083	0.113	
2	0.025	0.002	7.366	1.803	--	16.770	0.163	1.108	0.075	0.041	
3	0.154	0.002	10.950	1.299	--	16.800	0.166	1.199	0.402	0.019	1.942
4	0.521	0.002	6.989	1.739	--	16.800	0.166	1.452	0.107	0.042	4.795
5	0.021	0.041	8.303	0.981	5.3	--	0.171	88.732	0.104	0.076	1.143
6	0.025	0.030	8.103	4.460	--	--	0.182	0.692	0.421	0.079	
7	0.040	0.025	3.235	10.744	--	--	0.176	0.340	0.380	0.046	
8	0.000	0.000	1.992	27.694	2.4	--	0.174	0.270	2.676	0.048	
9	0.000	0.000	1.182	31.4517	--	--	0.176	0.311	13.726	0.032	
10	0.000	0.000	6.506	14.1308	--	--	0.183	0.454	0.742	0.605	
11	0.000	0.000	0.334	11.6963	--	--	0.157	0.398	0.214	0.501	
12	0.863	0.000	1.318	--	--	--	0.176	0.289	0.498	0.164	
13	6.710	0.000	1.969	--	--	--	0.198	0.402	0.288	0.114	
14	2.095	0.012	0.048	--	--	--	0.587	0.408	0.270	0.134	
15	0.257	0.026	2.670	--	--	--	0.592	99.164	0.271	0.088	
16	1.347	0.053	0.631	--	--	--	0.943	558.823	0.398	0.106	6.959
17	5.255	0.111	0.060	--	--	--	0.869	0.317	0.319	0.139	7.457
18	0.115	0.000	0.938	--	--	--	0.827	0.254	0.323	0.060	7.937
19	2.358	0.000	0.096	--	--	--	0.665	0.166	0.247	0.093	6.569
20	0.587	0.000	0.555	--	--	--	0.716	0.150	0.322	0.076	7.799
21	0.091	0.000	0.123	--	--	0.175	0.714	0.325	0.292	0.043	8.962
22	0.132	0.000	0.626	--	--	0.166	0.758	0.691	0.272		6.149
23	0.000	0.077	0.287	--	--	0.174	0.466	0.329	0.232		5.262
24	0.010	0.218	0.044	--	--	0.175	0.33	0.292	0.324		4.898
25	1.649	0.441	0.129	--	192.362	0.170	0.29	0.211	0.512		4.706
26	0.442	0.441	0.049	--	19.757	0.187	0.349	0.259	0.452		5.137
27	4.092	4.841	0.000	--	26.341	0.172	0.268	0.157	0.405		6.423
28	3.060	4.312	1.524	--	24.366	0.182	0.277	0.141	0.414		8.509
29	1.538		1.188	--	22.404	0.176	0.313	0.156	0.223		7.513
30	2.861		0.268	--	21.375	0.164	0.303	56.556	0.225		8.401
31	0.211		0.827		14.73		0.369	16.410			
COUNT days	**31**	**28**	**31**	**11**	**9**	**14**	30	30	30	21	18
MAX Turbidity (fnu)	**6.710**	**4.841**	**10.950**	**31.452**	**192.362**	**17.994**	**0.943**	**558.823**	**13.726**	**0.605**	**8.962**
MIN Turbidity (fnu)	**0.00**	**0.00**	**0.00**	**0.98**	**2.40**	**0.16**	**0.16**	**0.14**	**0.08**	**0.02**	**1.14**

Notes:

- Turbidity readings are in Formazin Nephelometric Turbidity Units (fnu)
- Turbidity Meter Location; Latitude 44.842628 Longitude -68.696594

-- = Not recorded

🟦	Anomaly
🟨	High water, unit transceiver submerged
🟩	Transceiver recovered, brought for maintenance
🟥	Grab sample analyzed with Hach 2100Q turbidimeter
🟪	Transceiver reinstalled
🟦	Collected potentially erroneous data, pulled meter for calibration
⬜	Data taken from rental troll turbidimeter
🟧	Meter shut down due to updating error
🟦	New turbidity meter installed, values inconsistent with old meter

Prepared by: TNG 12/13/2017

Checked by: LMT 12/13/2017

TABLE 3-6
2017 DAILY PRECIPITATION AT BANGOR IN INCHES

Penobscot River Phase III Engineering Study

DATE	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	Jun 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017
1	0.14	0.05	0.13	0.00	0.99	0.49	0.38	0.00	0.00	0.00	0.00
2	0.00	0.00	0.03	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.03
3	0.42	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.59	0.00	0.18
4	0.57	0.00	0.00	0.03	0.00	0.26	0.20	0.00	0.06	0.00	0.00
5	0.00	0.00	0.00	0.2	0.43	0.10	0.00	0.43	0.55	0.00	0.00
6	0.00	0.00	0.00	1.18	0.61	0.00	0.00	0.00	0.37	0.00	0.60
7	0.01	0.17	0.14	0.12	0.01	0.00	0.00	0.00	0.34	0.00	0.00
8	0.01	0.15	0.31	0.11	0.24	0.00	0.04	0.19	0.60	0.27	0.00
9	0.00	0.01	0.01	0.00	0.09	0.69	0.00	0.00	0.11	0.66	0.00
10	0.06	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.06
11	0.42	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.17	0.14	0.00	0.37	0.00	0.00	0.00	0.04	0.00	0.00	0.00
13	0.00	0.90	0.00	0.00	0.00	0.00	0.52	0.08	0.00	0.00	0.00
14	0.00	0.00	0.64	0.00	1.99	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.04	0.00	0.20	0.00	0.01	0.17	0.00	0.00	0.00
16	0.00	0.06	0.00	0.08	0.00	0.28	0.17	0.00	0.00	0.00	0.53
17	0.00	0.00	0.00	0.02	0.00	0.44	0.00	0.00	0.00	0.00	0.04
18	0.01	0.00	0.00	0.00	0.01	0.00	0.33	0.59	0.02	0.00	0.03
19	0.10	0.01	0.01	0.40	0.00	0.00	0.00	0.13	0.05	0.00	0.64
20	0.00	0.00	0.00	0.02	0.00	0.56	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.13	0.08	0.00	0.00	0.00	0.00	0.00	0.91
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
24	1.48	0.05	0.11	0.00	0.00	0.46	0.11	0.00	0.00	0.05	0.00
25	0.24	0.25	0.00	0.00	0.09	0.00	0.00	0.00	0.00	1.91	0.00
26	0.00	0.18	0.52	1.08	1.04	0.00	0.00	0.00	0.00	1.56	0.03
27	0.00	0.00	0.00	0.00	0.04	0.36	0.15	0.00	0.00	0.07	0.00
28	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
29	0.00		0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.11	0.00
30	0.00		0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.96	0.00
31	0.00		0.00		0.18		0.00	0.00		0.00	0.13

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Total Month COUNT days	**31**	**28**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**
Historic Monthly Average Precipitation in Inches[1]	**2.385**	**2.523**	**3.089**	**3.581**	**3.292**	**4.528**	**3.224**	**3.298**	**4.092**	**4.487**	**3.716**
MAX Daily Precipitation (inches)	**1.48**	**0.9**	**0.64**	**1.18**	**1.99**	**0.69**	**0.52**	**0.59**	**0.6**	**1.91**	**0.91**
Total Monthly Precipitation (inches)	**3.63**	**2.04**	**1.96**	**3.99**	**6.31**	**4.33**	**1.91**	**1.64**	**2.69**	**5.59**	**3.18**
Change from Avg to 2017 Data	**1.25**	**-0.48**	**-1.13**	**0.41**	**3.02**	**-0.20**	**-1.31**	**-1.66**	**-1.40**	**1.10**	**-0.54**
% Above/Below Historical Avg	**52.20%**	**-19.14%**	**-36.55%**	**11.42%**	**91.68%**	**-4.37%**	**-40.76%**	**-50.27%**	**-34.26%**	**24.58%**	**-14.42%**

https://www.wunderground.com/history/airport/KBGR/2017/2/1/DailyHistory.html?req_city=Bangor&req_state=ME&req_statename=&reqdb.zip=04401&reqdb.magic=1&reqdb.wmo=99999

🟦 Day of sampling

Prepared by: TNG 12/11/2017
Checked by: LMT 12/12/2017

[1] = Average precipitation from 2007 to 2016. Data from Wunderground.

TABLE 4-1

NUMBER OF SAMPLES IN THE 0 - 0.3 FOOT INTERVAL BY LOCATION AND YEAR

Penobscot River Phase III Engineering Study

		Year								
Location		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2016**	**2017**
Subtidal	E-01-01	--	1	7	7	2	--	3	1	1
	E-01-03	--	1	7	6	1	--	3	1	1
	E-01-04	--	1	7	6	1	--	3	1	1
Intertidal	OV-04	4	2	--	--	1	--	5	1	--
	OV-01	4	2	--	--	1	--	5	1	1
	OV-02	4	2	--	--	--	--	5	1	1
	OB-05	4	2	--	--	1	--	5	1	--
	W-17-Intertidal	--	1	7	7	1	--	4	1	1
	W-21-Intertidal	--	1	7	7	1	--	4	1	1
	W-61-Intertidal	--	1	--	--	--	--	4	2	1
	ES-02	4	2	--	--	1	--	5	1	--
	W-65-Intertidal	--	--	--	--	1	--	4	1	1
	ES-13	4	2	--	--	5	--	5	1	1
Marsh Platforms	W-63-High	--	--	7	6	1	--	--	2	1
	W-17-High	--	--	--	--	--	--	--	1	1
	W-17-Mid	--	--	--	--	--	--	--	1	1
	W-17-Low	--	1	7	7	2	--	4	1	1
	W-63-Intertidal	--	--	--	--	--	--	--	1	--
	W-63-Mid	--	--	--	--	--	--	--	--	1
	W-63-Low	--	--	--	--	--	--	--	1	1
	W-65-High	--	--	--	--	2	--	4	1	1
	W-65-Mid	--	--	--	--	1	--	4	1	1
	W-65-Low	--	--	--	--	--	--	--	--	1
	W-21-High	--	1	7	7	2	1	4	1	1
	W-21-Mid	--	2	7	7	1	--	4	1	1
	W-21-UM-Central-C	--	--	--	--	8	1	4	1	1
	W-21-UM-East-C	--	--	--	--	8	1	4	1	1
	W-21-UM-South	--	--	--	--	5	1	4	1	1
	W-21-UM-West-A	--	--	--	4	11	3	5	1	--
	W-21-Low	--	1	7	7	2	1	4	1	1
	W-61-High	--	1	--	--	--	--	4	1	1
	W-61-Mid	--	1	--	--	--	--	4	1	1
	W-61-Low	--	1	--	--	--	--	4	1	1

Notes:

-- No samples available

Prepared by/Date: LSV 03/07/18
Checked by/Date: NTG 03/07/18

TABLE 4-2
KRUSKAL-WALLIS RANK SUM TEST RESULTS

Penobscot River Phase III Engineering Study

Sediment Type	Analyte	Kruskal Wallis Chi-squared Value	Degrees of Freedom	p-value
Subtidal	Mercury	37.5	1	<0.001
	Methyl Mercury	31.9	1	<0.001
	Total Organic Carbon	26.9	1	<0.001
Intertidal	Mercury	61.1	3	<0.001
	Methyl Mercury	54.0	3	<0.001
	Total Organic Carbon	13.0	3	0.005
Marsh Platforms High	Mercury	6.91	3	0.075
	Methyl Mercury	22.5	3	<0.001
	Total Organic Carbon	31.2	3	<0.001
Marsh Platforms Mid	Mercury	3.89	3	0.27
	Methyl Mercury	5.42	3	0.14
	Total Organic Carbon	0.532	3	0.91
Marsh Platforms Low	Mercury	8.40	3	0.038
	Methyl Mercury	4.63	3	0.20
	Total Organic Carbon	12.1	3	0.007
Marsh Platforms Intertidal	Mercury	7.19	3	0.066
	Methyl Mercury	4.05	3	0.26
	Total Organic Carbon	9.52	3	0.023

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-3
SUMMARY OF MEAN (± STANDARD ERROR) SUBTIDAL SEDIMENT CONCENTRATIONS IN EACH REACH

Penobscot River Phase III Engineering Study

River Reach	Mercury (ng/g)			Methyl Mercury (ng/g)			Total Organic Carbon (%)		
Fort Point Cove	742	±	31	20.9	±	1.6	5.09	±	0.30
Upper Penobscot Bay	395	±	21	6.20	±	0.90	2.52	±	0.14

Notes:
ng/g = nanograms per gram
% = percent
Concentrations reported as mean ± standard error

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-4
P-VALUES FOR NEMENYI CHI-SQUARED APPROXIMATION FOR INDEPENDENT SAMPLES IN SUBTIDAL SEDIMENT

Penobscot River Phase III Engineering Study

Analyte	River Reach	Fort Point Cove
Mercury	Upper Penobscot Bay	<0.001
Methyl Mercury		<0.001
Total Organic Carbon		<0.001

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-5a
SUMMARY OF ANALYSIS OF COVARIANCE (ANCOVA) RESULTS FOR SUBTIDAL SEDIMENTS

Penobscot River Phase III Engineering Study

Mercury					
	DF	**Sum Sq**	**Mean Sq**	**F value**	**P-value (>F)**
Total Organic Carbon	1	1518740	1518740	95.1	<0.001
Reach	1	267578	267578	16.7	<0.001
Total Organic Carbon: Reach interaction	1	46850	46850	2.93	0.092
Residuals	55	878735	15977		
Methyl Mercury					
	DF	**Sum Sq**	**Mean Sq**	**F value**	**P-value (>F)**
Total Organic Carbon	1	1874	1874	58.0	<0.001
Reach	1	1038	1038	32.1	<0.001
Total Organic Carbon: Reach interaction	1	609	609	18.8	<0.001
Residuals	52	1680	32.3		

Notes:
DF = degrees of freedom
Sum Sq = sum of squares
Mean Sq = mean sum of squares

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-5b

SUMMARY OF ANALYSIS OF COVARIANCE (ANCOVA) RESULTS FOR SUBTIDAL SEDIMENTS (INTERACTION EXCLUDED)

Penobscot River Phase III Engineering Study

Mercury					
	DF	Sum Sq	Mean Sq	F value	P-value (>F)
Total Organic Carbon	1	1518740	1518740	91.9	<0.001
Reach	1	267578	267578	16.2	<0.001
Residuals	56	925585	16528		

Notes:
DF = degrees of freedom
Sum Sq = sum of squares
Mean Sq = mean sum of squares

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-6
TEMPORAL LOGLINEAR TREND RESULTS

Penobscot River Phase III Engineering Study

Sediment Type	Location	Analyte	Intercept Coefficient	Year Coefficient	R-Squared	p-value (log-linear model)	p-value (Kendall's Tau)
Subtidal	E-01-01	Mercury	-10.3	0.61	0.01	0.61	0.28
		Methyl Mercury	66.6	-0.03	0.04	0.40	0.19
		Normalized Mercury	82.4	-0.04	0.07	0.26	0.012
		Normalized Methyl Mercury	155.6	-0.08	0.09	0.21	0.052
	E-01-03	Mercury	0.54	0.003	0.00	0.85	1
		Methyl Mercury	-18.7	0.01	0.00	0.82	0.74
		Normalized Mercury	106.5	-0.05	0.19	0.060	0.041
		Normalized Methyl Mercury	85.0	-0.04	0.07	0.29	0.53
	E-01-04	Mercury	-37.7	0.02	0.05	0.34	1
		Methyl Mercury	-188.5	0.09	0.25	0.029	0.94
		Normalized Mercury	67.5	-0.03	0.05	0.33	0.25
		Normalized Methyl Mercury	-91.2	0.05	0.06	0.33	0.63
Intertidal	OV-04	Mercury	367.3	-0.18	0.68	0.001	0.013
		Methyl Mercury	493.6	-0.25	0.29	0.11	1
		Normalized Mercury	-37.8	0.02	0.02	0.70	1
		Normalized Methyl Mercury	27.9	-0.01	0.00	0.89	0.71
	OV-01	Mercury	34.8	-0.02	0.04	0.52	0.16
		Methyl Mercury	104.4	-0.05	0.04	0.56	0.52
		Normalized Mercury	-152.7	0.08	0.31	0.047	0.30
		Normalized Methyl Mercury	-98.4	0.05	0.03	0.60	0.33
	OV-02	Mercury	240.4	-0.12	0.49	0.007	0.021
		Methyl Mercury	9.0	0.00	0.00	0.96	0.75
		Normalized Mercury	-32.9	0.02	0.02	0.63	1
		Normalized Methyl Mercury	-275.6	0.14	0.30	0.082	0.330
	OB-05	Mercury	83.8	-0.04	0.22	0.13	0.14
		Methyl Mercury	74.5	-0.04	0.11	0.35	0.45
		Normalized Mercury	6.87	0.00	0.00	1	1
		Normalized Methyl Mercury	16.3	-0.01	0.00	0.87	0.705
	W-17-Intertidal	Mercury	127.4	-0.06	0.15	0.11	0.19
		Methyl Mercury	331.7	-0.16	0.54	<0.001	0.22
		Normalized Mercury	-171.4	0.09	0.11	0.19	0.006
		Normalized Methyl Mercury	30.1	-0.01	0.00	0.84	0.20
	W-21-Intertidal	Mercury	151.5	-0.07	0.47	<0.001	0.005
		Methyl Mercury	424.3	-0.21	0.79	<0.001	0.013
		Normalized Mercury	142.4	-0.07	0.24	0.024	0.041
		Normalized Methyl Mercury	408.1	-0.20	0.68	<0.001	0.11
	W-61-Intertidal	Mercury	-52.3	0.03	0.04	0.68	1
		Methyl Mercury	158.4	-0.08	0.79	0.042	0.13
		Normalized Mercury	111.5	-0.05	0.57	0.082	0.55
		Normalized Methyl Mercury	313.6	-0.15	0.66	0.093	0.13
	ES-02	Mercury	67.7	-0.03	0.40	0.028	0.040
		Methyl Mercury	9.0	0.00	0.00	0.914	0.850
		Normalized Mercury	77.0	-0.03	0.46	0.016	0.028
		Normalized Methyl Mercury	20.4	-0.01	0.01	0.75	0.570
	W-65-Intertidal	Mercury	515.5	-0.25	0.45	0.099	0.045
		Methyl Mercury	771.0	-0.38	0.65	0.10	0.13
		Normalized Mercury	121.4	-0.06	0.31	0.20	0.094
		Normalized Methyl Mercury	450.0	-0.22	0.97	0.002	0.043
	ES-13	Mercury	130.5	-0.06	0.17	0.17	0.25
		Methyl Mercury	185.4	-0.09	0.25	0.12	0
		Normalized Mercury	-60.6	0.03	0.17	0.16	0.16
		Normalized Methyl Mercury	27.2	-0.01	0.01	0.79	0.87

TABLE 4-6
TEMPORAL LOGLINEAR TREND RESULTS

Penobscot River Phase III Engineering Study

Sediment Type	Location	Analyte	Intercept Coefficient	Year Coefficient	R-Squared	p-value (log-linear model)	p-value (Kendall's Tau)
Marsh Platforms	W-21-UM-Central-C	Mercury	194.5	-0.09	0.16	0.14	0.022
		Methyl Mercury	124.7	-0.06	0.12	0.25	0.21
		Normalized Mercury	229.9	-0.11	0.09	0.41	0.18
		Normalized Methyl Mercury	212.4	-0.10	0.22	0.24	0.18
	W-21-UM-East-C	Mercury	-46.6	0.03	0.13	0.18	0.91
		Methyl Mercury	597.5	-0.30	0.55	0.004	0.12
		Normalized Mercury	-73.4	0.04	0.06	0.49	0.70
		Normalized Methyl Mercury	523.9	-0.26	0.65	0.015	0.032
	W-21-UM-South	Mercury	271.0	-0.13	0.26	0.091	0.034
		Methyl Mercury	347.5	-0.17	0.29	0.11	0.92
		Normalized Mercury	559.7	-0.28	0.30	0.10	0.18
		Normalized Methyl Mercury	586.2	-0.29	0.78	0.004	0.032
	W-21-UM-West-A	Mercury	5.35	0.00	0.00	1	0.23
		Methyl Mercury	539.6	-0.27	0.30	0.008	0.26
		Normalized Mercury	-50.9	0.03	0.00	0.87	0.42
		Normalized Methyl Mercury	469.8	-0.23	0.69	0.021	0.027
	W-21-High	Mercury	32.5	-0.01	0.01	0.64	0.44
		Methyl Mercury	276.4	-0.14	0.37	0.003	0.27
		Normalized Mercury	89.5	-0.04	0.05	0.34	0.47
		Normalized Methyl Mercury	339.9	-0.17	0.33	0.009	0.91
	W-61-High	Mercury	-58.7	0.03	0.02	0.78	1
		Methyl Mercury	-134.3	0.07	0.17	0.49	0.61
		Normalized Mercury	29.8	-0.01	0.01	0.87	1
		Normalized Methyl Mercury	-40.9	0.02	0.20	0.45	0.31
	W-63-High	Mercury	412.6	-0.20	0.55	0.001	0.002
		Methyl Mercury	509.9	-0.25	0.51	0.002	0.036
		Normalized Mercury	69.8	-0.03	0.04	0.47	0.66
		Normalized Methyl Mercury	167.1	-0.08	0.10	0.23	1
	W-65-High	Mercury	58.7	-0.03	0.02	0.75	1
		Methyl Mercury	865.3	-0.43	0.24	0.41	1
		Normalized Mercury	31.2	-0.01	0.00	0.89	1
		Normalized Methyl Mercury	882.8	-0.44	0.28	0.36	0.61
	W-21-Mid	Mercury	-71.9	0.04	0.02	0.57	0.11
		Methyl Mercury	257.9	-0.13	0.09	0.19	0.78
		Normalized Mercury	53.2	-0.02	0.01	0.64	0.88
		Normalized Methyl Mercury	372.5	-0.18	0.28	0.016	0.61
	W-61-Mid	Mercury	-124.0	0.06	0.11	0.47	0.74
		Methyl Mercury	55.5	-0.03	0.06	0.68	1
		Normalized Mercury	103.4	-0.05	0.04	0.66	1
		Normalized Methyl Mercury	288.9	-0.14	0.51	0.18	1
	W-65-Mid	Mercury	67.7	-0.03	0.09	0.51	0.74
		Methyl Mercury	62.9	-0.03	0.05	0.72	1
		Normalized Mercury	174.7	-0.08	0.32	0.19	0.32
		Normalized Methyl Mercury	207.4	-0.10	0.31	0.33	0.61
	W-21-Low	Mercury	88.3	-0.04	0.34	0.003	0.003
		Methyl Mercury	365.5	-0.18	0.61	<0.001	0.070
		Normalized Mercury	170.5	-0.08	0.32	0.008	0.074
		Normalized Methyl Mercury	459.7	-0.23	0.60	<0.001	0.17
	W-17-Low	Mercury	124.2	-0.06	0.08	0.25	0.15
		Methyl Mercury	327.9	-0.16	0.27	0.022	0.019
		Normalized Mercury	-69.7	0.04	0.03	0.48	0.086
		Normalized Methyl Mercury	130.2	-0.06	0.08	0.28	0.89
	W-61-Low	Mercury	6.39	0.00	0.00	1	0.74
		Methyl Mercury	-18.0	0.01	0.01	0.89	1
		Normalized Mercury	182.7	-0.09	0.24	0.26	0.32
		Normalized Methyl Mercury	164.8	-0.08	0.15	0.52	0.61

Notes:

Coefficients provided are for the loglinear regression equation: y = m * ln(x) + b

Highlighted cells indicate p-values

0.008	$p < 0.01$
0.040	$p < 0.05$
0.10	$p > 0.05$

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-7
P-VALUES FOR NEMENYI CHI-SQUARED APPROXIMATION FOR INDEPENDENT SAMPLES IN INTERTIDAL SEDIMENT

Penobscot River Phase III Engineering Study

Analyte	River Reach	Orrington	Veazie	Verona East
Mercury	Veazie	<0.001	-	-
	Verona East	0.76	<0.001	-
	Verona Northeast	1	<0.001	0.83
Methyl Mercury	Veazie	0.001	-	-
	Verona East	0.78	<0.001	-
	Verona Northeast	0.73	<0.001	1
Total Organic Carbon	Veazie	0.039	-	-
	Verona East	0.68	0.42	-
	Verona Northeast	1	0.056	0.75

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-8
SUMMARY OF MEAN (± STANDARD ERROR) INTERTIDAL SEDIMENT CONCENTRATIONS IN EACH RIVER REACH

Penobscot River Phase III Engineering Study

River Reach	Mercury (ng/g)			Methyl Mercury (ng/g)			Total Organic Carbon (%)		
Veazie	85	±	16	1.74	±	0.27	4.07	±	0.79
Orrington	1117	±	83	18.4	±	1.9	6.85	±	0.44
Verona East	837	±	154	32.6	±	5.1	5.63	±	1.0
Verona Northeast	1078	±	57	29.3	±	2.3	6.83	±	0.24

Notes:
ng/g = nanograms per gram
% = percent
Concentrations reported as mean ± standard error

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-9
SUMMARY OF ANALYSIS OF COVARIANCE (ANCOVA) RESULTS FOR INTERTIDAL SEDIMENTS BY REACH

Penobscot River Phase III Engineering Study

Mercury					
	DF	**Sum Sq**	**Mean Sq**	**F value**	**P-value (>F)**
Total Organic Carbon	1	8086243	8086243	244	<0.001
Reach	3	12744371	4248124	128	<0.001
Total Organic Carbon: Reach interaction	3	3833491	1277830	38.6	<0.001
Residuals	76	2515560	33099		
Methyl Mercury					
	DF	**Sum Sq**	**Mean Sq**	**F value**	**P-value (>F)**
Total Organic Carbon	1	3500	3500	43.7	<0.001
Reach	3	10758	3586	44.8	<0.001
Total Organic Carbon: Reach interaction	3	2141.5	714	8.92	<0.001
Residuals	64	5124	80		

Notes:
DF = degrees of freedom
Sum Sq = sum of squares
Mean Sq = mean sum of squares

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-10
SUMMARY OF ANALYSIS OF COVARIANCE (ANCOVA) RESULTS FOR INTERTIDAL SEDIMENTS

Penobscot River Phase III Engineering Study

Mercury					
	DF	Sum Sq	Mean Sq	F value	P-value (>F)
Total Organic Carbon	1	8086243	8086243	245	<0.001
up/downstream	1	12296117	12296117	373	<0.001
Total Organic Carbon: up/downstream interaction	1	4159744	4159744	126	<0.001
Residuals	80	2637561	32970		

Methyl Mercury					
	DF	Sum Sq	Mean Sq	F value	P-value (>F)
Total Organic Carbon	1	3500	3500	33.2	<0.001
up/downstream	1	9239	9239	87.8	<0.001
Total Organic Carbon: up/downstream interaction	1	1628	1628	15.5	<0.001
Residuals	68	7158	105		

Notes:

DF = degrees of freedom

Sum Sq = sum of squares

Mean Sq = mean sum of squares

Prepared by/Date: LSV 10/30/17

Checked by/Date: NTG 11/06/17

TABLE 4-11
SUMMARY OF MARSH PLATFORM SEDIMENT CONCENTRATIONS IN EACH RIVER REACH

Penobscot River Phase III Engineering Study

Elevation	Reach	Total Mercury (ng/g)				Total Methyl Mercury (ng/g)				Total Organic Carbon (%)		
		Median	Mean		SE	Median	Mean		SE	Median	Mean	SE
High	Orrington	320	403	±	62	7.70	10.0	±	1.8	2.95	3.91	0.54
	Frankfort Flats	917	917	±	350	30.4	30.4	±	14	14.5	14.5	6.0
	Mendall Marsh	562	540	±	47	31.5	31.4	±	2.4	13.2	15.2	1.4
	Verona East	259	351	±	87	6.50	8.71	±	2.3	11.4	15.0	3.5
Mid	Orrington	804	804	±	-	14.3	14.3	±	-	8.14	8.14	-
	Frankfort Flats	1004	1004	±	176	8.89	8.89	±	2.9	10.3	10.3	5.5
	Mendall Marsh	764	672	±	52	28.7	31.2	±	3.7	11.4	12.7	1.5
	Verona East	530	626	±	162	13.3	16.2	±	2.5	12.1	11.7	1.6
Low	Orrington	540	540	±	311	6.25	6.25	±	1.8	5.76	5.76	3.3
	Frankfort Flats	915	948	±	101	20.4	30.3	±	4.9	10.5	10.8	1.0
	Mendall Marsh	919	946	±	31	25.5	25.6	±	2.2	7.28	6.83	0.42
	Verona East	576	644	±	70	17.1	21.1	±	4.1	10.4	10.1	1.2
Intertidal	Orrington	1123	1123	±	-	22.4	22.4	±	-	9.80	9.80	-
	Frankfort Flats	763	883	±	103	16.9	18.6	±	2.1	4.95	6.93	0.95
	Mendall Marsh	789	825	±	64	22.2	19.9	±	2.0	5.81	5.62	0.34
	Verona East	456	526	±	109	11.2	11.8	±	1.4	2.50	3.71	1.1

Notes:

ng/g = nanograms per gram

% = percent

SE = standard error

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-12
P-VALUES FOR NEMENYI CHI-SQUARED APPROXIMATION FOR INDEPENDENT SAMPLES IN LOW ELEVATION MARSH PLATFORM SEDIMENTS

Penobscot River Phase III Engineering Study

Analyte	River Reach	Low Elevation Wetlands		
		Frankfort Flats	Mendall Marsh	Orrington
Mercury	Mendall Marsh	0.92	-	-
	Orrington	0.54	0.39	-
	Verona East	0.26	0.10	1
Total Organic Carbon	Mendall Marsh	0.022	-	-
	Orrington	0.53	1	-
	Verona East	1	0.17	0.58

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-13
P-VALUES FOR NEMENYI CHI-SQUARED APPROXIMATION FOR INDEPENDENT SAMPLES IN HIGH ELEVATION MARSH PLATFORM SEDIMENTS

Penobscot River Phase III Engineering Study

Analyte	**River Reach**	**High Elevation Wetlands**		
		Frankfort Flats	**Mendall Marsh**	**Orrington**
Methyl Mercury	Mendall Marsh	1	-	-
	Orrington	0.48	<0.001	-
	Verona East	0.52	0.037	1
Total Organic Carbon	Mendall Marsh	1	-	-
	Orrington	0.18	<0.001	-
	Verona East	1	1	0.010

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

TABLE 4-14
P-VALUES FOR NEMENYI CHI-SQUARED APPROXIMATION FOR INDEPENDENT SAMPLES IN INTERTIDAL ELEVATION MARSH PLATFORM SEDIMENTS

Penobscot River Phase III Engineering Study

Analyte	River Reach	Intertidal Elevation Wetlands		
		Frankfort Flats	Mendall Marsh	Orrington
Total Organic Carbon	Mendall Marsh	1	-	-
	Orrington	0.71	0.70	-
	Verona East	0.084	0.070	0.19

Prepared by/Date: LSV 10/30/17
Checked by/Date: NTG 11/06/17

APPENDIX A
FIELD DATA RECORDS

APPENDIX A-1
2017 SEDIMENT SAMPLE FIELD DATA RECORDS

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-17-High
WO: 4A-040 Annual

Core Collection

Core Collection Team: LT, JP, FM
Core Collection Date: 07/11/2017
Core Collection Time: 14:13
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.1	1.1
% Recovery (Recovered Core/Depth Cored):	73%	73%

Test Pit Log

Test Pit Logger: FM
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): Yes
Vegetation Type: Grass
Approx. # Stems/ft^2: 1440

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.3	Dark brown [7.5YR3/2], root base with SILT (< 10%), organic matter
0.3-1.3	Strong brown [7.5YR4/6], increasing SILT content (35-50%), scattered wood chips and pieces increase at 0.7, nonplastic, plenty organic matter, no living organisms observed

Sample Collection

Sample Collection Team: LT JP BW FM
Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-17-High _ 072417 _SED_00-01	1500	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-17-High _ 072417 _SED_01-03	1501	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-17-High _ 072517 _SED_03-05	1454	Hg, TOC, OC	MS/MSD	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-17-High _ 072517 _SED_05-10	1456	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi
Technician Signature:
QA/QC by: Lauren Tierney
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-17-Low
WO: 4A-040 Annual

Core Collection

Core Collection Team: FM LT JP
Core Collection Date: 07/11/2017
Core Collection Time: 15:32
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.0	1.0
% Recovery (Recovered Core/Depth Cored):	67%	67%

Test Pit Log

Test Pit Logger: FM
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): Yes
Vegetation Type: Grass
Approx. # Stems/ft^2: Heavy

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.7	Dark grayish brown (10YR 4/2), dense root mass with some SILT (<15%)
0.7-1.25	Dark grayish brown (10YR 4/2), CLAY with some silt (<15%), lots of organic matter, occasional wood chips, low plasticity

Sample Collection

Sample Collection Team: BW, JP
Sample Collection Date: 7/18/2017 and 7/19/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-17-Low _ 071817 _SED_00-01	12:10	MeHg, Hg, TOC, OC	MS/MSD	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-17-Low _ 071817 _SED_01-03	12:14	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-17-Low _ 071917 _SED_03-05	10:17	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-17-Low _ 071917 _SED_05-10	10:20	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi
Technician Signature:
QA/QC by: Lauren Tierney
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-17-Mid
WO: 4A-040 Annual

Core Collection

Core Collection Team: FM LT JP
Core Collection Date: 07/11/2017
Core Collection Time: 14:52
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.0	1.0
% Recovery (Recovered Core/Depth Cored):	67%	67%

Test Pit Log

Test Pit Logger: FM
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): Yes
Vegetation Type: Grass
Approx. # Stems/ft^2: 1440

Interval	**Description** color, grain size, odor, debris, roots, organisms, etc.
0-0.7	Very dark brown [7.5YR2.5/3], strong root mass with some SILT (~15%)
0.7-0.9	Very dark brown [7.5YR2.5/3], Wood chips and pieces, increasing SILT content (~35%)
0.9-1.2	Very dark brown [7.5YR2.5/3], CLAY with silt (< 15%), low plasticity, plenty organic matter, no living organisms observed

Sample Collection

Sample Collection Team: BW, JP
Sample Collection Date: 7/18/2017 and 7/19/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-17-Mid _ 071817 _SED_00-01	12:27	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-17-Mid _ 071817 _SED_01-03	12:29	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-17-Mid _ 071917 _SED_03-05	11:06	Hg, TOC, OC	MS/MSD	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-17-Mid _ 071917 _SED_05-10	11:10	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi
Technician Signature:
QA/QC by: Lauren Tierney
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-21-High
WO: 4A-040 Annual

Core Collection

Core Collection Team: FM, LT, KB
Core Collection Date: 07/18/2017
Core Collection Time: 12:18
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	0.9	0.85
% Recovery (Recovered Core/Depth Cored):	60%	57%

Test Pit Log

Test Pit Logger: FM
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): No
Vegetation Type: P grass
Approx. # Stems/ft^2: 1500

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-1.6	Dark reddish brown (5YR 3/3), saturated, CLAY some silt (30%), very low plasticity, 0.0-1.2 very high density root mass (90%) hair like to 0.01', 1.2-1.6' low density root mass
	Water in hole bgs 0.39'

Sample Collection

Sample Collection Team: JP LT BW FM
Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-21-High _ 072517 _SED_00-01	1204	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-21-High _ 072517 _SED_01-03	1205	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-21-High _ 072617 _SED_03-05	0856	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-21-High _ 072617 _SED_05-10	0858	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney
QA/QC by: Julie Pallozzi

Technician Signature:
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-21-Low
WO: 4A-040 Annual

Core Collection

Core Collection Team: KB, FM, LT
Core Collection Date: 07/18/2017
Core Collection Time: 13:41
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.1	1.35
% Recovery (Recovered Core/Depth Cored):	73%	90%

Test Pit Log

Test Pit Logger: FM
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): No
Vegetation Type: Cord grass
Approx. # Stems/ft^2: 1200

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-1.3	Dark brown (10YR 3/3), very moist, CLAY with some silt (10-25% silt), low to medium plasticity, soft, high density root mass, hair like to less than 0.01' sized roots, , some red mottling along ryzome roots.
	No water in hole

Sample Collection

Sample Collection Team: LT JP BW FM
Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-21-Low _ 072517 _SED_00-01	0957	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-21-Low _ 072517 _SED_01-03	0958	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-21-Low _ 072617 _SED_03-05	0957	Hg, TOC, OC	None	3 x 8 oz Plastic	Field Lab Homogenize and Subsample
0.5 - 1.0	W-21-Low _ 072617 _SED_05-10	0959	Hg, TOC, OC	None	3 x 8 oz Plastic	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney
Technician Signature:
QA/QC by: Julie Pallozzi
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-21-Mid
WO: 4A-040 Annual

Core Collection

Core Collection Team: KB, FM, LT
Core Collection Date: 07/18/2017
Core Collection Time: 12:44
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.3	1.45
% Recovery (Recovered Core/Depth Cored):	87%	97%

Test Pit Log

Test Pit Logger: FM
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): No
Vegetation Type: Carex (75%), p grass (25%)
Approx. # Stems/ft^2: 1200

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-1.45	Brown (7.5YR 4/4), wet, CLAY with some silt (20%), low to medium plasticity, soft, high density root mass, hair like to <0.01' diameter,
	Depth to water bgs 1.8'

Sample Collection

Sample Collection Team: LT JP BW FM
Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-21-Mid _ 072517 _SED_00-01	0820	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-21-Mid _ 072517 _SED_01-03	0821	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-21-Mid _ 072617 _SED_03-05	0930	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-21-Mid _ 072617 _SED_05-10	0932	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney
Technician Signature:
QA/QC by: Julie Pallozzi
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-21-UM-Central-C
WO: 4A-040 Annual

Core Collection

Core Collection Team: JP,BW,LT
Core Collection Date: 07/13/2017
Core Collection Time: 13:17
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.4	1.0
% Recovery (Recovered Core/Depth Cored):	93%	67%

Test Pit Log

Test Pit Logger: BW
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): No
Vegetation Type: Typha, p grass, "a" grass, other marsh grasses
Approx. # Stems/ft^2: 1600

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.6	Black (10YR2/1) on surface, dark brown (10YR3/3), Saturated, no odor, SILT with sand 85% / 15%, high density roots, 0.02 ft root diameter, plasticy NA
0.6-0.9	Very dark grayish brown 3/2), Saturated, SILT with sand 90% 10%, medium density hairy roots, organic odor, low plasticity
0.9-1.2	Very dark grayish brown (10YR3/2), Saturated, SILT with sand 95% 5%, low plasticity, organic odor, low density roots
	Water level 0.4 ft bgs

Sample Collection

Sample Collection Team: BW, JP
Sample Collection Date: 7/18/2017 and 7/19/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-21-UM-Central-C _ 071817 _SED_00-01	16:09	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-21-UM-Central-C _ 071817 _SED_01-03	16:11	MeHg, Hg, TOC, OC	MS/MSD	2 x 16 oz Plastic	
0.3 - 0.5	W-21-UM-Central-C _ 071917 _SED_03-05	13:34	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-21-UM-Central-C _ 071917 _SED_05-10	13:36	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi
Technician Signature:
QA/QC by: Lauren Tierney
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-21-UM-East-C
WO: 4A-040 Annual

Core Collection

Core Collection Team: KB, FM, LT
Core Collection Date: 07/18/2017
Core Collection Time: 11:53
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.07	1.2
% Recovery (Recovered Core/Depth Cored):	71%	80%

Test Pit Log

Test Pit Logger: FM
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): No
Vegetation Type: Carex (75%), p grass (25%)
Approx. # Stems/ft^2: 1200

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-1.25	Dark brown (7.5YR 3/3), saturated, hydrogen sulfide odor, CLAY with some silt(15-30% silt), very low plasticity, soft, high density root mass, roots from hair like to <0.01', plenty of dead organic matter, 0.0-0.6 45% organic matter
	Water in hole bgs 0.53'

Sample Collection

Sample Collection Team: JP LT BW FM
Sample Collection Date: 7/25/17 and 7/26/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-21-UM-East-C _ 072517 _SED_00-01	1035	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-21-UM-East-C _ 072517 _SED_01-03	1036	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-21-UM-East-C _ 072617 _SED_03-05	0919	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-21-UM-East-C _ 072617 _SED_05-10	0921	Hg, TOC, OC	MS/MSD	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney
Technician Signature:
QA/QC by: Julie Pallozzi
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-21-UM-South
WO: 4A-040 Annual

Core Collection

Core Collection Team: BW, LT
Core Collection Date: 07/27/2017
Core Collection Time: 13:01
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.4	1.5
% Recovery (Recovered Core/Depth Cored):	93%	100%

Test Pit Log

Test Pit Logger: BW
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): No
Vegetation Type: P grass, bull rush, marsh grasses
Approx. # Stems/ft^2: 1500

Interval	**Description** color, grain size, odor, debris, roots, organisms, etc.
0.0-0.2	Dark gray (10 YR 4/1), saturated, SILT with sand, (15% fine sand), plasticity NA due to moisture and high density root mass, hair like root sized
0.2-0.6	Gray (10 OF R 5/1), saturated, SILT with sand (10% fine sand), low plasticity, high density root mass, hair like roots
0.6-1.2	Dark grayish brown (10Yr 4/2), 0.025' black biological mottling, saturated, slight biological odor, SILT with sand (10%fine sand), low plasticity, high density hairlike fine roots
	Water at surface

Sample Collection

Sample Collection Team: BW LT
Sample Collection Date: 8/1/2017 and 8/3/2017

Sample Interval (ft.)	**Sample ID**	**Sample Time**	**Requested Analyses**	**Additional Volumes Collected**	**Container**	**Homoginization**
0.0 - 0.1	W-21-UM-South _ 080117 _SED_00-01	1344	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-21-UM-South _ 080117 _SED_01-03	1346	MeHg, Hg, TOC, OC	MS/MSD	2 x 16 oz Plastic	
0.3 - 0.5	W-21-UM-South _ 080317 _SED_03-05	1452	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-21-UM-South _ 080317 _SED_05-10	1454	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	**Method**	**Preservative**	**Lab**
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Lauren Tierney
Technician Signature:
QA/QC by: Julie Pallozzi
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-21-UM-West-A
WO: 4A-040 Annual

Core Collection

Core Collection Team: JP, BW, LT
Core Collection Date: 07/13/2017
Core Collection Time: 14:54
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	0.35	0.35
% Recovery (Recovered Core/Depth Cored):	23%	23%

Test Pit Log

Test Pit Logger: BW
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): No
Vegetation Type: Typha, "a" grass, marsh grasses, sedge
Approx. # Stems/ft^2: 1872

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.2	Black (10YR2/1), saturated, organic odor, SILT with sand (85% SILT 15% fine sand), plasticity NA due to very high density of roots, up to 0.02' in diameter
0.2-0.5	Very dark gray (10YR 3/1),saturated, organic odor, SILT with sand (90% SILT 10% fine sand), plasticity NA due to moisture and high density hair like to 0.01' diameter roots
0.5-0.8	Black (10YR2/1), saturated, organic odor, sandy SILT (80% SILT 20% fine sand), non plastic due to hard spherical organic matter 0.5 diameter
0.8-1.2	Dark gray (10YR 4/1), saturated, organic odor, SILT with sand (90% SILT 10% fine sand), medium plasticity, low density hair like roots
	Water level at surface

Sample Collection

Sample Collection Team: LT JP FM BW
Sample Collection Date: 7/25/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-21-UM-West-A _ 072517 _SED_00-01	1333	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-21-UM-West-A _ 072517 _SED_01-03	1334	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	NO VOLUME FOR THIS INTERVAL	NA	Hg, TOC, OC	NA	NA	Field Lab Homogenize and Subsample
0.5 - 1.0	NO VOLUME FOR THIS INTERVAL	NA	Hg, TOC, OC	NA	NA	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi
Technician Signature:
QA/QC by: Lauren Tierney
QA/QC Date: 10/6/2017

amec foster wheeler

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-61-High
WO: 4A-040 Annual

Core Collection

Core Collection Team: BW, JP
Core Collection Date: 07/21/2017
Core Collection Time: 10:25
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.25	1.15
% Recovery (Recovered Core/Depth Cored):	83%	77%

Test Pit Log

Test Pit Logger: BW
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): Yes
Vegetation Type: Cord grass
Approx. # Stems/ft^2: 720

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.3	Black (10YR2/1) surface, very dark gray (10YR3/1) below surface, Organics on surface (leaf matter), no odor, low density roots from hair like to 0.05' diameter, obvious line of separation at 0.3' - very dark gray (10YR3/1), SILT with sand, 90% silt 10% fine grain sand, low plasticity
0.3-0.55	Dark gray (10YR4/1), SILT with sand, 95% silt 5% sand, damp, no roots, High plasticity, competent, wood chips at 0.55' up to 0.2' in length, thickness of wood chip layer is 0.025', stiff, clay
0.5-1.2	Gray (10YR5/1) brown and black mottling, SILT with sand, 95% silt 5% sand, competent stiff clay, high plasticity, damp, no odor, no roots, leaf matter
	No water in hole

Sample Collection

Sample Collection Team: LT JP BW FM
Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-61-High _ 072417 _SED_00-01	1315	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-61-High _ 072417 _SED_01-03	1318	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-61-High _ 072517 _SED_03-05	1548	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-61-High _ 072517 _SED_05-10	1550	Hg, TOC, OC	MS/MSD	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi
Technician Signature: J Pallozzi
QA/QC by: Lauren Tierney
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River

Project Number: 3616166052

Location ID: W-61-Mid

WO: 4A-040 Annual

Core Collection

Core Collection Team: BW, JP

Core Collection Date: 07/21/2017

Core Collection Time: 10:55

Instant Freeze (Y/N): Yes

Collection Method: Slide Hammer

Liner Type: 3" D x 24" L Plastic

Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.35	1.45
% Recovery (Recovered Core/Depth Cored):	90%	97%

Test Pit Log

Test Pit Logger: BW

Digging Method: Shooter Shovel

Test Pit Dimensions: 6" x 6" x 18"

Woody Debris (Y/N): Yes

Vegetation Type: Cord grass

Approx. # Stems/ft^2: 720

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.2	Very dark grayish brown (10YR3/2), sandy SILT, 80% silt 20% sand, lots of organics, leaf matter, high density roots up to 0.03' diameter, wood chips up to 0.2' length, no odor, some black mottling, saturated, nonplastic
0.2-0.6	Very dark gray (10YR3/1), sandy SILT, 75% silt 25% fine grain sand, biological smell, high density roots, saturated, woodchips up to 0.2' length, low plasticity
0.6-0.8	Dark gray (10YR4/1), sandy SILT, 75% silt 25% fine grain sand, medium density roots up to 0.02' diameter, wood chips up to 0.2' length, saturated, biologic odor, medium plasticity
0.8-1.05	Dark grayish brown (10YR4/2), sandy SILT, 70% silt 30% fine grain sand, low density hair like roots, heavy woodchips up to 0.3' length, saturated, no odor, nonplastic
1.05-1.4	Dark gray (10YR4/1), sandy SILT, 80% silt 20% fine grain sand, biologic odor, low density hairlike roots, wet, low plasticity, smaller decayed wood chips up to 0.1' length
	Water depth 1.0' bgs

Sample Collection

Sample Collection Team: LT JP BW FM

Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-61-Mid _ 072417 _SED_00-01	1345	MeHg, Hg, TOC, OC	MS/MSD	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-61-Mid _ 072417 _SED_01-03	1346	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-61-Mid _ 072517 _SED_03-05	1630	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-61-Mid _ 072517 _SED_05-10	1632	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi

Technician Signature: J Pallozzi

QA/QC by: Lauren Tierney

QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-63-High
WO: 4A-040 Annual

Core Collection

Core Collection Team: FM, JP
Core Collection Date: 07/14/2017
Core Collection Time: 12:09
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.4	1.2
% Recovery (Recovered Core/Depth Cored):	93%	80%

Test Pit Log

Test Pit Logger: FM
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): Yes
Vegetation Type: None, grasses nearby
Approx. # Stems/ft^2: NA

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.35	Dark yellowish brown (10YR4/6), CLAY with silt, 85% CLAY, 15%silt, with reddish brown (5YR5/4) mottling throughout, moist, odorless, low plasticity, low density hair like roots
0.35-0.8	Very dark gray (10YR3/1), CLAY with silt, 85% CLAY, 15% silt, very moist, odorless, low to medium plasticity, very few roots of hair like diameter
0.8-1.1	Dark greenish gray (GLEY 1 4/1), silty (10%) fine SAND(90%), moist, odorless, no plastic, no roots, woodchips, sized 0.01' observed in 0.5-1.0'
	No water in the hole, no living organisms observed

Sample Collection

Sample Collection Team: BW JP
Sample Collection Date: 7/18/2017 and 7/19/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-63-High _ 071817 _SED_00-01	16:55	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-63-High _ 071817 _SED_01-03	16:57	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-63-High _ 071917 _SED_03-05	14:04	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-63-High _ 071917 _SED_05-10	14:07	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi
Technician Signature:
QA/QC by: Lauren Tierney
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-63-Mid
WO: 4A-040 Annual

Core Collection

Core Collection Team: FM, JP
Core Collection Date: 07/14/2017
Core Collection Time: 13:26
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.35	1.25
% Recovery (Recovered Core/Depth Cored):	90%	83%

Test Pit Log

Test Pit Logger: FM
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): No
Vegetation Type: None, bullrush in vicinity
Approx. # Stems/ft^2: 10

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0-0.2	Dark brown (7.5YR3/3), CLAY with silt (15%), low density roots, hair like to 0.01 ft, very moist, odorless, medium plasticity, soft
0.2-1.4	Dark grayish brown (2.5Y4/2), CLAY with silt (15%), very moist, odorless, medium plasticity, soft, occasional roots
Notes	No living organisms observed, incoming tide - hole filled above ground surface with water

Sample Collection

Sample Collection Team: BW JP
Sample Collection Date: 7/18/2017 and 7/19/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homogenization
0.0 - 0.1	W-63-Mid _ 071817 _SED_00-01	17:11	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-63-Mid _ 071817 _SED_01-03	17:13	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-63-Mid _ 071917 _SED_03-05	12:10	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-63-Mid _ 071917 _SED_05-10	12:15	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi
Technician Signature:
QA/QC by: Lauren Tierney
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-65-High
WO: 4A-040 Annual

Core Collection

Core Collection Team: BW, LT
Core Collection Date: 07/12/2017
Core Collection Time: 13:13
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	0.95	0.55
% Recovery (Recovered Core/Depth Cored):	63%	37%

Test Pit Log

Test Pit Logger: BW
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): Yes
Vegetation Type: Typha only
Approx. # Stems/ft^2: 820 stems/sq ft

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.05	Very dark grayish brown (10 YR 3/2), Wet, organic odor, SILT with sand (85% SILT 15% fine sand), low plasticity, 0.03' roots
0.05-1.2	Very dark brown (10 YR 3/2), Wet, organic odor, sandy SILT (80% SILT 20% fine sand), low plasticity, 0.03' roots down to 0.6, then hair sized roots, Woodchip layer at 0.3
	Water level 0.5' bgs

Sample Collection

Sample Collection Team: BW, JP
Sample Collection Date: 7/18/2017 and 7/19/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-65-High _ 071817 _SED_00-01	12:42	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-65-High _ 071817 _SED_01-03	12:45	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-65-High _ 071917 _SED_03-05	10:57	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-65-High _ 071917 _SED_05-10	11:00	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi
Technician Signature: JPallozzi
QA/QC by: Lauren Tierney
QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River

Project Number: 3616166052

Location ID: W-65-Low

WO: 4A-040 Annual

Core Collection

Core Collection Team: BW, LT

Core Collection Date: 07/12/2017

Core Collection Time: 15:23

Instant Freeze (Y/N): Yes

Collection Method: Slide Hammer

Liner Type: 3" D x 24" L Plastic

Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1.4	1.5
% Recovery (Recovered Core/Depth Cored):	93%	100%

Test Pit Log

Test Pit Logger: BW

Digging Method: Shooter Shovel

Test Pit Dimensions: 6" x 6" x 18"

Woody Debris (Y/N): Yes

Vegetation Type: P grass

Approx. # Stems/ft^2: 1440 stems/sq ft

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.1	Very dark grayish brown (10YR 3/2), damp, SILT with sand (95% SILT 5% fine sand), plasticity and stiffness NA because of dense roots, 0.005 root diameter
0.1-0.3	dark brown (10YR 3/3), damp, SILT with sand (90% SILT , 10% fine sand), low to medium plasticity, less dense roots, 0.005 root diameter, can't tell stiffness
0.3-0.7	Very dark grayish brown (10YR 3/2), damp, sandy SILT (80% SILT 20% fine sand), low plasticity, can't tell stiffness, hair like roots, woodchips at 0.6'
0.7-1.1	Yellowish brown (10YR 3/4), wet, sandy SILT (70% SILT 30% fine sand), no plasticity, can't tell stiffness, dense hair like roots
	No water in hole

Sample Collection

Sample Collection Team: BW, JP

Sample Collection Date: 7/18/2017 and 7/19/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-65-Low _ 071817 _SED_00-01	13:00	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-65-Low _ 071817 _SED_01-03	13:03	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-65-Low _ 071917 _SED_03-05	9:27	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-65-Low _ 071917 _SED_05-10	9:32	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:

Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi

Technician Signature:

QA/QC by: Lauren Tierney

QA/QC Date: 10/6/2017

Penobscot River Mercury Study - Phase III Engineering Evaluation

WETLAND SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: W-65-Mid
WO: 4A-040 Annual

Core Collection

Core Collection Team: BW, LT
Core Collection Date: 07/12/2017
Core Collection Time: 13:09
Instant Freeze (Y/N): Yes
Collection Method: Slide Hammer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery	
Sleeve Length in Decimal Feet:	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5
Recovered Core Length in Decimal Feet:	1	1
% Recovery (Recovered Core/Depth Cored):	67%	67%

Test Pit Log

Test Pit Logger: BW
Digging Method: Shooter Shovel
Test Pit Dimensions: 6" x 6" x 18"
Woody Debris (Y/N): No
Vegetation Type: Sedge
Approx. # Stems/ft^2: 1440 stems/sq ft

Interval	Description color, grain size, odor, debris, roots, organisms, etc.
0.0-0.5	0.0-0.05' Very dark grayish brown (10YR 3/2), 0.05-0.5' Dark brown (10YR 3/3), slight biological black mottling 0.05' diameter, saturated, organic odor, sandy SILT (75% SILT 25% fine sand), no plasticity, stiffness NA due to thick root mass, 0.01' roots
0.5-1.3	Very dark grayish brown (10YR 3/2), super saturated, organic odor, SILT with sand (85%SILT 15% fine sand), low to medium plasticity, non stiff, hair like roots
	Depth to water bgs 0.55'

Sample Collection

Sample Collection Team: BW, JP
Sample Collection Date: 7/18/2017 and 7/19/2017

Sample Interval (ft.)	Sample ID	Sample Time	Requested Analyses	Additional Volumes Collected	Container	Homoginization
0.0 - 0.1	W-65-Mid _ 071817 _SED_00-01	10:55	MeHg, Hg, TOC, OC	None	1 x 16 oz Plastic	Lab Homogenize and Subsample
0.1 - 0.3	W-65-Mid _ 071817 _SED_01-03	10:57	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	W-65-Mid _ 071917 _SED_03-05	10:34	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	W-65-Mid _ 071917 _SED_05-10	10:37	Hg, TOC, OC	MS/MSD	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	Method	Preservative	Lab
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
0.0 = Scalp
Samples were processed/sectioned in the Winterport field office
Geographic coordinates provided on Core/Grab Log.

Technician Name: Julie Pallozzi
Technician Signature: J Pallozzi
QA/QC by: Lauren Tierney
QA/QC Date: 10/6/2017

amec foster wheeler

Penobscot River Mercury Study - Phase III Engineering Evaluation

INTERTIDAL SEDIMENT SAMPLE COLLECTION

Project Name: USDC Penobscot River
Project Number: 3616166052
Location ID: ADD-02
WO: 4A-040 Annual

Core Collection

Core Collection Team: KCB. FKM
Core Collection Date: 07/13/2017
Core Collection Time: 13:32
Instant Freeze (Y/N): Yes
Collection Method: Push Corer
Liner Type: 3" D x 24" L Plastic
Est. Volume: 47 oz/ft

	Core Recovery		
Sleeve Length in Decimal Feet:	2.0	2.0	2.0
Depth Cored in Decimal Feet:	1.5	1.5	1.5
Recovered Core Length in Decimal Feet:	1	1	1
% Recovery (Recovered Core/Depth Cored):	67%	67%	67%

Core Log

Core Logger: FKM
Woody Debris (Y/N): No
Salinity of Water at Mudline: 20 PSU (o/00)

Interval	**Description** color, grain size, odor, debris, roots, organisms, etc.
0-0.6	brown (7.5YR 4/3), CLAY with some silt (<10%), medium plasticity, soft, decomposed organic matter (some roots and leaves), organic odor, no living organisms observed, no woodchips
0.6-1.4	dark gray (10YR 4/1) to black (10YR 2/1), CLAY, medium plasticity, soft, some decomposed organic matter, organic odor, no living organisms observed, no woodchips
Notes	No lutocline. Clear water decanted from the surface of sample core. 4 intervals for sampling

no photo taken

Sample Collection

Sample Collection Team: LT JP BW FM
Sample Collection Date: 7/24/2017 and 7/25/17

Sample Interval (ft.)	**Sample ID**	**Sample Time**	**Requested Analyses**	**Additional Volumes Collected**	**Container**	**Homoginization**
NA	No Lutocline Sample	NA	NA	NA	NA	Lab Homogenize and Subsample
0.0 - 0.1	ADD-02 _ 072417 _SED_00-01	1643	MeHg, Hg, TOC, OC	MS/MSD	1 x 16 oz Plastic	
0.1 - 0.3	ADD-02 _ 072417 _SED_01-03	1645	MeHg, Hg, TOC, OC	None	2 x 16 oz Plastic	
0.3 - 0.5	ADD-02 _ 072517 _SED_03-05	1430	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	Field Lab Homogenize and Subsample
0.5 - 1.0	ADD-02 _ 072517 _SED_05-10	1432	Hg, TOC, OC	None	1 x 8 oz Plastic 2 x 8 oz Amber Glass	

Sample Analysis Information

Analyte	**Method**	**Preservative**	**Lab**
Methyl Mercury (MeHg)	1630	Freeze	EFGS
Mercury (Hg)	1631	4 C	EFGS
Total Organic Carbon (TOC)	Lloyd-Kahn	4 C	Alpha
Organic Content (OC)	D2974 Mod(550 C)	Ambient	Amec FW

Notes:
Sediment Core sampling was conducted according to the following SOPs included in the QAPP:
SOP-S-6a Sediment Sampling, SOP-S-7 Soil Descriptions, SOP-S-17 Decon
Interval 0.0 = Determined by light disappearance test
Samples were processed/ sectioned in the Winterport field office.
Geographic coordinates provided on Core/Grab log.

Technician Name: Julie Pallozzi
QA/QC by: Lauren Tierney

Technician Signature:
QA/QC Date: 12/13/2017

APPENDIX A-2
2017 WATER QUALITY SAMPLE FIELD DATA RECORDS

amec foster wheeler

SAMPLE COLLECTION LOG - SURFACE WATER

Project Name:	USDC Penobscot River	**Project Number:**	3616166052.04A.A042
Location ID:	TURB	**Sample Crew:**	KCB, JPP
Date:	05/08/2017	**Latitude:**	44.84308000
Sample ID:	TURB_050817_SW_50	**Longitude:**	-68.69651350

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)
15:00	3.5	10.45	6.67	0.028	6.66	243.6	2.40 (2100Q) / 2.44 (2100P)	0.01

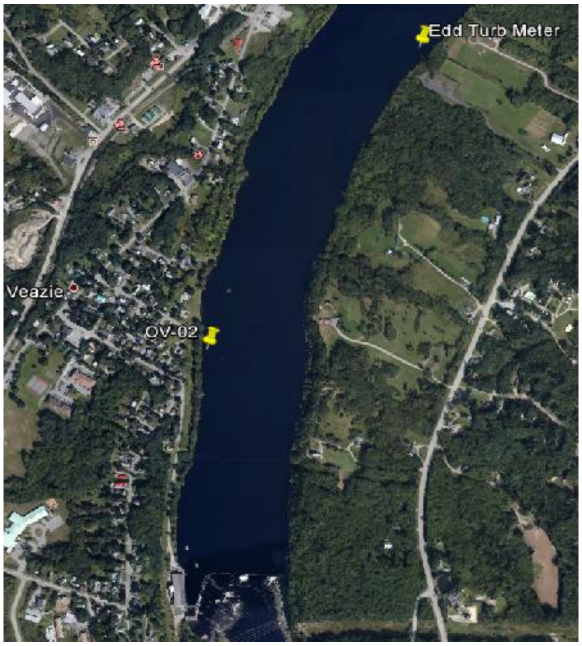
Water Depth (ft):	> 6	**QC Collected:**	No
Flow Rate (mL/min):	500	**Duplicate ID:**	N/A
Purge Volume:	2 gal	**MS ID:**	N/A
Tide Direction:	NA	**MSD ID:**	N/A

Water Body and Water Quality Characteristics:

Requested Analyses:

Analytes:	Methods:	Container:	# Containers	Preservative
Tot Hg/Dis Hg	1631e	250 ml PETG	0	4°C
Tot MeHg/Dis Hg	1630	250 ml BSG	0	H_2SO_4, 4°C
TOC/DOC	9060	40 ml AG	0	H_2SO_4, 4°C
TSS	2450D	1 L Plastic	3	4°C
SSC	D3977-97B	1 L Plastic	3	4°C

Location Sketch:



Equipment: (Manufacturer, Model, Serial No)

Turbidity Meter, Water Quality Meter, Peristaltic Pump,Filter (0.45 micron),Teflon Tubing (Lab Supplied),Masterflex Tubing (Lab Supplied)

Hach	2100	P/Q	MO24-27/MO24-17
YSI	556	MPS	MO15-06

Notes: (traffic)

Clean Hands/ Dirty Hands
Surface Water Sampling was conducted according to the following SOPs included in the QAPP;
SOP S-3 Calibration of Field Instruments
SOP S-4 Surface Water Sampling
SOP S-5 Clean Hands/Dirty Hands Surface Water Sampling

Pre-cleaned tubing provided by Eurofins for 1 time use.

Sample equipment (IE, tubing and unpreserved containers) were triple rinsed with location specific sample water prior to collecting the sample.

Target intake depth was 5 ft below surface. Actual intake depth was 3 ft below surface
Samples were collected from the YARD canoe

Technician name (Print): Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

Date: 12/13/2017

SAMPLE COLLECTION LOG - SURFACE WATER

Project Name:	USDC Penobscot River	**Project Number:**	3616166052.04A.A042
Location ID:	OV-02	**Sample Crew:**	KCB, JPP, BPW
Date:	04/19/2017	**Latitude:**	44.837349
Sample ID:	OV-02_041917_SW_10_R1 thru R3	**Longitude:**	-68.701639

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)
16:00	1	5.19	6.7	0.029	26.67	167.5	5.17	0.01

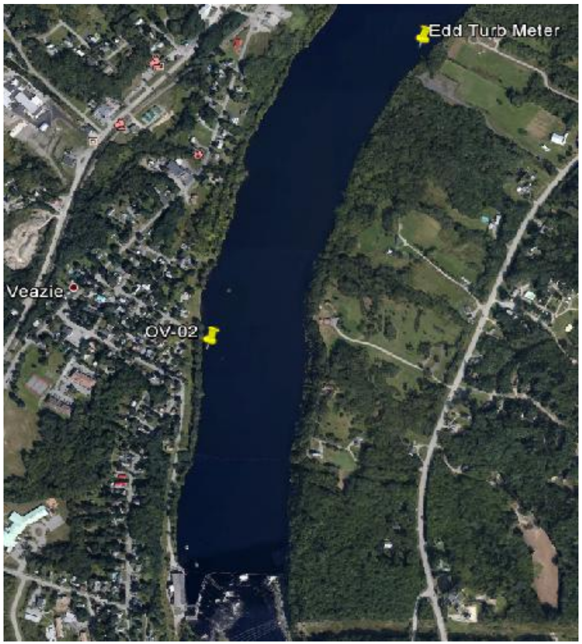
Water Depth (ft):	4	**QC Collected:**	Yes
Flow Rate (mL/min):	500	**Duplicate ID:**	OV-02_041917_SW_10_DUP
Purge Volume:	25 Liters	**MS ID:**	OV_041917_SW_10_MS
Tide Direction:	N/A	**MSD ID:**	OV-02_041917_SW_10_MD

Water Body and Water Quality Characteristics: 8-10 knots moving water, turbid, river gage heitght 14.74 ft.

Requested Analyses:

Analytes:	Methods:	Container:	# Containers	Preservative
Tot Hg/Dis Hg	1631e	250 ml PETG	12	4°C
Tot MeHg/Dis Hg	1630	250 ml BSG	12	H_2SO_4, 4°C
TOC/DOC	9060	40 ml AG	36	H_2SO_4, 4°C
TSS	2450D	1 L Plastic	6	4°C
SSC	D3977-97B	1 L Plastic	6	4°C

Location Sketch:



Equipment: (Manufacturer, Model, Serial No)

Turbidity Meter, Water Quality Meter, Peristaltic Pump,Filter (0.45 micron),Teflon Tubing (Lab Supplied),Masterflex Tubing (Lab Supplied)

Hach	2100	P	MO24-17
YSI	556	MPS	M015-06

Notes: (traffic)

Clean Hands/ Dirty Hands
Surface Water Sampling was conducted according to the following SOPs included in the QAPP;
SOP S-3 Calibration of Field Instruments
SOP S-4 Surface Water Sampling
SOP S-5 Clean Hands/Dirty Hands Surface Water Sampling
Pre-cleaned tubing provided by Eurofins for 1 time use.
Sample equipment (IE, tubing and unpreserved containers) were triple rinsed with location specific sample water prior to collecting the sample.
River gage is at 14.74 ft
16:00 OV-02_041917_SW_10_R1
16:15 OV-02_041917_SW_10_R2
16:30 OV-02_041917_SW_10_R3
16:45 OV-02_041917_SW_10_MS
17:00 OV-02_041917_SW_10_MD
17:15 OV-02_041917_SW_10_DUP
Samples were collected from the YARD canoe

Technician name (Print): Brad Wolfe

Technician Signature:

QA/QC by: Lauren Tierney

Date: 12/13/2017

SAMPLE COLLECTION LOG - SURFACE WATER

Project Name:	USDC Penobscot River	**Project Number:**	3616166052.04A.A042
Location ID:	OV-02	**Sample Crew:**	KCB, JPP
Date:	05/08/2017	**Latitude:**	44.83738717
Sample ID:	OV-02_050817_SW_10	**Longitude:**	-68.70158650

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)
12:00	1	10.09	4.76	0.034	21.10	292.9	2.77	0.01

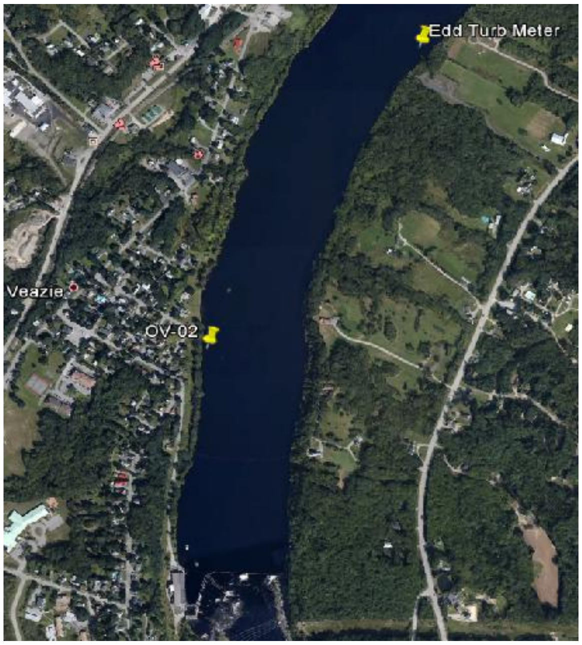
Water Depth (ft):	5	**QC Collected:**	Yes
Flow Rate (mL/min):	500	**Duplicate ID:**	OV-02_050817_SW_10_DUP
Purge Volume:	5 gallons	**MS ID:**	OV-02_050817_SW_10_MS
Tide Direction:	NA	**MSD ID:**	OV-02_050817_SW_10_MD

Water Body and Water Quality Characteristics:

Requested Analyses:

Analytes:	Methods:	Container:	# Containers	Preservative
Tot Hg/Dis Hg	1631e	250 ml PETG	12	4°C
Tot MeHg/Dis Hg	1630	250 ml BSG	12	H_2SO_4, 4°C
TOC/DOC	9060	40 ml AG	36	H_2SO_4, 4°C
TSS	2450D	1 L Plastic	6	4°C
SSC	D3977-97B	1 L Plastic	6	4°C

Location Sketch:



Equipment: (Manufacturer, Model, Serial No)

Turbidity Meter, Water Quality Meter, Peristaltic Pump,Filter (0.45 micron),Teflon Tubing (Lab Supplied),Masterflex Tubing (Lab Supplied)

Hach	2100	P/Q	MO24-27
YSI	556	MPS	MO15-06

Notes: (traffic)

Clean Hands/ Dirty Hands
Surface Water Sampling was conducted according to the following SOPs included in the QAPP;
SOP S-3 Calibration of Field Instruments
SOP S-4 Surface Water Sampling
SOP S-5 Clean Hands/Dirty Hands Surface Water Sampling

Pre-cleaned tubing provided by Eurofins for 1 time use.

Sample equipment (IE, tubing and unpreserved containers) were triple rinsed with location specific sample water prior to collecting the sample.

Samples were collected from the YARD canoe

Technician name (Print): Julie Pallozzi

Technician Signature:

QA/QC by: Lauren Tierney

Date: 12/13/2017

SAMPLE COLLECTION LOG - SURFACE WATER

Project Name:	USDC Penobscot River	**Project Number:**	3616166052.04A.A042
Location ID:	OV-02	**Sample Crew:**	KCB, JPP
Date:	05/24/2017	**Latitude:**	44.83720450
Sample ID:	OV-02_052417_SW_10	**Longitude:**	-68.70148117

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)
12:00	1	16.79	6.97	0.037	23.25	179.7	2.30 (Q), 1.47 (P)	0.02

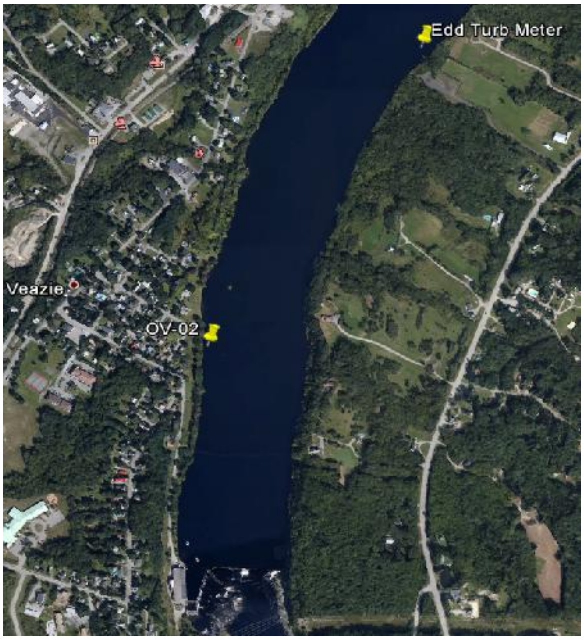
Water Depth (ft):	8	**QC Collected:**	Yes
Flow Rate (mL/min):	600	**Duplicate ID:**	OV-02_052417_SW_10_DUP
Purge Volume:	1.5 gallons	**MS ID:**	OV-02_052417_SW_10_MS
Tide Direction:	Outgoing	**MSD ID:**	OV-02_052417_SW_10_MD

Water Body and Water Quality Characteristics: River, Flowing, Clear

Requested Analyses:

Analytes:	Methods:	Container:	# Containers	Preservative
Tot Hg/Dis Hg	1631e	250 ml PETG	12	4°C
Tot MeHg/Dis Hg	1630	250 ml BSG	12	H_2SO_4, 4°C
TOC/DOC	9060	40 ml AG	36	H_2SO_4, 4°C
TSS	2450D	1 L Plastic	6	4°C
SSC	D3977-97B	1 L Plastic	6	4°C

Location Sketch:



Equipment: (Manufacturer, Model, Serial No)

Turbidity Meter, Water Quality Meter, Peristaltic Pump,Filter (0.45 micron),Teflon Tubing (Lab Supplied),Masterflex Tubing (Lab Supplied)

Hach	2100	P/Q	MO24-27, MO24-23
YSI	556	MPS	MO15-14

Notes: (traffic)

Clean Hands/ Dirty Hands

Surface Water Sampling was conducted according to the following SOPs included in the QAPP;
SOP S-3 Calibration of Field Instruments
SOP S-4 Surface Water Sampling
SOP S-5 Clean Hands/Dirty Hands Surface Water Sampling

Pre-cleaned tubing provided by Eurofins for 1 time use.

Sample equipment (IE, tubing and unpreserved containers) were triple rinsed with location specific sample water prior to collecting the sample.

Sample collected in triplicate:
OV-02_052417_SW_10_R1 @ 1200 (+dup/MS/MSD)
OV-02_052417_SW_10_R2 @ 1215
OV-02_052417_SW_10_R3 @ 1230

Location is not affected by tide.

Technician name (Print): Julie Pallozzi

QA/QC by: Lauren Tierney

Technician Signature:

Date: 12/13/2017

APPENDIX A-3
2017 FIELD SAMPLING EQUIPMENT CALIBRATION LOGS

EQUIPMENT CALIBRATION AND TRACKING LOG

amec foster wheeler

Project Name: USDC Penobscot River **Project Number:** 3616166052 **Date:** 04/19/2017

Weather (AM): Mostly cloudy **Calibration Start Time:** 10:20 **Calibration End Time:** 19:29

Weather (PM): Mostly cloudy, drizzles **Sample Technician:** KB,JP

Morning (AM) Calibration

Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (%, mg/L)	Salinity (ppt)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
10:20	17.25	3.92 7.00 NA	0.10 19.8 99 790	1.406	101.9 9.79	NA	245	776.8	None

Afternoon (PM) Calibration Check

Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (%, mg/L)	Salinity (ppt)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
10:48	18.01	NA 7.07 NA	NA NA NA NA	1.385	NA 8.39	NA	245.2	771.0	Turbidity meter has an E7 error

Calibration Materials Record:

pH Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
pH (4)	6GH007	08/19/2018
pH (7)	6GH649	08/19/2018
pH (10)	NA	N/A

Specific Electrical Conductance, Salinity, Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
Spec. Conductance	6GH1218	08/19/2017
D.O.	NA	N/A
Salinity	0278	11/19/2021
ORP	0278	11/19/2021

Turbidity Standards

Standard	Cal. Standard Lot #	Expiration Date
10	A6238	11/19/2017
20	A6251	12/19/2017
100	A6251	12/19/2017
800	A6266	12/19/2017

Instruments (Manufacturer, Model, and Serial No.):

	Manufacturer/Model	Serial No
Water Quality Meter:	YSI 556 MPS	M015-06
Turbidity Meter:	Hach 2100Q	M024-17
GPS Unit:	Trimble R1GNSS	5702475564

Calibrated Within Acceptance Criteria (Y/N): Yes

If No, Provide Explanation:

GPS Coordinate system: NAD83

Map Projection: State Plane

Lat/Long; SPC X/Y: NA

Notes:

None

Technician Signature:

Technician Name (print): KB,JP

QA/QC'd by: **Lauren Tierney** **QA/QC Date:** **12/13/2017**

EQUIPMENT CALIBRATION AND TRACKING LOG

amec foster wheeler

Project Name: USDC Penobscot River
Project Number:
Date: 05/08/2017
Weather (AM): Overcast,45 f
Calibration Start Time: 09:42
Calibration End Time: 16:11
Weather (PM): Overcast, 48 f
Sample Technician: Julie Pallozzi

Morning (AM) Calibration

Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (%, mg/L)	Salinity (ppt)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
09:42	19.18	3.94 6.99 NA	10.1 20.4 101 787	1.407	99.3 9.17	NA	241.9	754	None

Afternoon (PM) Calibration Check

Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (%, mg/L)	Salinity (ppt)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
10:03	19.15	NA 7.06 NA	9.81 21.6 102 786	1.413	NA 5.31	NA	238.5	755	None

Calibration Materials Record:

pH Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
pH (4)	6GH007	08/08/2018
pH (7)	6GH649	08/08/2018
pH (10)	NA	NA

Specific Electrical Conductance, Salinity, Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
Spec. Conductance	6GH1218	08/08/2017
D.O.	NA	NA
Salinity	0278	06/08/2021
ORP	0278	06/08/2021

Turbidity Standards

Standard	Cal. Standard Lot #	Expiration Date
10	A6207	10/08/2017
20	A6207	10/08/2017
100	A6203	10/08/2017
800	A62028	10/08/2017

Instruments (Manufacturer, Model, and Serial No.):

	Manufacturer/Model	Serial No
Water Quality Meter:	YSI 556 MPS	MO15-06
Turbidity Meter:	Hach 2100Q	MO24-27
GPS Unit:	Trimble R1	5628471693

Calibrated Within Acceptance Criteria (Y/N): Yes
If No, Provide Explanation:
GPS Coordinate system: NAD83
Map Projection: State Plane
Lat/Long; SPC X/Y: NA

Notes:
None

Technician Signature:

Technician Name (print): Julie Pallozzi

QA/QC'd by: Lauren Tierney
QA/QC Date: 12/13/2017

EQUIPMENT CALIBRATION AND TRACKING LOG

Project Name: USDC Penobscot River
Project Number: 3616166052.04A.4A042
Date: 05/24/2017
Weather (AM): Slightly overcast 50
Calibration Start Time: 10:22
Calibration End Time: 17:33
Weather (PM): Sunny, some clouds 70
Sample Technician: Kendra Bavor

Morning (AM) Calibration

Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (%, mg/L)	Salinity (ppt)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
10:22	19.03	4.00	9.65	1.414	98.3 9.02	NA	243.6	757.3	None
		7.00	20.1						
		NA	100						
			770						

Afternoon (PM) Calibration Check

Time (24hr)	Temperature (°C)	pH (SU)	Turbidity (NTUs)	Specific Electrical Conductance (mS/cm)	D.O. (%, mg/L)	Salinity (ppt)	ORP/Eh (mV)	Barometric Pressure (mm Hg)	Comments
10:41	21.55	NA	10.3	1.416	NA 9.23	NA	230.9	756.7	None
		7.0	20.5						
		NA	101						
			778						

Calibration Materials Record:

pH Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
pH (4)	6gh007	08/24/2018
pH (7)	6gh649	08/24/2018
pH (10)	NA	NA

Specific Electrical Conductance, Salinity, Dissolved Oxygen (DO) and Oxidation Reduction Potential (ORP) Calibration Standards

Standard	Cal. Standard Lot #	Expiration Date
Spec. Conductance	6gh1218	08/24/2017
D.O.	NA	NA
Salinity	0278	11/24/2021
ORP	0278	11/24/2021

Turbidity Standards

Standard	Cal. Standard Lot #	Expiration Date
10	A6207	10/24/2017
20	A6207	10/24/2017
100	A6203	10/24/2017
800	A6202b	10/24/2017

Instruments (Manufacturer, Model, and Serial No.):

	Manufacturer/Model	Serial No
Water Quality Meter:	YSI 556 MPS	MO15-14
Turbidity Meter:	Hach 2100Q	MO24-27
GPS Unit:	Trimble R1 GNSS	5629472046

Calibrated Within Acceptance Criteria (Y/N): Yes
If No, Provide Explanation:
GPS Coordinate system: NAD83
Map Projection: State Plane
Lat/Long; SPC X/Y: NA

Notes: NA

Technician Signature:

Technician Name (print): Kendra Bavor

QA/QC'd by: **Lauren Tierney**
QA/QC Date: **12/13/2017**

APPENDIX A-4
2017 FIELD ACTIVITY PHOTOGRAPHS

Penobscot River Phase III – Engineering Study
Penobscot River, Maine

Photographic Log

	Client: United States District Court District of Maine Location: OV-02 Project No.: 3616166052 Date: 4/26/2017 Photo No.: 1 Photographer: Brad Wolfe Description: Surface water sampling April 2017
	Client: United States District Court District of Maine Location: OV-02 Project No.: 3616166052 Date: 4/26/2017 Photo No.: 2 Photographer: Brad Wolfe Description: Surface water sampling April 2017.

	Client: United States District Court District of Maine
	Location: Field Station
	Project No.: 3616166052
	Date: 5/10/2017
	Photo No.: 3
	Photographer: Brad Wolfe
	Description: Equipment blank collection

	Client: United States District Court District of Maine
	Location: OV-02
	Project No.: 3616166052
	Date: 05/10/2017
	Photo No.: 4
	Photographer: Brad Wolfe
	Description: Surface water sampling Event 2

	Client: United States District Court District of Maine
	Location: OV-02
	Project No.: 3616166052
	Date: 5/10/2017
	Photo No.: 5
	Photographer: Brad Wolfe
	Description: Surface water sampling Event 2.

	Client: United States District Court District of Maine
	Location: Turbidty Meter – Eddington, ME
	Project No.: 3616166052
	Date: 05/12/2017
	Photo No.: 6
	Photographer: Julie Pallozzi
	Description: Removing turbidity meter transceiver unit from submerged station.

	Client: United States District Court District of Maine
	Location: Turbidity Meter – Eddington ME
	Project No.: 3616166052
	Date: 5/12/17
	Photo No.: 7
	Photographer: Brad Wolfe
	Description: Sampling turbidity at turbidity meter installation.

	Client: United States District Court District of Maine
	Location: OV-02
	Project No.: 3616166052
	Date: 5/25/2017
	Photo No.: 8
	Photographer: Brad Wolfe
	Description: Preparing for surface water sampling Event 3

<table>
<tr><td rowspan="7"></td><td>Client:
United States District Court District of Maine</td></tr>
<tr><td>Location:
OV-02</td></tr>
<tr><td>Project No.:
3616166052</td></tr>
<tr><td>Date:
5/25/2017</td></tr>
<tr><td>Photo No.:
9</td></tr>
<tr><td>Photographer:
Julie Pallozzi</td></tr>
<tr><td>Description:
Collecting surface water with peristaltic pump.</td></tr>
<tr><td rowspan="7"></td><td>Client:
United States District Court District of Maine</td></tr>
<tr><td>Location:
OV-02</td></tr>
<tr><td>Project No.:
3616166052</td></tr>
<tr><td>Date:
5/25/2017</td></tr>
<tr><td>Photo No.:
10</td></tr>
<tr><td>Photographer:
Brad Wolfe</td></tr>
<tr><td>Description:
Collecting data and surface water sample Event 3</td></tr>
</table>

Penobscot River Phase III – Engineering Study
Penobscot River, Maine

Photographic Log

Client:
United States District Court District of Maine

Location:
W-MM-04

Project No.:
3616166052

Date:
7/11/2017

Photo No.:
1

Photographer:
Julie Pallozzi

Description:
Wetland core collection at W-MM-04 using slide hammer method with stainless steel core barrel and core liner.

Client:
United States District Court District of Maine

Location:
W-MM-04

Project No.:
3616166052

Date:
7/11/2017

Photo No.:
2

Photographer:
Julie Pallozzi

Description:
Stainless steel core barrel and core liner used during wetland core collection.

Client:
United States District Court District of Maine

Location:
W-MM-04

Project No.:
3616166052

Date:
7/11/2017

Photo No.:

Photographer:
Julie Pallozzi

Description:
Sediment core #1 from W-MM-04 before core liner cut down, cap, and dry ice instant freeze.

Client:
United States District Court District of Maine

Location:
W-100-A

Project No.:
3616166052

Date:
7/11/2017

Photo No.:

Photographer:
Julie Pallozzi

Description:
Wetland test pit cut open with bread knife and logged at W-100-A.

<table>
<tr><td rowspan="7"></td><td>Client:
United States District Court District of Maine</td></tr>
<tr><td>Location:
Frankfort, ME</td></tr>
<tr><td>Project No.:
3616166052</td></tr>
<tr><td>Date:
7/27/2017</td></tr>
<tr><td>Photo No.:</td></tr>
<tr><td>Photographer:
Brad Wolfe</td></tr>
<tr><td>Description:
Wetland stainless steel core barrels decontaminated with potable water and Liquinox, formula 409, and deionized water.</td></tr>
<tr><td rowspan="7"></td><td>Client:
United States District Court District of Maine</td></tr>
<tr><td>Location:
Mendall Marsh</td></tr>
<tr><td>Project No.:
3616166052</td></tr>
<tr><td>Date:
7/27/2017</td></tr>
<tr><td>Photo No.:</td></tr>
<tr><td>Photographer:
Lauren Tierney</td></tr>
<tr><td>Description:
Using R1 hand held GPS unit to locate proposed wetland sediment sampling locations.</td></tr>
</table>

	Client: United States District Court District of Maine Location: Orland River Project No.: 3616166052 Date: 7/20/2017 Photo No.: Photographer: Julie Pallozzi Description: Intertidal sediment core collection with push core method from boat in the Orland River. Core collected to be logged at Winterport field office.
	Client: United States District Court District of Maine Location: Orland River Project No.: 3616166052 Date: 7/20/2017 Photo No.: Photographer: Julie Pallozzi Description: Intertidal sediment core collection with push core method from boat in the Orland River. Core collected to be logged at Winterport field office.

Client:
United States District Court District of Maine

Location:
ADD-02

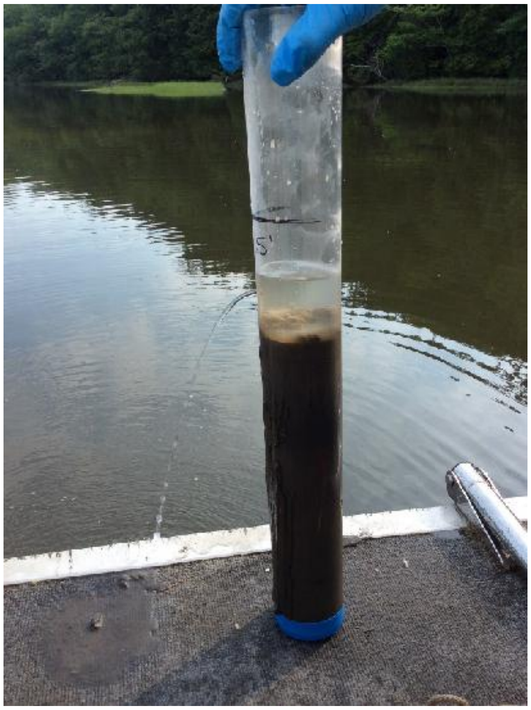
Project No.:
3616166052

Date:
7/13/2017

Photo No.:

Photographer:
Kendra Bavor

Description:
Intertidal sediment core collection with push core method while standing in water at background location. Draining overlying water above sediment.



Client:
United States District Court District of Maine

Location:
Orland River

Project No.:
3616166052

Date:
7/20/2017

Photo No.:

Photographer:
Julie Pallozzi

Description:
Intertidal sediment core collection with push core method from boat in the Orland River. Draining overlying water above sediment.

Client: United States District Court District of Maine	
Location: Orland River	
Project No.: 3616166052	
Date: 7/20/2017	
Photo No.:	
Photographer: Julie Pallozzi	
Description: Salinity of water at the mudline of an intertidal sediment core is measured using a refractometer.	

Client: United States District Court District of Maine	
Location: Orland River	
Project No.: 3616166052	
Date: 7/20/2017	
Photo No.:	
Photographer: Julie Pallozzi	
Description: Refractometer is used to measure the salinity of surface water and water above mudline during intertidal and subtidal sediment collection.	

	Client: United States District Court District of Maine Location: Orland River Project No.: 3616166052 Date: 7/21/2017 Photo No.: Photographer: Julie Pallozzi Description: Intertidal sediment core collection using the push core method from boat.
	Client: United States District Court District of Maine Location: OR-02-03 Project No.: 3616166052 Date: 7/31/2017 Photo No.: Photographer: Lauren Tierney Description: Woody debris observed on the outside of core liner during intertidal sediment collection using the push core method.

	Client: United States District Court District of Maine Location: OB-05SW Project No.: 3616166052 Date: 7/27/2017 Photo No.: Photographer: Julie Pallozzi Description: Petite ponar used to collect 0.0’-0.3’ subtidal sediment samples.

	Client: United States District Court District of Maine Location: OB-05S Project No.: 3616166052 Date: 7/27/2017 Photo No.: Photographer: Julie Pallozzi Description: Petite ponar deployed at subtidal sediment sampling location OB-05S with 70% recovery .

Penobscot River Phase III – Engineering Study
Penobscot River, Maine

Photographic Log

Client:
United States District Court District of Maine

Location:
ESFP-E

Project No.:
3616166052

Date:
7/21/2017

Photo No.:

Photographer:
Lauren Tierney

Description:
Petite ponar deployed at subtidal sediment sampling location ESFP-E with 100% recovery .

Client:
United States District Court District of Maine

Location:
OB-04

Project No.:
3616166052

Date:
7/27/2017

Photo No.:

Photographer:
Lauren Tierney

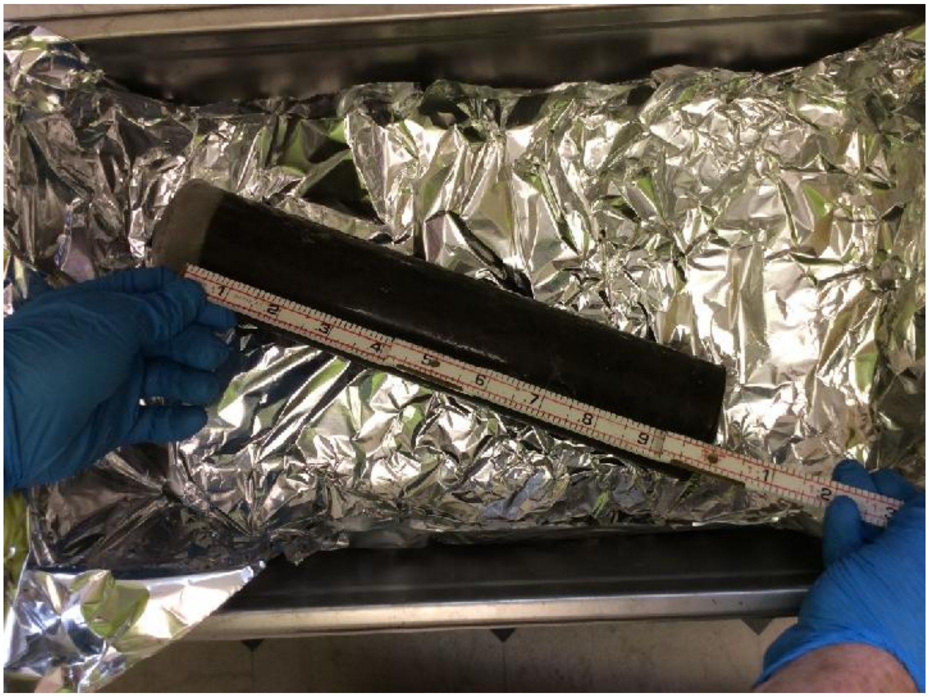
Description:
Sediment collected from OB-04 removed from petite ponar and homogenized by hand in clean 3 gallon bucket before put into sample bottles.

Client: United States District Court District of Maine	
Location: Winterport Field Office	
Project No.: 3616166052	
Date: 7/25/2017	
Photo No.:	
Photographer: Lauren Tierney	
Description: Sample processing clean room with negative air pressure.	

Client: United States District Court District of Maine	
Location: Winterport Field Office	
Project No.: 3616166052	
Date: 7/18/2017	
Photo No.:	
Photographer: Julie Pallozzi	
Description: Cutting into frozen sediment core with hook blade in sample processing clean room.	

<table>
<tr><td rowspan="7"></td><td>Client:
United States District Court District of Maine</td></tr>
<tr><td>Location:
Winterport Field Office</td></tr>
<tr><td>Project No.:
3616166052</td></tr>
<tr><td>Date:
7/18/2017</td></tr>
<tr><td>Photo No.:</td></tr>
<tr><td>Photographer:
Julie Pallozzi</td></tr>
<tr><td>Description:
Transferring frozen sediment core from core liner to aluminum foil lined cutting tray.</td></tr>
</table>

<table>
<tr><td rowspan="7"></td><td>Client:
United States District Court District of Maine</td></tr>
<tr><td>Location:
Winterport Field Office</td></tr>
<tr><td>Project No.:
3616166052</td></tr>
<tr><td>Date:
7/24/2017</td></tr>
<tr><td>Photo No.:</td></tr>
<tr><td>Photographer:
Lauren Tierney</td></tr>
<tr><td>Description:
Example of frozen water at top end of frozen intertidal sediment core. Frozen water removed, depth measurements begin from top of sediment.</td></tr>
</table>

	Client: United States District Court District of Maine Location: Winterport Field Office Project No.: 3616166052 Date: 7/24/2017 Photo No.: Photographer: Lauren Tierney Description: Example of frozen water at top end of frozen intertidal sediment core. Frozen water removed, depth measurements begin from top of sediment.
	Client: United States District Court District of Maine Location: Winterport Field Office Project No.: 3616166052 Date: 7/18/2017 Photo No.: Photographer: Julie Pallozzi Description: Engineer's rule used to measure sample intervals on frozen sediment core. Hatchet and hammer used to cut sediment core into sample intervals.

Client:
United States District Court District of Maine

Location:
Winterport Field Office

Project No.:
3616166052

Date:
7/18/2017

Photo No.:

Photographer:
Julie Pallozzi

Description:
Hatchet and hammer used to cut sediment core into sample intervals.

Client:
United States District Court District of Maine

Location:
Winterport Field Office

Project No.:
3616166052

Date:
7/18/2017

Photo No.:

Photographer:
Julie Pallozzi

Description:
0.1-0.3’ sediment core sample interval.

Penobscot River Phase III – Engineering Study
Penobscot River, Maine

Photographic Log

Client:
United States District Court District of Maine

Location:
Winterport Field Office

Project No.:
3616166052

Date:
7/18/2017

Photo No.:

Photographer:
Julie Pallozzi

Description:
0.3-0.5’ and 0.5-1.0’ sediment core sample intervals being cut with hatcher and hammer.

Client:
United States District Court District of Maine

Location:
Winterport Field Office

Project No.:
3616166052

Date:
7/18/2017

Photo No.:

Photographer:
Julie Pallozzi

Description:
0.3-0.5’ and 0.5-1.0’ sediment core sample intervals placed into clean 3 gallon buckets and allowed to thaw for 24-48 hours before homogenization.

Client:
United States District Court District of Maine

Location:
Winterport Field Office

Project No.:
3616166052

Date:
7/26/2017

Photo No.:

Photographer:
Lauren Tierney

Description:
Interval 0.3-0.5’ of W-MM-07 sediment core being homogenized by hand in 3 gallon bucket and placed into sample jars.

Client:
United States District Court District of Maine

Location:
Winterport Field Office

Project No.:
3616166052

Date:
7/19/2017

Photo No.:

Photographer:
Lauren Tierney

Description:
Sediment core being hand homogenized after thawing.

Client:
United States District Court District of Maine

Location:
Winterport Field Office

Project No.:
3616166052

Date:
7/19/2017

Photo No.:

Photographer:
Lauren Tierney

Description:
Interval 0.5-1.0' of W-65-Low sediment core being homogenized by hand in 3 gallon bucket and placed into sample jars.

Client:
United States District Court District of Maine

Location:
Winterport Field Office

Project No.:
3616166052

Date:
7/20/2017

Photo No.:

Photographer:
Brad Wolfe

Description:
9 sample bottles from 4 sample intervals associated with sediment core location W-101-A.

Client:
United States District Court District of Maine

Location:
Winterport Field Office

Project No.:
3616166052

Date:
8/1/2017

Photo No.:

Photographer:
Lauren Tierney

Description:
Sediment samples organized by location getting packed into coolers for shipment to laboratories.

Client:
United States District Court District of Maine

Location:
Winterport Field Office

Project No.:
3616166052

Date:
8/18/2017

Photo No.:

Photographer:
Brad Wolfe

Description:
Sediment samples after processing stored in freezer before shipment to laboratories.

APPENDIX B
STANDARD OPERATING PROCEDURES

APPENDIX B-1
SOP S-6: SEDIMENT SAMPLING

SOP No. S-6

AMEC FOSTER WHEELER ENVIRONMENT & INFRASTRUCTURE, INC.
STANDARD OPERATING PROCEDURE

SEDIMENT SAMPLING

SEDIMENT SAMPLING

PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to provide a standardized method for collecting sediment samples at hazardous waste sites. This SOP may be used by employees of Amec Foster Wheeler, or contractors and subcontractors supporting the Penobscot River Estuary Project. Deviations from the procedures outlined in this document must be approved by the Project Manager or Field Investigation Leader prior to initiation of the sampling activity.

This SOP is applicable to the collection of representative sediment samples. Analysis of sediment may be biological, chemical, or physical in nature and may be used to determine the following:

- toxicity
- biological availability and effects of contaminants
- benthic biota
- extent and magnitude of contamination
- contaminant migration pathway and potential source
- fate of contaminants
- grain size distribution

The methodologies discussed in this SOP are applicable to the sampling of sediment in both flowing and standing water. For the purposes of this procedure, sediments are those mineral and organic materials situated beneath an aqueous layer. The water may be static, as in lakes, ponds, and impoundments; or flowing, as in rivers and streams.

RESPONSIBILITIES

The Field Operation Leader (FOL) may be an Amec Foster Wheeler employee or contractor who is responsible for overseeing the sediment sampling activities. The FOL is also responsible for checking all work performed and verifying that the work satisfies the specific tasks outlined by this SOP and the Project Plan. It is the responsibility of the FOL to communicate with the Field Personnel regarding specific collection objectives and anticipated situations that require any deviation from the Project Plan. It is also the responsibility of the FOL to communicate the need for any deviations from the Project Plan with the appropriate personnel (Project Manager or Field Investigation Leader).

Field personnel performing sediment sampling are responsible for adhering to the applicable tasks outlined in this procedure while collecting samples.

EQUIPMENT

- Ponar dredge **-** used for collecting sediment grab samples below the water surface.
- Sample coring device **-** used for collecting continuous sediment cores above or below the water surface.
- Stainless steel hand tools - trowel, large spoon, or similar had tool for collection of sediment samples (above water).
- Nylon rope or steel cable **-** for raising and lowering the Ponar dredge.
- Collection containers - 4-oz., 8-oz., and one-quart wide mouth amber glass jars with Teflon lined lids.
- Gloves - for personal protection and to prevent cross-contamination of samples. May be plastic or latex, disposable, powderless.
- Field Clothing and Personal Protective Equipment - as specified in the Health and Safety Plan.
- Sampling flags - Used for identifying sediment sampling locations.
- Field notebook -a bound book used to record progress of sampling effort and record any problems and field observations during sampling. Alternatively an electronic tablet device with pre-loaded forms for electronic data entry may be used.
- Ipad- to store necessary forms used to record and track samples collected at the site. IPads will contain the Sample Collection Log – Sediment (Grab) and Site Diagrams and sample labels will be printed for each day. Example forms are provided in Attachment 1.
- Permanent marking pen - used to mark sample jars/lids, coring tubes, and for documentation of field logbooks and data sheets.
- Stainless steel lab spoon **-** or equivalent. Used for homogenizing sediment samples.
- Stainless steel bucket **-** used for compositing samples; must have 10 - 12 liter capacity.
- Trash bags - used to dispose of gloves and any other non-hazardous waste generated during sampling.

METHOD SUMMARY

Sediment is collected from beneath an aqueous layer using a Ponar dredge or sample coring device. A Ponar dredge is a heavyweight sediment sampling device with weighted jaws that are lever or spring activated. It is used to collect consolidated fine to coarse textured sediment. The procedures for collecting sediment with a Ponar dredge, as well as the sample mixing and homogenization are described below. The sediment is then transferred from the mixing bucket to an 8 oz. amber glass jar.

Samples designated for greater than 6 inches in depth must be collected with a sample coring device or hand auger, plastic or stainless bucket and spoon. The procedure for collecting sediment samples with a coring device or hand auger is described below.

SAMPLE COLLECTION PROCEDURE

A new pair of Nitrile gloves are to be worn at each sampling location. Each sampling location must be recorded on the FDR prior to collecting the sample. All sampling equipment must be decontaminated prior to use, as well as between sample locations. Decontamination procedures are presented in SOP S-17.

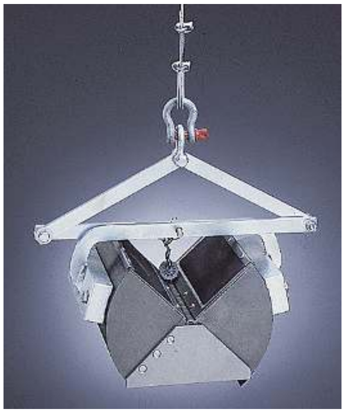
Collection with a Ponar Dredge

Attach a sturdy nylon rope or steel cable to the ring provided on top of the dredge. Arrange the Ponar dredge with jaws in the open position, setting the trip bar so that the sampler remains open when lifted from the top. If the dredge is so equipped, place the spring loaded pin into the aligned holes in the trip bar. Slowly lower the sampler to a point approximately two inches above the sediment. Drop the sampler to the sediment. Slack on the line will release the trip bar or spring loaded pin; pull up sharply on the line, closing the dredge. Raise the dredge to the surface and slowly decant any free liquid through the screens on top of the dredge. Care should be taken to retain the fine sediment fraction during this operation.

Open the dredge and transfer the sediment to a 2 gallon plastic bucket. If necessary, repeat the collection procedure until sufficient material has been collected. Homogenize the sample by mixing with a stainless steel drill bit or lab spoon or equivalent, then transfer the sample to an amber glass jar. When splitting sediment samples, continuous mixing may be required to maintain homogeneity, and to avoid the settling of larger sediment fractions in the bottom of the compositing bowl. Affix one sample ID label to each container and take a photo of the label record the photo number on the FDR.

Ponar Type Grab

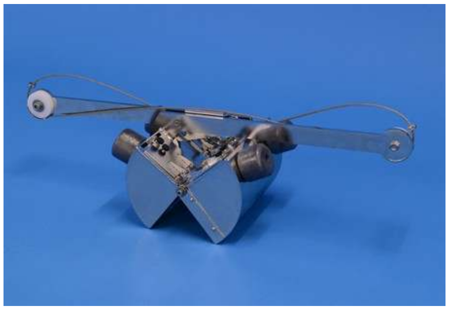
Equipment Description. The Ponar type grab is a commonly used sampler that is very versatile for all types of hard bottoms such as sand, gravel, and clay. It can be used in streams, lake reservoirs, and the ocean. When the scoop strikes the bottom, their tapered cutting edges penetrate the ground efficiently with very little disturbance. Removable screens on top of each scoop allow water to flow through as it descends. It is recommended that a crane and winch is used for deployment due to working weight.



Ponar Type Grab

Van Veen Grab

Equipment Description. This sediment sampler has a clam shell-type scoop setup. Although it tends to disturb the sediments more than the hydraulically damped corer, it is much simpler to operate. It can extract samples up to 20 centimeters deep within a sampling area of 0.1 square meters.



Van Veen Grab

Collection with a Coring Device

Sediment collected at depths greater than 6 inches must be collected with a sampling system consisting of a tube sampler, removable Lexan tube, ‘eggshell’ check valve, nosecone, extensions, and a “T” handle or drivehead. The use of additional extensions can increase the depth of water from which sediment can be collected from 24 inches to 10 feet or more, but sample handling and manipulation become more difficult as the depth of water increases. This sampler can be used with either a “T” handle for soft sediment, or a drive-hammer for firm sediment.

Assemble the coring device by inserting the Lexan core into the sampling tube. Insert the “eggshell” check valve into the lower end of the sampling tube with the convex surface positioned inside the bottom of the Lexan tube. Screw the nosecone onto the lower end of the sampling tube, securing the Lexan tube and the check valve. Crew the “t” handle onto the upper end of the sampling tube, and add extension rods, as needed. Position the sampler perpendicular to the sediment being sampled.

If the “T” handle is used, collect the sample by pressing down on the sampling device until the desired depth is achieved. After reaching the desired depth, rotate the sampler to shear off the bottom of the sediment core. Slowly withdraw the sampler from the sediment, and decant the surface water, using care to retain the fine sediment fraction. Unscrew the nosecone and remove the eggshell check valve. Slide the Teflon core out of the sampler tube. If there is headspace in the upper end of the sediment core, use a hacksaw to shear off the Lexan tubing at the sediment surface.

If the drive hammer is used, insert the tapered handle (drive head) through the top of the sampler. Drive the sampler into the sediment to the desired depth, and rotate the sampler to shear off the bottom of the sediment core. Slowly withdraw the sampler from the sediment, and decant the surface water, using care to retain the fine sediment fraction. Unscrew the nosecone and remove the eggshell check valve. Slide the Teflon core out of the sampler tube. If there is headspace in the upper end of the sediment core, use a hacksaw to shear off the Teflon tubing at the sediment surface.

Cap both ends of the core, and use a water proof pen to indicate the orientation of the sediment core. Affix one sample identification label to the core and take a photo of the label and record the photo number on the Sample Collection Log – Sediment (Grab). Immediately place the sample on ice for transport to the analytical laboratory.

Vibracore Sampler

Sampling with a vibratory corer is divided into four steps: intrusion, extraction, core sampling, and packaging. The following procedure describes the use of a VibraCore to collect subsurface sediments.

Intrusion. The vibrator head should be attached near the top of the unsharpened end of the core barrel prior to initiating the coring procedure. After a coring location has been determined, the core pipe will be vertically positioned. The core barrel will initially sink into the sediment by its own weight, giving the barrel stability. Once the vibrator head engine is started, the pipe will rapidly penetrate into the sediment. Tying a teather line (rope) to the core barrel and pulling down by adding weight will aid in getting the pipe through resistant subsurfaces.

Extraction. After removing the vibrator head, the remaining pipe is cut off with a hacksaw approximately 2 feet above the ground surface. The distance to the sediment surface inside and outside of the pipe is measured to determine the amount of compaction. The pipe is then filled with water and a gas-main sealer plug is inserted and tightened to prevent loss of sediment from the core pipe when it is removed.

A tripod is assembled and placed over the intruded pipe. Two come-alongs are fastened to the eyeballs on the tripod head and to a rope securely fastened to the core pipe. The core is guided through the core pipe slot in the tripod head and then rested against the tripod head to prevent falling over during extraction. When the core is completely out of the sediment, the come-alongs are removed and the core pipe slot is opened by pulling on the cord that moves the spring-loaded slot gate. The core barrel is gently placed horizontally, to prevent disturbance of the core, and examined.

Core Sampling. Sediment samples can be removed from the core either by splitting the core lengthwise or removing the sample or by drilling holes in the core liner. Splitting the core lengthwise is preferred since it allows direct observation of the sediment structure, bedding, lithologies and other features. Samples can be collected from one half of the core and the other half can be preserved for future studies or sampling. Alternatively, a power drill fitted with a 1.5- to 2-inch saw can be used to make holes in the liner. Samples can then be removed with a spoon and the hole closed by replacing the cutout disk and sealing with duct or plastic electrical tape. Spacing of approximately 1 foot is recommended to ensure that the samples are representative of the lithologies in the cores.

Packaging. If the core is to be homogenized at the laboratory, the extracted core is cut in the field using a hacksaw. Aluminum foil, plastic caps, or wooden plugs held securely with duct tape may be used to cap the core liner. Each core section must be carefully labeled, indicating the top and bottom, with a waterproof marker.

Gravity Core Sampler

Equipment Description. The gravity core sampler uses the pull of gravity to penetrate the seabed with it’s carbon steel core barrel, which can collect samples of up to six meters in length. A replaceable core liner is housed within the carbon steel barrel to ensure that it is simple to remove the collected sample. The barrel is fitted with a sharpened replaceable carbon steel core cutter to ensure minimal disturbance. Sample loss on retrieval is minimized by a core catcher fitted inside the end of the barrel.

Gravity Core Sampler

HAPS Core Sampler

Equipment Description. The HAPS frame supported corer is highly suitable for taking well defined, virtually undisturbed seafloor samples of soft and hard sediments. The corer may be adapted to all types of sediments while providing accurate sampling. It has high stability and it is easy to maintain and to operate.

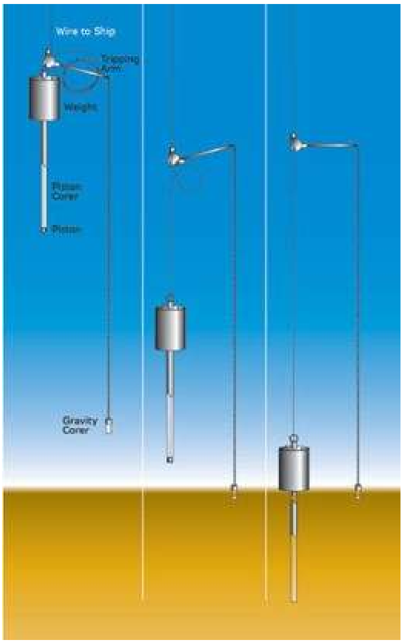
Using its large supportive base, the HAPS finds itself a stable sampling position even in the most adverse conditions - such as operating in swell seas or on a sloping seabed. On retrieval, the top cap seals the tube before withdrawal, and the base catcher operates immediately the sediment is cleared. This procedure includes some supernatant water in the core preserving sediment/water interface, and producing samples of a high quality

HAPS Core Sampler

Piston Core Sampler

Equipment Description. Piston core samples are usually longer, less disturbed and more complete than those from gravity corers. The main advantages of a Piston Corer over a Gravity Corer are the longer and less disturbed samples. The action of the piston reduces internal friction and prevents plugging. Cores up to 18m are possible in soft sediments and muds.

The system is lowered to the seabed, where the messenger operated release mechanism triggers the final free fall penetration to obtain a core sample. The mechanical trigger enables the free fall distance to be adjusted via the length of cable from clamp to counterweight.



Piston Core Sampler

Collection with a Hand Auger

Hand augers may be used to advance boreholes and collect soil and sediment samples in the surface and shallow subsurface intervals. Typically, a 4-inch stainless steel auger bucket with a cutting head is used. The bucket is advanced by simultaneously pushing and turning using an attached handle with extensions (as needed).

If sampling dry to moist surficial sediments is the sampling objective, then a sample can be collected by using grab samplers such as stainless steel hand augers, spoons, scoops or the sample containers themselves (wide-mouth jar). If sampling shallow submerged sediment (< 6 inches below the water surface), then the sample container may be used as the preferred collection device to minimize loss of fines upon raising the sample to the surface. The lid of the sample container may be used to cover the mouth of the sample before raising it to the surface.

When using a hand coring device, slowly push the corer into the sediment until there is a noticeable resistance (usually indicating the channel or basin floor), or until the trailing end of the core barrel is at the sediment surface.

When conducting surface soil or sediment sampling with hand augers, the bucket is advanced to the appropriate depth and the contents are transferred to the homogenization container for processing.

Hand augers are the most common equipment used to collect shallow subsurface soil and sediment samples. Auger holes are advanced one bucket at a time until the sample depth is achieved. When the sample depth is reached, the bucket used to advance the hole is removed and a clean bucket is attached. The clean auger bucket is then places in the hole and filled with soil and/or sediment to make up the sample and removed.

For sediment sampling using a boat, gently lower all grab and core samplers to the bottom so as not to create a bow wave and disturb the fine sediment on the surface. After the sample is collected at a given location, measure the depth of water with a weighted fiberglass tape and record this information on the sample collection log. These data are useful for profiling the water body bottom.

Retrieve the sample device slowly through the water to avoid washout by creating turbulent flow. Immediately directly transfer the sample to a stainless steel bowl (depending on analytical parameters), and check to see that the sediment recovery is acceptable (no visual signs of sediment loss or washing). If sediment recovery is unacceptable or the volume is insufficient, collect another sample close to, but upstream of, the previous attempt.

Thoroughly homogenize the collected sediment sample in a mixing bowl (due to stratified nature of sediment deposits), after removing excess water (being careful not to lose the fines in the process), rocks, sticks, leaves, and other organic debris. Then transfer the sediment into the sample containers using a stainless steel spoon or spatula. Fill the sample container such that little to no headspace exists.

Collect X-Y coordinates of the sample location using a portable GPS instrument. If a GPS is ineffective due to the terrain or tree canopy, mark the location in the field with a stake or flag.

Prior to sample collection, decontaminate non-disposable sample equipment according to the SOP No. S-7, Decontamination of Field Equipment.

Collection with a Split Spoon

A split spoon sampler may be used for surface soil sampling to depths of approximately six inches below ground surface where conditions are generally soft and non-indurated, and there is no problematic vegetative layer to penetrate.

A split-spoon sampler is a two-inch diameter, thick-walled, steel tube that is split lengthwise. A driving shoe is attached to the lower end; the upper end contains a check valve and is connected to the drill rods. For sediment and soil sampling, the split-spoon sampler is usually attached to a short driving rod and driven into the sediment and soil with a sledge hammer or slide hammer to obtain a sample.

Thoroughly homogenize the collected sediment sample in a mixing bowl (due to stratified nature of sediment deposits), after removing excess water (being careful not to lose the fines in the process), rocks, sticks, leaves, and other organic debris. Then transfer the sediment into the sample containers using a stainless steel spoon or spatula. Fill the sample container such that little to no headspace exists.

HEALTH AND SAFETY

All field personnel must wear protective clothing and equipment as specified in the Health and Safety Plan. When sampling from waterbodies, physical hazards must be identified, and adequate precautions must be taken to ensure the safety of the sampling team. The team member collecting the samples should stay away from the edge of the waterbody, where bank failure may cause loss of balance. When collecting samples near the edge of waterbodies, personnel must wear a lifeline. All sampling personnel must wear personal flotation devices (life vests). If sampling from a boat, appropriate protective measures must be implemented.

SAMPLE CONTAINERS AND LABELING

Following the sample collection procedures outlined above, sediment is homogenized using a spoon and/or electric drill and stainless steel paddle, and mixing bowl or bucket. Following homogenization, a portion is removed and transferred into appropriate sample containers (see QAPP for appropriate containers).

Sample labeling will occur as prescribed below:

1. Place a pre-printed label onto the sample collection container.
2. Place a pre-printed label onto the Field Data Sheet.
3. This procedure will be repeated for each sample collected using clean sample containers and unique sample ID numbers.

All samples will be stored on ice (4°C) in a secured cooler or refrigerator. Samples will be shipped under chain-of-custody, protected with suitable resilient packing material to reduce shock, vibration, and disturbance.

SITE CLEAN-UP

Excess sediment not included in the sample should be washed into the stream, pond, lake, or surface impoundment where it came from. All marker flags (if reused) should be decontaminated by wiping off with towels and/or baby wipes before re-use.

Throw all used wipes and gloves into the trash bags and take with you to dispose of at the field office.

RECORD KEEPING AND QUALITY CONTROL

Field personnel should collect the number and type of quality control sample as described in the Quality Assurance Project Plan. Each field crew will carry an iPad tablet that contains field data sheets, site diagrams, and sample labels will be preprinted. In addition, a field notebook should be maintained by each individual or team that is collecting samples, as described in the QAPP. Each sampling location must be recorded on the site diagram. Each sample should have an ID number affixed to the outside of the collection container, and the duplicate label must be affixed to the Sediment Sampling Log. Deviations from this sampling plan should be noted in the field notebook, as necessary.

For each location, the notebook information must include:

a. date
b. time
c. personnel
d. weather conditions
e. sample identification numbers that were used
f. descriptions of any deviations to the FSP/QAPP and the reason for the deviation

Samples taken from waters with visible color abnormalities, foaming, unusual odor, iridescent film, or other indications of non-homogeneous conditions should also be noted. Field personnel will collect the proper type and quantity of quality control samples as prescribed in the QAPP.

DECONTAMINATION

Because decontamination procedures are time consuming, having a quantity of pre-cleaned sampling tools available is recommended. All sampling equipment must be decontaminated prior to reuse as prescribed in the FSP and detailed in the QAPP SOP No. S-17, Decontamination of Field Equipment.

Equipment decontamination will consist of the following 5 steps:

1. Brush off any loose soil/sediment
2. Detergent Wash
3. Tap water rinse
4. Deionized water rinse
5. Air Dry

REFERENCES

Amec Foster Wheeler, 2016a. Field Sampling Plan; Penobscot River Phase III Engineering Study – Penobscot River, Maine. July 2016.

Amec Foster Wheeler, 2016b. Quality Assurance Project Plan; Penobscot River Phase III Engineering Study – Penobscot River, Maine. July 2016.

- END OF PROCEDURE -

APPENDIX B-2
SOP S-6A: INTERVAL SEDIMENT SAMPLING - MARSH, INTERTIDAL, AND SUBTIDAL SEDIMENTS

DRAFT

Interval Sediment Sampling Marsh, Intertidal, Subtidal

SOP S-6A

Table of Contents

Subtidal Sediment Grab Sample Collection

DRAFT

Interval Sediment Sampling Marsh, Intertidal, Subtidal

SOP S-6A

The objectives of this SOP is as follows;

1. **Maintain sample interval integrity,**
2. **Minimize sample exposure to the environment,**
3. **Reproducible sample collection and process methods.**

Note: Three core sleeves will be collected at each location. Once sediment is collected in plastic core sleeves, always keep sleeves in the vertical orientation until the core is completely frozen. The third core is a record core for additional volume if something happens to the first two cores during handling and processing.

Triple reps

- Collect 10% triple reps – Additional core volume will be collected at location where triple replicate samples are being collected. Triple replicate target locations should be from Mendall Marsh to the East Verona channel attempting to sample horizontal and vertical variability.

Marsh Sediment Coring Methodology

Equipment

- Sample and Analysis Plan, SOP, HASP, and Figures
- Two 3 inch diameter X 24" long plastic core sleeves
- Four 3 inch diameter endcaps
- Two 3"diameter X 12 inch long Stainless Steel Slide hammer core barrels screwed together.
- One Slide hammer
- 2 stainless steel core tip (Shoe)
- one vented stainless steel core top
- 2 adjustable wrenches
- 2 strap wrenches
- 3" stainless steel pipe cutter
- Ruler that measures tenths of a foot

- Camera
- IPAD with electronic FDRs
- R1 GPS receiver
- Nitrile gloves
- Paper towels
- Permanent pen
- 8.5” X 11” blank paper
- Two Ozark Coolers
- Dry Ice (two 3”diameter X24” long cores sleeves filled with dry Ice per cooler)
- Zip Ties
- Shooter shovel
- Serrated knife
- Kevlar cut resistance gloves
- Munsell Soil Color Book
- Decontamination Equipment
    - Plastic containers
    - 409 multipurpose cleaner
    - Knock off brushes
    - DI water

Ozark Cooler Setup

12 cores sleeves will fit in the cooler. 10 of the sleeves are samples and the two center cores will be filled with Dry Ice. Holes will be punctured in the endcaps for CO2 to escape.

Each Ozark cooler is meant to stay in one place like a refrigerator unit. Each boat will have two coolers. The core sleeves will be transferred between the the core collection boat and a ferry boat if necessary.

Sets of core sleeves will be bound together with zip ties to keep each location’s core sleeves together and to help ensure that sleeves remain in the vertical orientation.

Pre-Coring Core Sleeve Markings

Prior to loading plastic core sleeves into the stainless steel slide hammer barrel, use a permanent marker to write the following markings on the plastic core sleeves:

- Location Name
- Core Collection Date
- Core Collection Time
- 18” target line
- Top
- Bottom

Marsh Core Sleeve Collection

- Navigate to the desired sediment sample location.
- Screw the slide hammer onto the vented stainless steel top.
- Making sure markings are in the correct orientation, load the pre-marked core sleeve in the slide hammer stainless steel barrel from the bottom.
- Screw the stainless steel core tip (shoe) on the bottom of the stainless steel core barrel.
- Drive the core to 18” below ground surface using the slide hammer maintaining the core in a vertical orientation.
- Move the slide hammer from side to side to break off the core at the bottom of the shoe.
- Remove the core barrel from the ground being sure to keep the core in the vertical orientation.
- Screw off the stainless steel coring tip (shoe).
- Start to slide the core sleeve out of the core barrel.
- Cap the bottom of the core.
- Remove the rest of the core being sure to keep the core in the vertical orientation.
- Measure the total amount recovered and mark the % recovery on the core with the permanent pen.

Calculate: Length Recovered/Total Cored = % recovery

- Ensure that there is at least 70% recovery within the core sleeve
- If the recovery is less than 70%, preserve and stand core sleeve aside and try the second core.
- If 70% recovery is achieved, utilizing the stainless steel pipe cutter, cut the plastic core sleeve ¼ inch above the top of the recovered core.
- Cap the top of the core sleeve.
- Place the core in the Ozark cooler.
- Repeat the process for the second core sleeve using the same stainless steel core barrel and a decontaminated shoe.
- Ensure that there is at least 70% recovery or that the recovery is within 10% of the previous core attempt at the same location.
- Collect GPS location between the three slide hammer borings.
- Decontaminate the stainless steel slide hammer core barrels and fittings according to the Decontamination SOP S-17.

Note – Subsequent cores at the same location will be attempted using the same stainless steel coring barrel and fittings without decontamination. Decontamination of the core barrels and fittings will occur between sample locations.

Post-Core Collection Core Marking

- Mark the 0.0 depth on the two cores.

Plastic Core Sleeve Handling and Management

- Each set of core sleeves will be bound together with zip ties and placed in the Ozark cooler ensuring that the length of the sleeves are in contact with the dry ice sleeves.
- Core sleeves will be secured in the upright manner to ensure the sleeves remain in the vertical manner as they freeze.
- Coolers will not be lifted. Sets of full core sleeves will be transferred between Ozark coolers for transport back to the field office.
- Core sleeves will be placed and stored in the field office freezer in the vertical orientation until core sleeves are removed from the freezer for sample logging and processing.

Soil Logging and Classification

- Utilizing the shooter shovel, create a square plug the length of the shovel next to the coring location
- Remove the plug from the ground.
- Put on the Kevlar cut resistant gloves.
- Utilizing the serrated knife, dissect the sediment plug with the objective of Logging the sediments to 12 inches bgs.
- Place ruler and info sheet next to bisected plug. Take a Photograph
- Log the soils according to SOP S-7 on the E-FDR.

Intertidal Sediment Coring Methodology

Equipment

- Sample and Analysis Plan, SOP, HASP, and Figures
- Boat
- Safety equipment
- Salinometer
- Three 3 inch diameter X 24 inch long plastic core sleeves
- Six 3 inch diameter end caps
- Watermark sediment sampler and appropriate tools
- 12 feet of Watermark extension rods
- 3 inch stainless steel pipe cutter.
- Ruler that measures tenths of a foot
- Camera
- IPAD with electronic FDRs
- R1 GPS receiver
- Nitrile gloves
- Paper towels
- Permanent marker
- 8.5” X 11” blank paper
- Two Ozark Coolers
- Dry Ice (two 3”diameter X24” long cores sleeves filled with dry Ice per cooler)
- Zip Ties
- Cordless Drill
- ¼ inch drill bit
- Decontamination Equipment
    - Plastic containers
    - 409 multipurpose cleaner
    - Knock off brushes
    - DI water

Ozark Cooler Setup

12 cores sleeves will fit in the cooler. 10 of the sleeves are samples and the two center cores will be filled with Dry Ice. Holes will be punctured in the endcaps for CO2 to escape.

Each Ozark cooler is meant to stay in one place like a refrigerator unit. Each boat will have two coolers. The core sleeves will be transferred between the the core collection boat and a ferry boat if necessary.

Sets of core sleeves will be bound together with zip ties to keep each location's core sleeves together and to help ensure that sleeves remain in the vertical orientation.

Pre-Coring Core Sleeve Markings

Prior to loading plastic core sleeves into the stainless steel slide hammer barrel, use a permanent marker to write the following markings on the plastic core sleeves:

- Location Name
- Core Collection Date
- Core Collection Time
- 18" target line
- Top
- Bottom

Intertidal Sediment Core Collection Method

- Navigate to the desired sediment sample location while intertidal sediments are covered with water.
- Collect the surface water salinity utilizing the salinometer.
- Use the watermark sediment coring handle with core to advance the core tube to 18" below ground surface in a vertical manner from the boat.
- Remove the core from the ground and water.
- Cap the bottom of the core.
- Remove the top of the core from the Watermark coring handle.
- Measure the total amount recovered.

Calculate: Length Recovered/Total Cored = % recovery

- Ensure that there is at least 70% recovery within the core sleeve.
- Utilizing the stainless steel pipe cutter, cut the plastic core sleeve ¼ inch above the top of the recovered material.
- Cap the top of the core sleeve.
- Repeat the process for the second and third core sleeve using a new plastic core sleeve.
- Drill a 1/4 inch hole with the cordless drill ¼ inch above the consolidated mud and let the overlying clear water drain out.
- Collect the overlying water and record a salinometer reading.
- Using the 3" decontaminated stainless steel pipe cutter, cut the core sleeve horizontally at the drilled hole such that no cutting equipment touches the media to be sampled.
- Cap the top of the core and place it in the Ozark cooler to begin freezing.
- Repeat the process above for the second and third cores.
- If the recovery is less than 70%, preserve and stand core sleeve aside and try the second core.
- Ensure that there is at least 70% recovery or that the recovery is within 10% of the previous core attempt at the same location.

- Collect GPS location at sediment collection location.

Post-Coring Core Sleeve Markings

Use a permanent marker to mark the following on the core;

- Top of consolidated mud (as identified in the previous section) = 0.0
- Salinity

Plastic Core Sleeve Handling and Management

- Each set of three core sleeves will be bound together with zip ties and placed in the Ozark cooler ensuring that the length of the sleeves are in contact with the dry ice sleeves.
- Core sleeves will be secured in the upright manner to ensure the sleeves remain in the vertical manner as they freeze.
- Coolers will not be lifted. Sets of full core sleeves will be transferred between Ozark coolers for transport back to the field office.
- Core sleeves will be placed and stored in the field office freezer in the vertical orientation until core sleeves are removed from the freezer for sample processing.

Soil Logging and Classification

- Back in the office, the third core will be split open and utilized to log and classify the sediments per SOP S-7 on the E-FDR.
- Place the ruler and info sheet next to the core and take a photograph.

Short Core Processing

See SOP S-6B Short Core Processing for how to process the cores collected above.

Subtidal Sediment Grab Methodology

Note: All subtidal sediment grab sample processing happens on the Boat.

Equipment

- Sample and Analysis Plan, SOP, HASP, and Figures
- Boat
- Safety equipment
- Petite Ponar
- Sample containers
- Camera
- IPAD with electronic FDRs
- R1 GPS receiver
- Nitrile gloves
- Paper towels
- Permanent Pen
- 8.5” X 11” blank paper
- Ozark Coolers
- Dry Ice
- 2.5 gallon bucket
- Kemmerer sampler
- Salinometer
- Stainless Steel spoon
- Munsell Soil Color Book
- Decontamination Equipment
    - Plastic containers
    - 409 multipurpose cleaner
    - Knock off brushes
    - DI water

Subtidal Sediment Grab Collection

- Navigate to the desired sediment sample location.
- Deploy the petite ponar to the river bottom to grab bottom sediments
- Recover and remove the petite ponar from the water and identify the amount of sediment recovered. (Actual volume recovered/ Total volume of sampler).
- When 70% recovery is achieved, place the contents of the ponar in a new 2.5 gallon bucket.
- If recovery is less than 70%, discard the contents and re-deploy the petite ponar until two grabs of 70% or more are recovered.
- On a piece of paper write the location name, date, and indicate top of the core. (Info sheet)
- Take a photo with the info sheet.
- Classify and log the sediments in the petite ponar on the Sediment Grab E-FDR.
- While still on sample location, deploy a Kemmerer Sampler to the bottom of the river. When Kemmerer is resting on the bottom, send the messenger to close the Kemmerer and capture the

sample at the mud line. Use the salinometer to record a salinity measurement of the fluid within the Kemmerer Sampler.

- Additionally record the surface water salinity with the salinometer at the sample location.

Subtidal Sediment Grab Sample Collection

See Table 1.1 above for Sample and Analysis Plan.

- The targeted intervals for grab sampling is;
  - 0.0 - 0.3
- Homogenize the contents of the bucket (0.0-0.3) using a decontaminated stainless steel spoon.
- Collect the Hg and MeHg samples in one jar. (Instant freeze on dry ice)
- Collect the TOC in one jar. (4°C)
- Collect the Organic Content in one jar. (4°C)

Soil Logging and Classification

- After collecting the sample on the boat, log and classify the soils according to SOP S-7 on the E-FDR.

Created by: BPW 6/30/17

APPENDIX B-3
SOP S-6B: SHORT CORE PROCESSING

SOP S-6B Short Core Processing

Work Orders .030, .040 and .050

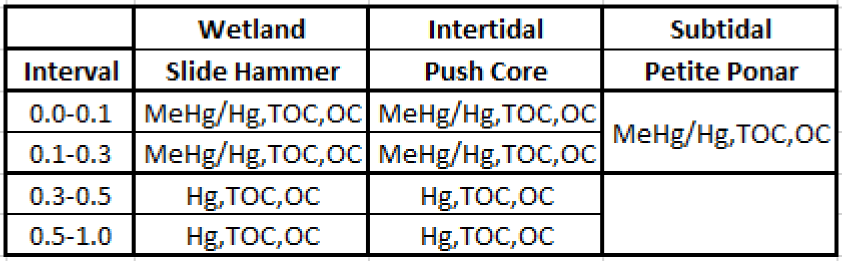
Equipment

- Scrub brush
- Liquinox in squirt
- Potable water in squirt bottle
- 409 in squirt bottle
- DI water in squirt bottle
- 2 gallon bucket for decon fluids
- Paper towels
- Broom
- Dust pan
- 4 X hatchets
- 4 lb Hammer
- Window box fan
- Core slicer jig
- Hook blade box cutter
- 2 X 18”Long X 4” wide X 5” tall bread pans with the bottom lined with tephlon cutting board
- 2 X 12”wide X 18 “X 6 “deep stainless steel chafing pans
- Aluminum Foil
- 9 – 16 oz plastic or glass sample bottles per location
- 2 X 2 gallon buckets with lids per location
- Measuring folding rule.
- Kneeling pad
- I-Pad
- Nitrile gloves
- Cut resistant gloves
- Trash bag
- Waste bucket for extra core material beyond one foot
- Hatchet sharpener (sanding wheel grinder, file, etc.)

Core Processing

Notes:

1. **After collection, cores are collected and frozen for a minimum of 12 hours (24 hours is optimal).**
2. **Cores should be processed on shore at the field lab after freezing in on-site freezer.**
3. **Avoid core processing while diesel machinery is running up wind in the boat yard.**
4. **Measurements are in tenths of feet.**



	Wetland	Intertidal	Subtidal
Interval	Slide Hammer	Push Core	Petite Ponar
0.0-0.1	MeHg/Hg,TOC,OC	MeHg/Hg,TOC,OC	MeHg/Hg,TOC,OC
0.1-0.3	MeHg/Hg,TOC,OC	MeHg/Hg,TOC,OC	
0.3-0.5	Hg,TOC,OC	Hg,TOC,OC	
0.5-1.0	Hg,TOC,OC	Hg,TOC,OC	

There is a hierarchy of analysis for each interval depending on sample volume.

1. Hg/MeHg
2. TOC
3. OC

If there is not enough volume for a full analysis sample set, fill jars in the order above.

Processing of the upper interval which includes methyl mercury analysis

0.0-0.1 – Mercury (Hg)/ Methyl Mercury (MeHg), Total Organic Carbon (TOC), Organic Content (OC)

0.1-0.3 – Hg/MeHg, TOC, OC

1. Set up box fan in window facing out to create negative pressure in the process room.
2. Sweep the floor.
3. Decontaminate all surfaces using 409 and paper towels, squirt and wipe all table and floor surfaces.
4. Decontaminate the core cutter jig, hook blade, and hatchets with Liquinox, potable water, 409 and de-ionize water rinse.
5. Line all four pans with foil.
6. Retrieve the set of two frozen cores from the freezer or one location.
7. Close the door to the process room to create a negative pressure environment.
8. Don cut resistant gloves under nitrile gloves. Change nitrile gloves between each contact with sample intervals.
9. Cut the zip tie that holds the cores together.
10. Slice open each core longitudinally with the hook blade and core cutter jig.
11. Cores longer than 1 foot will be cut to one foot in the stainless steel chaffing pans. Lay the frozen core into the aluminum foil lined chaffing pan and measure one foot from the top of the core. Align the decontaminated hatchet at one foot from the top of the core. Utilize the hammer to hit the back of the hatchet and cut the core.
12. Decontaminate the hatchet with liquinox and brush, potable water rinse, 409 rinse, followed by a DI rinse.
13. Remove the 1 foot frozen core from the chaffing pan and place it in the foil lined bread pan.
14. Repeat the above if necessary for the second core if it is longer than 1 foot.

15. Place the 2 one foot frozen cores in the individual foil lined bread pans next to each other.
16. Utilizing a decontaminated hatchet and hammer, cut off the top 0.0 to 0.1 foot interval of each core by measuring from the top of the core.
17. Immediately put the 0.0 to 0.1 interval from each core into one pre-labeled container.
18. Decontaminate the hatchet same as above.
19. Utilizing a decontaminated hatchet and hammer, cut off the 0.1 to 0 .3 interval by measuring 0.2 feet from the top of the remaining core.
20. Immediately put the 0.1 to 0.3 interval from each core into two separate pre-labeled containers.
21. The one 0.0 to 0.1 and the two 0.1 to 0.3 intervals sample jars will return to the freezer to remain frozen.
22. Utilizing a decontaminated hatchet and hammer, cut off the 0.3 to 0.5 interval by measuring 0.2 feet from the top of the remaining core.
23. Place the two 0.3 to 0.5 and the 0.5 to 1.0 frozen intervals into two separate pre-labeled two-gallon buckets. Seal the lid on each bucket and put aside to thaw for 24 hours in mercury free area.
24. Repeat the steps above for each set of cores starting at #2 above.
25. The top two intervals will be shipped to Eurofin Global Science of Bothel Washington for homogenization and sub aliquotting of TOC and OC. Eurofin Global Science will ship the aliquot TOC samples to Alpha Analytical for analysis and the OC samples to Amec Foster Wheeler lab for analysis.
26. Decontaminate surfaces. Dispose of foil, ppe and investigative derived waste.

Lower sample interval which does not include methyl mercury analysis

0.3-0.5 – Hg, TOC, OC

0.5-1.0 – Hg, TOC, OC

1. Set up box fan in window facing out to create negative pressure in the process room.
2. Sweep the floor.
3. Decontaminate all surfaces using 409 and paper towels, squirt and wipe all table and floor surfaces.
4. Close the door to the process room to create a negative pressure environment.
5. Once the core slices have thawed for 24 hours, remove the bucket lid from one 2 gallon bucket with the two 0.3-0.5 foot core sections.
6. Utilizing a nitrile gloved hand, thoroughly mix and homogenize the sample volume for one minute.
7. Fill the pre-labeled jars for Hg, TOC, and OC.
8. Decontaminate all surfaces using 409 and paper towels, squirt and wipe all table and floor surfaces.
9. Remove the bucket lid from the location's second 2-gallon bucket with the two 0.5-1.0 foot core sections.
10. Utilizing a nitrile gloved hand, thoroughly mix and homogenize the sample volume for one minute.
11. Fill the pre-labeled jars for Hg, TOC, and OC in this order based on volume.

12. Hg sample will be shipped to Eurofin Global Sciences of Bothel Washington for Analysis
13. TOC sample will be shipped to Alpha Analytical of Westborough Massachusetts for analysis
14. OC sample will be shipped to Amec Foster Wheeler of Durham North Carolina for analysis.
15. Decontaminate surfaces. Dispose of foil, ppe and investigative derived waste.

APPENDIX B-4
SEDIMENT LAB HOMOGENIZATION AND SUBSAMPLING (EUROFINS)

eurofins	Always check on-line for validity. **AMEC Sediment Lab Homogenization and Subsampling Procedure**	Level: **Work Instruction**
Document number: **EFSR-P-SP-WI15953**		
Old Reference:		
Version: **1**		Organisation level: **4-Business Unit**
Approved by: **UDWU, URNE** Effective Date **08-AUG-2017**	Document users: **5_EUUSBO2_AFS, 5_EUUSBO2_QA, 5_EUUSBO2_S-and-R, 5_EUUSBO2_TraceMetal**	Responsible: **5_EUUSBO2_QA**

Sediment Laboratory Homogenization and Subsampling Process

Sediment Laboratory Homogenization and Subsampling Process

1. **Check In Samples:** Check in the samples following all applicable EFGS SOPs. After checking the samples, place them in the walk in freezer until ready to process in the following manner

2. **Composite The Sediment Cores:** For this particular sediment core monitoring project, there will either be a single jar with 2 core sections or two separate 16 oz. PP sediment jars that are designated to be composited together.

    a. Remove the two sample jars from the freezer that correspond to one another and let thaw.

    b. Composite the sediment volume from each of the two jars together:

        i. Obtain PP Sediment Jar #1 and its accompanying Matrix Duplicate PP Sediment Jar #2 and double check that the pair matches.

        ii. Place the contents of Jar #1 into Jar #2 or combine in a single trace clean container that will accommodate the mass of both samples.

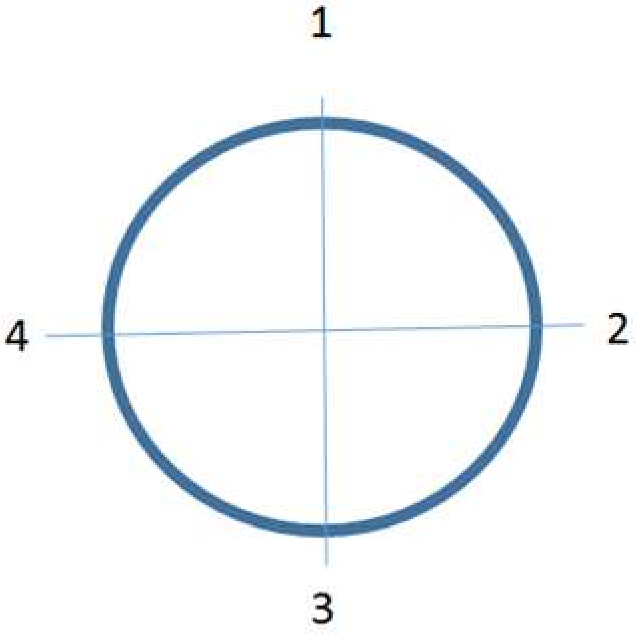
        iii. Using a trace clean implement (one time use and throw away) remove as much of the remaining sediment off the wall of the PP Jar and bottom of jar and include in the final combined jar.

3. **Homogenize The Composited Sediment:** Homogenize the two sediment samples that have been composited into one container in the following manner:

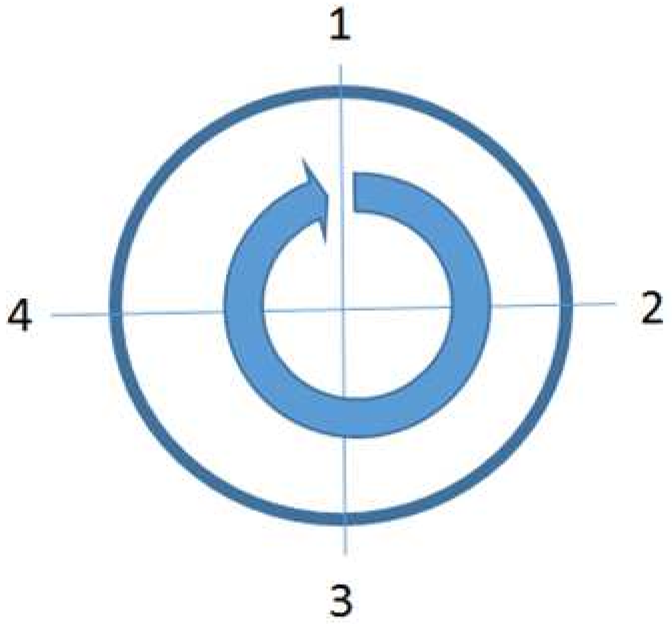
    a. Using a trace clean implement (one time use and throw away after each use) combine/homogenize/mix the sediment in the following manner to ensure that the sample is as well mixed and homogenous prior to sub sampling.

        i. **Turn The Bottom Of The Sediment Jar To The Top At 4 Locations:**

            1. Divide the circular sediment jar into 4 x "imaginary" quadrants
            2. At the top of each imaginary dividing line – insert a trace clean implement (one time use and throw away after each use), run the implement down the side of the jar and "turn" the bottom portion of the sediment jar up and over the top to the center of the jar.
            3. Do this at each of the 4 lines as show below



i. **Radially Turn The Sample To Further Mix:** Once all 4 points of the jar have been turned over, using the same trace clean one time use implement, RADIALLY turn the sample 3 times to further mix the sample sediments. Place the implement to as near the bottom of the jar as possible and turn the sample 3 times



4. **Sub Sample The Now Composited/Homogenized Sample For The Following Analysis:** Sub sample the now composited / homogenized sediment using the following criteria for priority of analysis. If there is not enough of the Material for the analysis that are lower in priority, please note this in the appropriate way so that this is then reported back to AMECFw.

Hierarchy of analysis:

1. Hg
2. MeHg
3. TOC
4. OC (Organic Content)
    a. Sub Sample The Appropriate Amount For Methyl Hg by Mod EPA 1630

    b. Sub Sample The Appropriate Amount For Total Hg By 7474_1631

    c. Sub Sample The Appropriate Amount for TOC (Alpha)

        i. Use AMECFW provided excel COCs, populate the date and sampling time on the COC based on date and time of homogenization.

        ii. Ship subsamples to Alpha following all of the requirement for the sample handling and send overnight to Alpha.

        iii. Email Denise King (AmecFW) and Liz Porta (eporta@alphalab.com) (Alpha) the day samples ship.

d. Sub Sample The Appropriate Amount For and Organic Content (AMECFW).

   i. Use AMECFW provided excel COCs, populate the date and sampling time on the COC based on date and time of homogenization.

   ii. Ship subsamples to AMECFW for overnight shipment.

   iii. Email Denise King (Amec FW) and Albert Romero (albert.romero@amecfw.com), Hugo Santana (hugo.santana@amecfw.com), and Stephen Fenton (Stephen.Fenton@amecfw.com (AmecFW) the day samples ship.

End of document

Version history

Version	Approval	Revision information
1	25.JUL.2017	

APPENDIX C
LABORATORY ANALYTICAL AND DATA VALIDATION REPORTS

APPENDIX C-1
2017 SEDIMENT MONITORING ANALYTICAL LABORATORY REPORTS

APPENDIX C-2
2017 WATER QUALITY MONITORING
ANALYTICAL LABORATORY REPORTS

APPENDIX C-3
2017 SEDIMENT MONITORING VALIDATION REPORT

APPENDIX C-4
2017 WATER QUALITY MONITORING VALIDATION REPORTS

APPENDIX D
RIVER STAGE AND TURBIDITY DATA

APPENDIX D-1
HISTORICAL U.S. GEOLOGICAL SURVEY EDDINGTON GAGE DATA

APPENDIX D-1
HISTORICAL USGS EDDINGTON GAGE DATA

Penobscot River Estuary Phase III Engineering Study

YEAR	Monthly mean in ft (Calculation Period: 2007-08-01 -> 2013-08-31)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007								2.847	2.891	3.383	6.944	5.064
2008	5.321	4.870	5.989	10.143	8.718	4.709	4.305	5.077	3.665	5.141	6.675	6.957
2009	5.295	4.460	5.265	11.226	5.827	5.489	6.159	4.979	3.333	4.541	5.623	5.906
2010	5.202	4.805	6.996	8.388	4.030	4.061	3.298	2.807	3.386	5.074	7.085	8.736
2011	4.904	4.182	7.031	9.257	9.695	4.915	3.242	4.117	6.454	5.231	4.201	5.060
2012	4.285	3.744	6.270	5.965	6.237	5.869	4.509	3.037	3.295	5.841	6.372	4.821
2013	4.798	4.972	5.304	7.461	6.035	7.304	5.249	4.585	5.334	3.776	4.335	7.506
2014		4.273	3.818	10.391	7.794	4.607	5.220	3.566	3.042	4.621	5.555	7.749
2015	11.415	9.326	7.127	9.100	5.342	4.824	3.446	3.673	3.522	5.796	4.903	6.097
2016	7.271	6.389	6.816	8.352	4.459	3.509	2.869	2.824	2.633			
Mean of Historic Monthly Gage Height	6.061	5.224555556	6.068444444	8.920333333	6.459666667	5.031888889	4.2552222	3.7512	3.7555	4.822666667	5.743666667	6.432888889

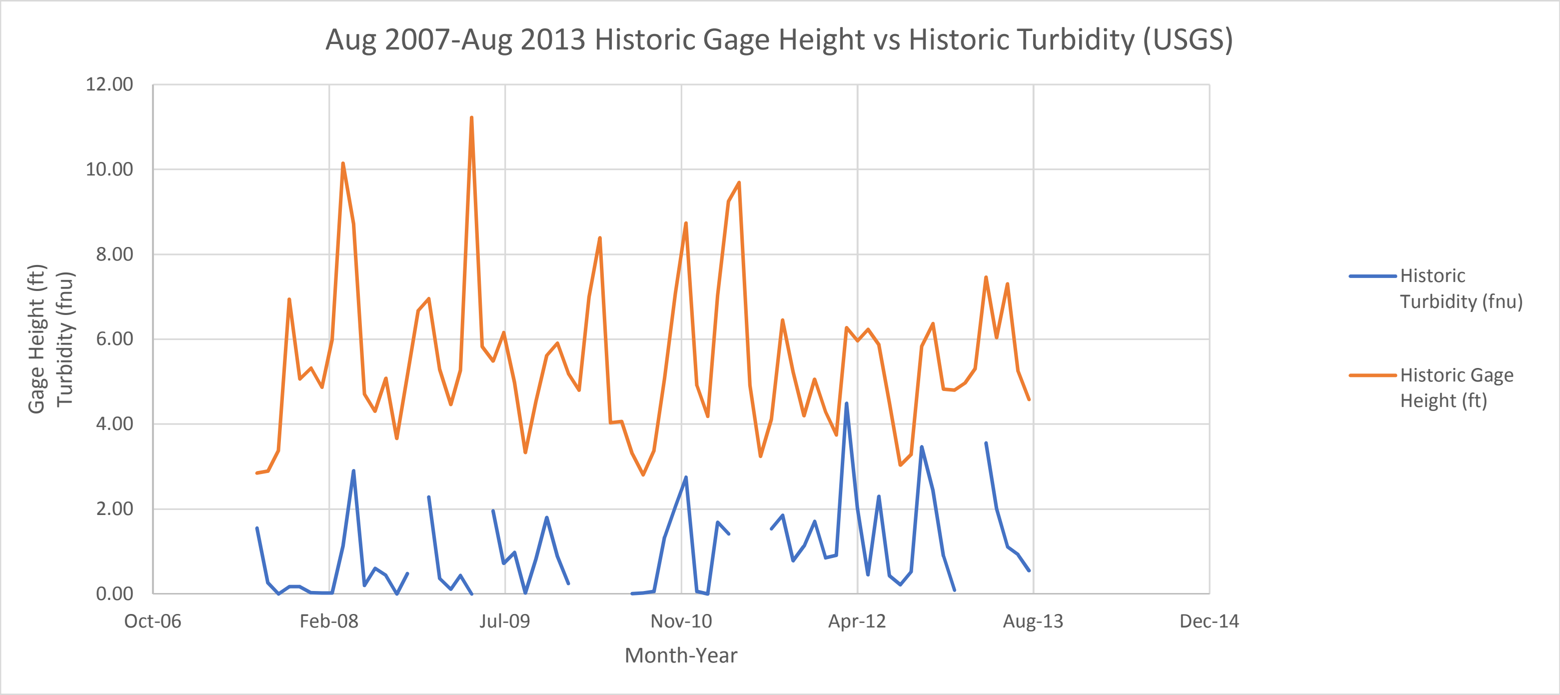
63680, Turbidity, water, unfiltered, monochrome near infra-red LED light, 780-900 nm, detection angle 90 +-2.5 degrees, formazin nephelometric units (FNU),												
YEAR	Monthly mean in FNU (Calculation Period: 2007-08-01 -> 2013-08-31)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007								1.55	0.26	0.00	0.17	0.17
2008	0.03	0.02	0.02	1.13	2.90	0.20	0.60	0.44	0.00	0.48		2.28
2009	0.37	0.11	0.44	0.00		1.96	0.72	0.98	0.02	0.82	1.80	0.89
2010	0.25						0.01	0.02	0.06	1.34	2.07	2.75
2011	0.06	0.00	1.69	1.42		1.67		1.54	1.85	0.78	1.13	1.71
2012	0.85	0.91	4.49	2.02	0.45	2.30	0.43	0.22	0.53	3.47	2.44	0.89
2013	0.09			3.56	2.01	1.11	0.93	0.55				
2014-2016	Data not available											
Mean of monthly Turbidity	0.28	0.26	1.66	1.63	1.79	1.45	0.54	0.76	0.45	1.15	1.52	1.45

USGS Gage and Turbidity Data: https://waterdata.usgs.gov/usa/nwis/uv?01036390

APPENDIX D-2
HISTORICAL U.S. GEOLOGICAL SURVEY EDDINGTON TURBIDITY DATA

APPENDIX D-2
HISTORICAL USGS EDDINGTON TURBIDITY DATA

Penobscot River Estuary Phase III Engineering Study

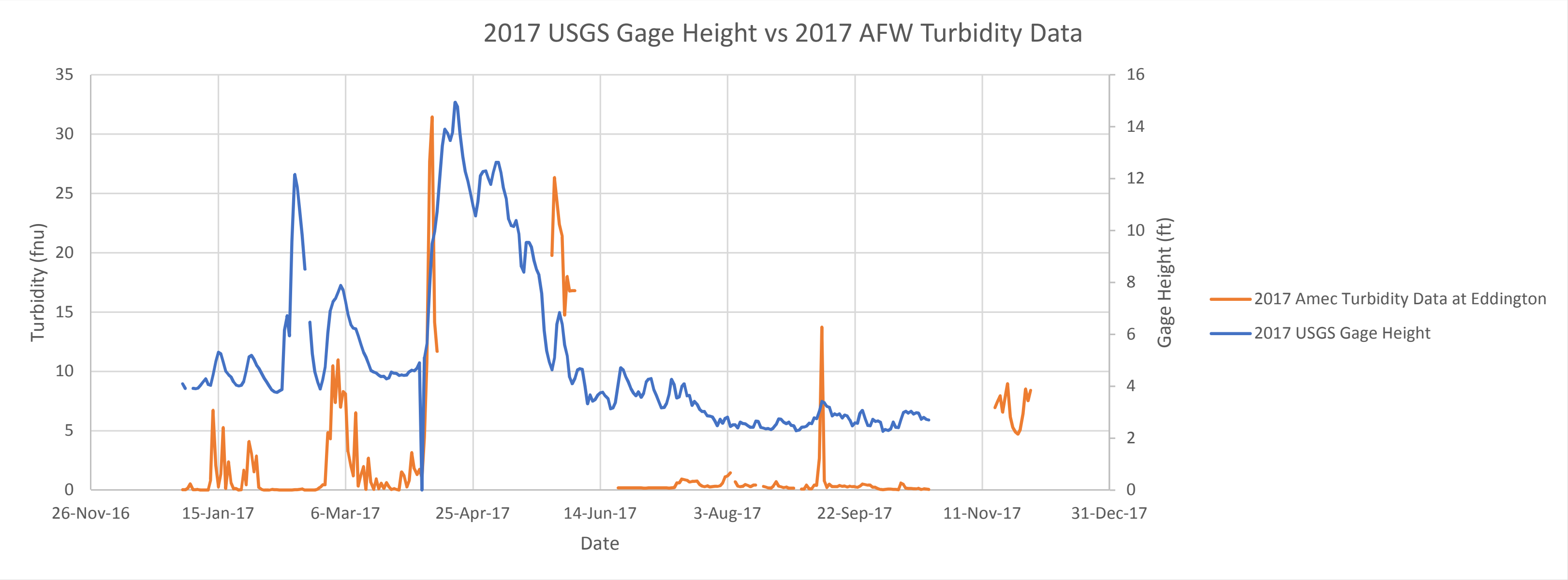


USGS Data Taken from: https://waterdata.usgs.gov/usa/nwis/uv?01036390

APPENDIX D-3
2017 EDDINGTON BOAT RAMP TURBIDITY DATA

APPENDIX D-3
2017 EDDINGTON BOAT RAMP TURBIDITY DATA

Penobscot River Estuary Phase III Engineering Study



USGS Gage Height Readings Taken from: https://waterdata.usgs.gov/usa/nwis/uv?01036390

APPENDIX E
TEMPORAL DISTRIBUTION OF SEDIMENT MERCURY AND METHYL MERCURY

APPENDIX E: SEDIMENT ASSESSMENT RESULTS

TABLES

FIGURES

Appendix E presents an assessment of the temporal and spatial trends of mercury and methyl mercury concentrations in the top 0- to 0.1-foot (ft) of sediment using data from the period 2006 through 2017.

E.1. SEDIMENT ASSESSMENT METHODS

Historical data were evaluated by number of samples and years to determine which sampling locations had multiple years of data that would result in a robust exploratory data evaluation. The data used in the statistical evaluation included data from the years 2006 to 2012 and 2017 (**Table E-1**). Sampling locations by sediment type include:

- Subtidal: E-01-01, E-01-03, E-01-04
- Intertidal: OV-04, OV-01, OV-02, OB-05, W-17-Intertidal, W-21-Intertidal, W-61 Intertidal, W-65-Intertidal, ES-02, ES-13
- Marsh Platforms: W-21-UM-Central-C, W-21-UM-East-C, W-21-UM-South, W-21-UM-West-A, W-21-High, W-21-Mid, W-21-Low, W-61-High, W-61-Mid, W-61-Low, W-63-High, W-65-High, W-65-Mid, W-17-Low

Details of data evaluation are provided in **Section 4.0**.

E.2. SEDIMENT ASSESSMENT RESULTS

Subtidal Sediments

Mercury, methyl mercury, and TOC are summarized by reach and sampling location (includes all years of available data) (**Figures E-1 through E-6**). Temporal trends of mercury, methyl mercury, normalized mercury, and normalized methyl mercury are presented on **Figures E-7 through E-10**.

Mercury and methyl mercury concentrations and percent TOC were approximately 1.6 to 3.6 times higher in Fort Point Cove than in the Upper Penobscot Bay reach (**Table E-2**), consistent with the expected difference of a depositional environment (i.e., Fort Point Cove) compared to an area subject to more estuarine circulation and flow (i.e., Upper Penobscot Bay). Mercury was significantly related to TOC and reach, but the interaction between TOC and reach was not significant (**Table E-3a and E-3b**). Methyl mercury showed a significant interaction between TOC and reach. Methyl mercury also was significantly related to TOC and reach, indicating that the relationship of TOC and methyl mercury differs by reach (**Table E-3a**).

Linear regressions by sampling location test for trends over time – *are mercury concentrations in sediments changing at a rate that is statistically significant for the data set analyzed?* Using a log-linear regression model, mercury and methyl mercury concentrations in subtidal sediments did not show significant change through time (**Table E-4**, **Figures E-7 and E-8)**, except at E-01-04 where methyl mercury concentrations appear to be increasing through time over the interval 2008-2012 (**Figure E-8**).

Normalizing mercury to organic carbon showed a significant change through time at E-01-01 and E-01-03 (**Figure E-9**). After methyl mercury concentrations were normalized by TOC, the increase at E-01-04 was no longer significant as determined by a loglinear regression model (**Figure E-10**).

Rank-order tests for trends provide evidence regarding the impact of outliers, which can substantially impact linear regression models. **Table E-4** includes a Kendall's rank order probability (p-Tau) for statistically significant trends. Although the methyl mercury trend is significant by loglinear regression at E-01-04, the p-Tau value (0.86) means that a significant trend was not indicated by the Kendall rank order test. This lack of significant trend suggests that the trend of methyl mercury identified by a loglinear regression model is affected by the 2012 samples which have elevated methyl mercury concentrations relative to other years. The p-Tau values for TOC-normalized mercury was significant (0.002) at E-01-01, but not significant (0.073) at E-01-03 (**Table E-4**). This difference suggest that the trend of normalized mercury identified by loglinear regression at E-01-03 is affected by the variability of results in 2008.

Intertidal Sediments

Mercury, methyl mercury, and TOC by reach and sample location are presented on **Figures E-11 through E-16**. Temporal trends of mercury, methyl mercury, normalized mercury, and normalized methyl mercury are presented on **Figures E-17 through E-20**.

Sediment mercury concentrations are lowest in Veazie and increasing downstream; sediment mercury concentration are similar between Verona reaches (**Table E-5**). Mercury and methyl mercury showed a significant interaction between TOC and reach and between TOC and upstream/downstream location (**Table E-6 and E-7**). Mercury and methyl mercury also were significantly related to TOC, reach, and upstream/downstream location, indicating that the relationship of TOC and mercury or methyl mercury differ by reach (**Table E-6**) and by separation of upstream to downstream locations (**Table E-7**).

Time trends analysis using linear regression models on intertidal sediment sampling locations showed significantly decreasing ($p<0.05$) mercury concentrations at OV-02 (consistent with the Kendall rank order test results) and ES-13 through time, but not at the other intertidal sediment sampling locations (**Table E-4, Figures E-17 and E-27**). Methyl mercury concentrations significantly declined through time at OV-02, OB-05, ES-13 (consistent with the Kendall rank order test results), W-17-Intertidal, W-21-Intertidal, and W-61-Intertidal, but not in any of the other intertidal stations (**Table E-4, Figures E-18 and E-29**). No significant trends in TOC normalized mercury were identified at the intertidal sediment sampling locations evaluated (**Figures E-19 and E-28, Table E-4**). Normalized methyl mercury concentrations showed a significant downward trend only at W-21-Intertidal ($p<0.001$) and OB-05 ($p=0.002$) (**Figures E-20 and E-30**). The Kendall rank order test was not consistent with the loglinear regression results at W-21-Intertidal (p-Tau = 0.73) and OB-05 (p-Tau = 0.091) (**Table E-4**). As with subtidal sediments, some p-Tau values for TOC-normalized mercury at W-17-Intertidal were significant for intertidal sediments while loglinear values were not significant (**Table E-4**).

Marsh Platform Sediments

Mercury, methyl mercury, and TOC by reach and sample location are presented on **Figures E-21 through E-26**. Temporal trends of mercury, normalized mercury, methyl mercury, and normalized methyl mercury are presented on **Figures E-27 through E-30**.

The highest (2,510 ng/g) and lowest (305 ng/g) sediment mercury concentrations were found at low elevation marsh platform stations in Frankfort Flats. Mean mercury concentrations are lowest at Verona East and higher in Orrington (where data are available), Frankfort Flats and Mendall Marsh for low and intertidal elevation marsh platform sediments (**Table E-8**). Verona East mercury concentrations are approximately 1.5 to 2 times lower than Frankfort Flats and Mendall Marsh in low elevation marsh platform sediments and 2 to 3 times lower in intertidal marsh platform sediments (**Table E-8**).

In high elevation marsh platform sediments, Mendall Marsh had higher methyl mercury concentrations than found in high elevation sediments in the Orrington and Verona East reaches (**Table E-8**). Mendall Marsh high elevation sediment methyl mercury concentrations were three to four times higher than concentrations in the Orrington and Verona East reaches (**Table E-8**). In intertidal marsh platform sediments, Mendall Marsh had higher methyl mercury concentrations than sediments in the Verona East reach (**Table E-8**). Mendall Marsh sediment methyl mercury concentrations were two times higher than concentrations in the Verona East reach (**Table E-8**). Verona East and Frankfort reaches were similar in methyl mercury concentrations in intertidal marsh platform sediments (**Table E-8**).

The average (median or mean) percent TOC in marsh platform high elevation sediments in the Orrington reach was approximately three to four times lower than the mean percent TOC in high elevation marsh platform sediments in the other three reaches (**Table E-8**). Percent TOC in marsh platform sediments in the Mendall Marsh reach was approximately two times lower than in low elevation marsh platform sediments in the Frankfort Flats reach (**Table E-8**). Percent TOC in marsh platform intertidal sediments in the Verona East reach was approximately two times lower than in intertidal marsh platform sediments in the Frankfort Flats and Mendall Marsh reaches (**Table E-8**).

Linear regressions at marsh platform sediment sampling locations showed significantly decreasing mercury and TOC normalized mercury concentrations at W-21 in high marsh platform sediments, at W-61 in low marsh platform sediments, and at W-21-UM-Central (**Table E-4**, **Figures E-27 and E-28**). Mercury and TOC normalized mercury concentrations did not change in other marsh platform sediments. Only TOC normalized mercury concentrations at the West W-21-UM and W-61-High locations showed a significantly decreasing trend (**Table E-4**). Mercury concentrations otherwise did not change significantly at other locations including W-61-High, W-

63-High, W-21-Mid, W-61-Mid, W-21-UM-East-C, W-21-UM-South, W-21-UM-West-A, W-21-Low, or W-17-Low locations. TOC normalized mercury concentrations did not change significantly at any marsh platform sampling location with the exception of W-21-UM-Central-C, W-21-UM-West, W-21-High, W-61-High, and W-61-Low (**Table E-4**, **Figure E-28**).

Linear regressions at marsh platform sediment sampling locations showed significantly decreasing methyl mercury concentrations at W-21-UM-East-C, W-21-High, and W-21-Low (**Table E-4, Figure E-29**). P-Tau values did not show significance at these locations. The other marsh platform sediment sampling locations showed no significant decrease in methyl mercury concentrations over time. Linear regressions at marsh platform sediment sampling locations showed significantly decreasing TOC normalized methyl mercury concentrations at W-21 in high, mid, and low marsh platform sediments, W-61 in low marsh platform sediments, and W-21-UM-East-C and W-21-UM-South (**Table E-4**, **Figure E-30**). P-Tau values were not consistent with loglinear regression results (**Table E-4**).

E.3. SEDIMENT ASSESSMENT FINDINGS

Three sampling locations (E-01-01, W-21-UM-Central-C, and W-21-UM-West-A), of which two are in Mendall Marsh, show a significant decline (significant loglinear and Kendall's rank order test p-values) in either normalized mercury or normalized methylmercury in the top 0-0.1 ft of sediment. The third sampling location is in the Fort Point Cove reach. Other sampling locations indicated the potential for trends with either mercury or methyl mercury, but when the data are normalized by percent TOC, the statistically significant relationships no longer exist.

Ten additional sampling locations (E-01-03, OB-05, W-21-UM-East-C, W-21-UM-South, W-21-Intertidal, W-21-High, W-21-Mid, W-21-Low, W-61-High, and W-61-Low) showed a significant decreasing loglinear trend in the top 0.1-ft of sediment, but the p-Tau value did not indicate a significant trend. This suggests that the observed loglinear regression results are affected by the variability in the data set, particularly in the historical dataset where multiple samples were collected in a year and/or affected by the limited number of data points (**Figures E-27 to E-30**, **Table E-3**).

Overall, in terms of broad-scale temporal trends, while there is some evidence of decreasing concentrations of mercury and/or methyl mercury over time in the top 0.1-ft of sediment, and particularly when data are normalized to the organic carbon content of samples, these results are not consistently apparent either within reaches or across reaches. Importantly, limiting the temporal trends evaluation to only the 0-0.1 ft data set (Phase II and Phase III) did not improve the ability to identify statistically significant changes in sediment mercury and/or methyl mercury concentrations with time. Challenges associated with ascribing decreasing chemical concentrations in normalized data to evidence of recovery include: (1) uncertainty in whether the decrease is a function of changes in mercury loading or organic carbon loading or a combination of both; and (2) uncertainty in overall understanding of where and how both components of that ratio (i.e., mercury and organic matter) are being mixed and transported throughout the Penobscot River estuary.

TABLES

TABLE E-1
NUMBER OF SAMPLES IN THE 0 TO 0.1 FOOT INTERVAL BY LOCATION AND YEAR

2017 SEDIMENT AND WATER QUALITY MONITORING REPORT
PENOBSCOT RIVER ESTUARY PHASE III - ENGINEERING STUDY

		Year							
Location		**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2017**
Subtidal	E-01-01	--	1	7	7	2	--	3	--
	E-01-03	--	1	7	7	2	--	3	--
	E-01-04	--	1	7	6	1	--	3	--
Intertidal	OV-04	4	2	--	--	1	--	5	--
	OV-01	4	2	--	--	1	--	5	--
	OV-02	4	2	--	--	--	--	5	--
	OB-05	4	2	--	--	1	--	5	--
	W-17-Intertidal	--	1	7	7	1	--	4	1
	W-21-Intertidal	--	1	7	7	1	--	--	1
	W-61-Intertidal	--	1	--	--	--	--	4	1
	ES-02	4	2	1	--	1	--	5	--
	W-65-Intertidal	--	--	--	--	1	--	--	1
	ES-13	4	2	--	--	5	--	5	1
Wetland	W-17-High	--	--	--	--	--	--	--	1
	W-17-Mid	--	--	--	--	--	--	--	1
	W-17-Low	--	1	7	7	2	--	4	1
	W-63-High	--	--	7	6	1	--	--	1
	W-63-Mid	--	--	--	--	--	--	--	1
	W-63-Low	--	--	--	--	--	--	--	1
	W-65-High	--	--	--	--	2	--	--	1
	W-65-Mid	--	--	--	--	1	--	--	1
	W-65-Low	--	--	--	--	--	--	--	1
	W-21-High	--	1	7	7	2	1	--	1
	W-21-Mid	--	2	7	7	1	--	--	1
	W-21-Low	--	1	7	7	2	1	--	1
	W-21-UM-Central-C	--	--	--	--	8	1	4	1
	W-21-UM-East-C	--	--	--	--	8	1	4	1
	W-21-UM-South	--	--	--	--	5	1	4	1
	W-21-UM-West-A	--	--	--	4	11	3	5	--
	W-61-High	--	1	--	--	--	--	4	1
	W-61-Mid	--	1	--	--	--	--	4	1
	W-61-Low	--	1	--	--	--	--	4	1

Notes:

-- No samples available

Prepared by/Date: LO 03/07/18

Checked by/Date: LSV 03/07/18

TABLE E-2
SUMMARY OF MEAN (± STANDARD ERROR) SUBTIDAL SEDIMENT CONCENTRATIONS IN EACH REACH

2017 SEDIMENT AND WATER QUALITY MONITORING REPORT
PENOBSCOT RIVER ESTUARY PHASE III - ENGINEERING STUDY

River Reach	**Mercury (ng/g)**			**Methyl Mercury (ng/g)**			**Total Organic Carbon (%)**		
Fort Point Cove	718	±	24	21.1	±	1.7	5.05	±	0.33
Upper Penobscot Bay	428	±	44	5.83	±	0.85	2.44	±	0.15

Notes:
ng/g = nanograms per gram
% = percent
Concentrations reported as mean ± standard error

Prepared by: JPM 02/16/18
Checked by: LO 02/16/18

TABLE E-3a
SUMMARY OF ANALYSIS OF COVARIANCE (ANCOVA) RESULTS FOR SUBTIDAL SEDIMENTS

2017 SEDIMENT AND WATER QUALITY MONITORING REPORT
PENOBSCOT RIVER ESTUARY PHASE III - ENGINEERING STUDY

Mercury					
	DF	**Sum Sq**	**Mean Sq**	**F value**	**P-value (>F)**
Total Organic Carbon	1	1197064	1197064	93.2	<0.001
Reach	1	278255	278255	21.7	<0.001
Total Organic Carbon: Reach interaction	1	48574	48574	3.78	0.058
Residuals	49	629437	12846		
Methyl Mercury					
	DF	**Sum Sq**	**Mean Sq**	**F value**	**P-value (>F)**
Total Organic Carbon	1	1725	1725	58.2	<0.001
Reach	1	1194	1194	40.3	<0.001
Total Organic Carbon: Reach interaction	1	546	546	18.4	<0.001
Residuals	46	1363	29.6		

Notes:
DF = degrees of freedom
Sum Sq = sum of squares
Mean Sq = mean sum of squares

Prepared by: JPM 02/16/18
Checked by: LO 02/16/18

TABLE E-3b
SUMMARY OF ANALYSIS OF COVARIANCE (ANCOVA) RESULTS FOR SUBTIDAL SEDIMENTS (INTERACTION EXCLUDED)

2017 SEDIMENT AND WATER QUALITY MONITORING REPORT
PENOBSCOT RIVER ESTUARY PHASE III - ENGINEERING STUDY

Mercury					
	DF	**Sum Sq**	**Mean Sq**	**F value**	**P-value (>F)**
Total Organic Carbon	1	1197064	1197064	88.3	<0.001
Reach	1	278255	278255	20.5	<0.001
Residuals	50	678011	13560		

Notes:
DF = degrees of freedom
Sum Sq = sum of squares
Mean Sq = mean sum of squares

Prepared by: JPM 02/16/18
Checked by: LO 02/16/18

TABLE E-4
TEMPORAL LOGLINEAR TREND RESULTS

2017 SEDIMENT AND WATER QUALITY MONITORING REPORT
PENOBSCOT RIVER ESTUARY PHASE III - ENGINEERING STUDY

Sediment Type	Location	Analyte	Intercept Coefficient	Year Coefficient	R-Squared	p-value (log-linear model)	p-value (Kendall's Tau)
Subtidal	E-01-01	Mercury	55.1	0.35	0.05	0.35	0.15
		Methyl Mercury	10.7	0	0	0.96	0.28
		Normalized Mercury	307.6	-0.15	0.31	0.016	0.002
		Normalized Methyl Mercury	253.3	-0.12	0.06	0.35	0.11
	E-01-03	Mercury	33.75	-0.014	0	0.81	1
		Methyl Mercury	-77.1	0.04	0.01	0.65	0.88
		Normalized Mercury	213.3	-0.10	0.24	0.044	0.073
		Normalized Methyl Mercury	72.5	-0.04	0.01	0.66	0.66
	E-01-04	Mercury	106.6	-0.05	0.13	0.14	0.36
		Methyl Mercury	-236.8	0.12	0.27	0.034	0.86
		Normalized Mercury	225.4	-0.11	0.20	0.066	0.14
		Normalized Methyl Mercury	-161.4	0.08	0.06	0.35	0.60
Intertidal	OV-04	Mercury	155.6	-0.07	0.15	0.23	0.27
		Methyl Mercury	-35.0	0.02	0.01	0.82	1
		Normalized Mercury	47.6	-0.02	0.01	0.77	0.20
		Normalized Methyl Mercury	-156.2	0.08	0.08	0.45	0.74
	OV-01	Mercury	73.5	-0.04	0.10	0.34	0.11
		Methyl Mercury	27.0	-0.01	0	0.88	0.43
		Normalized Mercury	56.9	-0.03	0.08	0.39	0.67
		Normalized Methyl Mercury	21.8	-0.01	0	0.88	0.14
	OV-02	Mercury	287.7	-0.14	0.73	<0.001	0.014
		Methyl Mercury	635.7	-0.32	0.94	<0.001	0.018
		Normalized Mercury	-114.4	0.06	0.17	0.21	1
		Normalized Methyl Mercury	132.9	-0.07	0.20	0.23	0.21
	OB-05	Mercury	42.95	-0.02	0.06	0.47	0.44
		Methyl Mercury	403.5	-0.20	0.79	0.001	0.032
		Normalized Mercury	-46.63	0.03	0.20	0.17	0.27
		Normalized Methyl Mercury	353.8	-0.17	0.77	0.002	0.091
	W-17-Intertidal	Mercury	125.8	-0.06	0.09	0.24	0.40
		Methyl Mercury	337.7	-0.17	0.45	0.003	0.40
		Normalized Mercury	-204.9	0.11	0.10	0.22	0.007
		Normalized Methyl Mercury	7.0	0	0	0.98	0.13
	W-21-Intertidal	Mercury	77.0	-0.03	0.12	0.17	0.35
		Methyl Mercury	455.2	-0.23	0.78	<0.001	0.17
		Normalized Mercury	88.0	-0.04	0.06	0.35	0.66
		Normalized Methyl Mercury	466.1	-0.23	0.66	<0.001	0.73
	W-61-Intertidal	Mercury	134.9	-0.06	0.42	0.16	0.37
		Methyl Mercury	248.4	-0.12	0.96	0.019	0.15
		Normalized Mercury	101.4	-0.05	0.58	0.13	0.27
		Normalized Methyl Mercury	214.8	-0.10	0.85	0.08	0.15
	ES-02	Mercury	12.6	0	0	0.89	1
		Methyl Mercury	13.0	0	0	0.86	0.91
		Normalized Mercury	43.5	-0.02	0.08	0.40	0.35
		Normalized Methyl Mercury	47.0	-0.02	0.07	0.48	0.74
	ES-13	Mercury	238.4	-0.12	0.33	0.05	0.14
		Methyl Mercury	410.8	-0.20	0.71	0.002	0.023
		Normalized Mercury	-91.0	0.05	0.25	0.10	0.11
		Normalized Methyl Mercury	132.4	-0.06	0.29	0.11	0.13

TABLE E-4
TEMPORAL LOGLINEAR TREND RESULTS

2017 SEDIMENT AND WATER QUALITY MONITORING REPORT
PENOBSCOT RIVER ESTUARY PHASE III - ENGINEERING STUDY

Sediment Type	Location	Analyte	Intercept Coefficient	Year Coefficient	R-Squared	p-value (log-linear model)	p-value (Kendall's Tau)
Wetlands	W-21-UM-Central-C	Mercury	474.6	-0.23	0.67	<0.001	<0.001
		Methyl Mercury	4.5	0	0	0.99	1
		Normalized Mercury	630.2	-0.31	0.49	0.036	0.028
		Normalized Methyl Mercury	205.9	-0.10	0.15	0.38	0.23
	W-21-UM-East-C	Mercury	50.3	-0.02	0.10	0.27	0.14
		Methyl Mercury	363.0	-0.18	0.44	0.019	0.32
		Normalized Mercury	149.6	-0.07	0.29	0.13	0.083
		Normalized Methyl Mercury	394.4	-0.19	0.60	0.041	0.062
	W-21-UM-South	Mercury	357.8	-0.17	0.34	0.058	0.018
		Methyl Mercury	415.2	-0.20	0.27	0.15	0.82
		Normalized Mercury	771.1	-0.38	0.40	0.069	0.083
		Normalized Methyl Mercury	708.7	-0.35	0.79	0.008	0.13
	W-21-UM-West-A	Mercury	202.22	-0.10	0.09	0.17	0.26
		Methyl Mercury	250.5	-0.12	0.03	0.43	0.43
		Normalized Mercury	1331.0	-0.66	0.84	0.001	0.030
		Normalized Methyl Mercury	838.5	-0.42	0.64	0.055	0.11
	W-21-High	Mercury	247.0	-0.12	0.44	0.002	0.10
		Methyl Mercury	327.5	-0.16	0.56	<0.001	0.28
		Normalized Mercury	313.3	-0.15	0.38	0.011	0.73
		Normalized Methyl Mercury	406.5	-0.20	0.50	0.002	0.46
	W-61-High	Mercury	48.6	-0.02	0.01	0.87	1
		Methyl Mercury	-211.2	0.11	0.33	0.43	0.47
		Normalized Mercury	287.8	-0.14	0.68	0.044	0.071
		Normalized Methyl Mercury	27.9	-0.01	0.09	0.69	1
	W-63-High	Mercury	213.9	-0.10	0.22	0.076	0.006
		Methyl Mercury	161.3	-0.08	0.08	0.30	0.19
		Normalized Mercury	110.8	-0.05	0.06	0.37	1
		Normalized Methyl Mercury	58.1	-0.03	0.01	0.75	0.44
	W-21-Mid	Mercury	-63.5	0.03	0.01	0.75	0.44
		Methyl Mercury	302.1	-0.15	0.07	0.27	1
		Normalized Mercury	103.2	-0.05	0.03	0.52	0.29
		Normalized Methyl Mercury	467.8	-0.23	0.27	0.033	0.72
	W-61-Mid	Mercury	-17.7	0.01	0.01	0.89	1
		Methyl Mercury	-83.6	0.04	0.07	0.74	1
		Normalized Mercury	331.9	-0.16	0.49	0.12	1
		Normalized Methyl Mercury	265.9	-0.13	0.37	0.39	1
	W-21-Low	Mercury	76.1	-0.03	0.18	0.066	0.038
		Methyl Mercury	286.9	-0.14	0.49	<0.001	0.19
		Normalized Mercury	132.4	-0.06	0.14	0.16	0.59
		Normalized Methyl Mercury	387.9	-0.19	0.42	0.007	0.88
	W-17-Low	Mercury	103.5	-0.05	0.04	0.43	0.31
		Methyl Mercury	141.9	-0.07	0.05	0.39	0.26
		Normalized Mercury	8.0	0	0	0.99	0.16
		Normalized Methyl Mercury	39.7	-0.02	0.005	0.80	0.41
	W-61-Low	Mercury	156.56	-0.07	0.84	0.011	0.071
		Methyl Mercury	207.9	-0.10	0.89	0.054	0.15
		Normalized Mercury	416.6	-0.20	0.90	0.004	0.071
		Normalized Methyl Mercury	468.0	-0.23	0.92	0.041	0.15

Notes:

Coefficients provided are for the loglinear regression equation: y = m * ln(x) + b

Highlighted cells indicate p-values

0.008	$p < 0.01$
0.040	$p < 0.05$
0.10	$p > 0.05$

Prepared by: JPM 02/16/18
Checked by: LO 02/16/18

TABLE E-5
SUMMARY OF MEAN (± STANDARD ERROR) INTERTIDAL SEDIMENT CONCENTRATIONS IN EACH RIVER REACH

2017 SEDIMENT AND WATER QUALITY MONITORING REPORT
PENOBSCOT RIVER ESTUARY PHASE III - ENGINEERING STUDY

River Reach	Mercury (ng/g)			Methyl Mercury (ng/g)			Total Organic Carbon (%)		
Veazie	85	±	15	1.91	±	0.33	4.27	±	0.75
Orrington	1106	±	63	28.3	±	4.9	7.01	±	0.46
Verona East	944	±	155	36.8	±	5.4	6.45	±	1.1
Verona Northeast	973	±	47	23.7	±	1.3	6.54	±	0.23

Notes:
ng/g = nanograms per gram
% = percent

Concentrations reported as mean ± standard error

Prepared by: JPM 02/16/18
Checked by: LO 02/16/18

TABLE E-6
SUMMARY OF ANALYSIS OF COVARIANCE (ANCOVA) RESULTS FOR INTERTIDAL SEDIMENTS BY REACH

2017 SEDIMENT AND WATER QUALITY MONITORING REPORT
PENOBSCOT RIVER ESTUARY PHASE III - ENGINEERING STUDY

Mercury					
	DF	**Sum Sq**	**Mean Sq**	**F value**	**P-value (>F)**
Total Organic Carbon	1	7697064	7697064	202	<0.001
Reach	3	11003698	3667899	96.3	<0.001
Total Organic Carbon: Reach interaction	3	2500312	833437	21.9	<0.001
Residuals	68	2589672	38083		
Methyl Mercury					
	DF	**Sum Sq**	**Mean Sq**	**F value**	**P-value (>F)**
Total Organic Carbon	1	5959	5959	56.2	<0.001
Reach	3	9804	3268	30.8	<0.001
Total Organic Carbon: Reach interaction	3	2421	807	7.62	<0.001
Residuals	56	5934	106		

Notes:
DF = degrees of freedom
Sum Sq = sum of squares
Mean Sq = mean sum of squares

Prepared by: JPM 02/16/18
Checked by: LO 02/16/18

TABLE E-7
SUMMARY OF ANALYSIS OF COVARIANCE (ANCOVA) RESULTS FOR INTERTIDAL SEDIMENTS

2017 SEDIMENT AND WATER QUALITY MONITORING REPORT
PENOBSCOT RIVER ESTUARY PHASE III - ENGINEERING STUDY

Mercury					
	DF	**Sum Sq**	**Mean Sq**	**F value**	**P-value (>F)**
Total Organic Carbon	1	7697064	7697064	201	<0.001
up/downstream	1	10874731	10874731	285	<0.001
Total Organic Carbon: up/downstream interaction	1	2467546	2467546	64.6	<0.001
Residuals	72	2751404	38214		

Methyl Mercury					
	DF	**Sum Sq**	**Mean Sq**	**F value**	**P-value (>F)**
Total Organic Carbon	1	5959	5959	50.3	<0.001
up/downstream	1	8753	8753	73.9	<0.001
Total Organic Carbon: up/downstream interaction	1	2297	2297	19.4	<0.001
Residuals	60	7108	119		

Notes:
DF = degrees of freedom
Sum Sq = sum of squares
Mean Sq = mean sum of squares

Prepared by: JPM 02/16/18
Checked by: LO 02/16/18

TABLE E-8
SUMMARY OF WETLAND SEDIMENT CONCENTRATIONS IN EACH RIVER REACH

2017 SEDIMENT AND WATER QUALITY MONITORING REPORT
PENOBSCOT RIVER ESTUARY PHASE III - ENGINEERING STUDY

Elevation	Reach	Total Mercury (ng/g)				Total Methyl Mercury (ng/g)				Total Organic Carbon (%)			
		Median	Mean		SE	Median	Mean		SE	Median	Mean		SE
High	Orrington	320	429	±	62	8.29	10.8	±	1.8	3.85	4.32	±	0.54
	Frankfort Flats	513	513	±	-	33.7	33.7	±	-	18.7	18.7	±	-
	Mendall Marsh	592	568	±	47	35.3	33.3	±	2.6	11.4	11.9	±	0.93
	Verona East	234	310	±	91	7.52	9.36	±	2.8	15.9	16.8	±	4.0
Mid	Orrington	839	839	±	-	19.9	19.9	±	-	7.15	7.15	±	-
	Frankfort Flats	592	592	±	-	18.7	18.7	±	-	18.0	18.0	±	-
	Mendall Marsh	791	746	±	62	31.6	35.0	±	4.5	7.56	9.18	±	1.1
	Verona East	456	500	±	101	19.1	21.7	±	5.7	11.5	13.0	±	2.9
Low	Orrington	906	906	±	-	7.60	7.60	±	-	8.89	8.89	±	-
	Frankfort Flats	924	993	±	99	26.3	33.3	±	4.7	10.4	11.1	±	1.0
	Mendall Marsh	981	949	±	37	28.8	27.2	±	2.3	5.38	6.60	±	0.54
	Verona East	500	559	±	67	12.4	15.0	±	3.0	10.5	10.5	±	1.5
Intertidal	Orrington	-	-	±	-	-	-	±	-	-	-	±	-
	Frankfort Flats	752	888	±	108	17.0	19.1	±	2.0	4.97	7.12	±	0.98
	Mendall Marsh	962	1003	±	58	23.5	23.0	±	2.2	5.81	6.01	±	0.39
	Verona East	353	401	±	57	11.5	11.6	±	2.1	2.44	2.42	±	0.13

Notes:
ng/g = nanograms per gram
% = percent
SE = standard error

Prepared by: JPM 02/16/18
Checked by: LO 03/02/18

FIGURES

APPENDIX F
STATISTICAL ANALYSES

APPENDIX F-1
SEDIMENT DATA USED IN STATISTICAL ANALYSES
(0 TO 0.3 FOOT INTERVAL SEDIMENT SAMPLES)

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
BA-ES-02-A	ES-02	Verona No	7/9/2007	BA-ES2A					1590	25.6267	1590	25.6267			
BA-ES-02-B	ES-02	Verona No	7/9/2007	BA-ES2B					1740	32.2866	1740	32.2866			
BA-ES-02-C	ES-02	Verona No	7/9/2007	BA-ES2C					1840	33.3302	1840	33.3302			
BA-ES-02-D	ES-02	Verona No	7/9/2007	BA-ES2D					1730	25.7097	1730	25.7097			
BA-ES-02-E	ES-02	Verona No	7/9/2007	BA-ES2E					1450	23.6219	1450	23.6219			
BA-ES-02-F	ES-02	Verona No	7/9/2007	BA-ES2F					1560	24.8836	1560	24.8836			
E-01-01	E-01-01	Fort Point	8/17/2007	E01-01-0-3	x	0	0.099	1.4	606	29	606	29			
E-01-01	E-01-01	Fort Point	7/23/2008	E01-01-0-3	x	0	0.099	5.18	864	30.5	864	30.5			
E-01-01	E-01-01	Fort Point	8/6/2008	E01-01-0-3	x	0	0.099	4.07	810	26.9	810	26.9			
E-01-01	E-01-01	Fort Point	8/20/2008	E01-01-0-3	x	0	0.099	2.19	760	29.2	760	29.2			
E-01-01	E-01-01	Fort Point	9/3/2008	E01-01-0-3	x	0	0.099	4.46	830	19.5	830	19.5			
E-01-01	E-01-01	Fort Point	9/18/2008	E01-01-0-3	x	0	0.099	5.6	788	27.4	788	27.4			
E-01-01	E-01-01	Fort Point	9/30/2008	E01-01	x	0	0.099	5.62	760	27.1	760	27.1			
E-01-01	E-01-01	Fort Point	10/20/2008	E01-01-0-3	x	0	0.099	5.58	777	16.4	777	16.4			
E-01-01	E-01-01	Fort Point	5/12/2009	E01-01-0-3	x	0	0.099	5.23	672	9.52	672	9.52			
E-01-01	E-01-01	Fort Point	6/2/2009	E01-01-0-3	x	0	0.099	8.24	931	8.74	931	8.74			
E-01-01	E-01-01	Fort Point	6/25/2009	E01_01-0-3	x	0	0.099	5.24	654	17.7	654	17.7			
E-01-01	E-01-01	Fort Point	7/15/2009	E01_01-0-3	x	0	0.099	5.54	458	10.7	458	10.7			
E-01-01	E-01-01	Fort Point	8/5/2009	E01-01-0-3	x	0	0.099	5.35	671	20.4	671	20.4			
E-01-01	E-01-01	Fort Point	8/25/2009	PB09-6520-0-3		0	0.099		627	15.5	627	15.5			
E-01-01	E-01-01	Fort Point	8/25/2009	PB09-6521-3-6		0.099	0.198		788	23.1	788	23.1			
E-01-01	E-01-01	Fort Point	8/25/2009	PB09-6522-6-9		0.198	0.297		778	15	778	15			
E-01-01	E-01-01	Fort Point	8/25/2009	PB09-0-9_a	x				731	17.86666667	731	17.86666667			
E-01-01	E-01-01	Fort Point	9/4/2009	E01-01-0-3	x	0	0.099	4.95	699	16.1	699	16.1			
E-01-01	E-01-01	Fort Point	5/26/2010	PB10-8391-0-3		0	0.099		733	12.1	733	12.1			
E-01-01	E-01-01	Fort Point	5/26/2010	PB10-8392-3-6		0.099	0.198		790	18.7	790	18.7			
E-01-01	E-01-01	Fort Point	5/26/2010	PB10-8393-6-9		0.198	0.297		813	14.9	813	14.9			
E-01-01	E-01-01	Fort Point	5/26/2010	PB10-0-9_a	x				778.6666667	15.23333333	778.6666667	15.23333333			
E-01-01	E-01-01	Fort Point	8/23/2010	E-01-01 0-3	x	0	0.099	4.28333	672	23.1	672	23.1			
E-01-01	E-01-01	Fort Point	8/20/2012	E01-1-Surfa	x	0	0.099	6.03	755	31.7	755	31.7			
E-01-01	E-01-01	Fort Point	8/20/2012	E01-1-Surfa	x	0	0.099	6.03	583	29	583	29			
E-01-01	E-01-01	Fort Point	8/20/2012	E01-1-Surfa	x	0	0.099	5.93	702		702				
E-01-01	E-01-01	Fort Point	7/28/2016	E-01-01_07	x	0	0	5.9	1100	12.3	1207	24.6			
E-01-03	E-01-03	Upper Pen	8/17/2007	E01-03-0-3	x	0	0.099	1.3	447	6.69	447	6.69			
E-01-03	E-01-03	Upper Pen	7/23/2008	E01-03-0-3	x	0	0.099	3.34	369	5.79	369	5.79			
E-01-03	E-01-03	Upper Pen	8/6/2008	E01-03-0-3	x	0	0.099	4.9	651	33.2	651	33.2			
E-01-03	E-01-03	Upper Pen	8/20/2008	E01-03-0-3	x	0	0.099	1.79	530	8.61	530	8.61			
E-01-03	E-01-03	Upper Pen	9/3/2008	E01-03-0-3	x	0	0.099	2.2	564	7.07	564	7.07			
E-01-03	E-01-03	Upper Pen	9/18/2008	E01-03-0-3	x	0	0.099	2.71	696	8.52	696	8.52			
E-01-03	E-01-03	Upper Pen	9/30/2008	E01-03	x	0	0.099	2.88	456	5.88	456	5.88			
E-01-03	E-01-03	Upper Pen	10/20/2008	E01-03-0-3	x	0	0.099	3.17	462	5.92	462	5.92			
E-01-03	E-01-03	Upper Pen	5/12/2009	E01-03-0-3	x	0	0.099	2.6	433	5.59	433	5.59			
E-01-03	E-01-03	Upper Pen	6/3/2009	E01-03-0-3	x	0	0.099		482	4.78	482	4.78			
E-01-03	E-01-03	Upper Pen	6/25/2009	E01_03-0-3	x	0	0.099	2.8	500	5.25	500	5.25			
E-01-03	E-01-03	Upper Pen	7/15/2009	E01_03-0-3	x	0	0.099	2.38	360	3.77	360	3.77			
E-01-03	E-01-03	Upper Pen	8/5/2009	E01-03-0-3	x	0	0.099	2.38	493	6.49	493	6.49			
E-01-03	E-01-03	Upper Pen	8/25/2009	PB09-6580-0-3		0	0.099		1859	7.12	1859	7.12			
E-01-03	E-01-03	Upper Pen	9/4/2009	E01-03-0-3	x	0	0.099	1.85	403	4.74	403	4.74			
E-01-03	E-01-03	Upper Pen	5/26/2010	PB10-8432-0-3		0	0.099		514	5.9	514	5.9			
E-01-03	E-01-03	Upper Pen	8/23/2010	E-01-03 0-3	x	0	0.099	2.85667	576.33333	6.747	576.33333	6.747			
E-01-03	E-01-03	Upper Pen	8/20/2012	E01-3-Surfa	x	0	0.099	3.48	459	11.3	459	11.3			
E-01-03	E-01-03	Upper Pen	8/20/2012	E01-3-Surfa	x	0	0.099	3.41	432	10.9	432	10.9			
E-01-03	E-01-03	Upper Pen	8/20/2012	E01-3-Surfa	x	0	0.099	3.75	522		522				
E-01-03	E-01-03	Upper Pen	7/28/2016	E-01-03_07	x	0	0	3.9	513	6.72	567	13.44			
E-01-04	E-01-04	Upper Pen	8/17/2007	E01-04-0-3	x	0	0.099	1.5	278	3.14	278	3.14			
E-01-04	E-01-04	Upper Pen	7/23/2008	E01-04-0-3	x	0	0.099	1.53	268	2.66	268	2.66			
E-01-04	E-01-04	Upper Pen	8/6/2008	E01-04-0-3	x	0	0.099	4.68	369	3.8	369	3.8			
E-01-04	E-01-04	Upper Pen	8/20/2008	E01-04-0-3	x	0	0.099	0.678	253	3.81	253	3.81			
E-01-04	E-01-04	Upper Pen	9/3/2008	E01-04-0-3	x	0	0.099	2.02	324	3.66	324	3.66			
E-01-04	E-01-04	Upper Pen	9/18/2008	E01-04-0-3	x	0	0.099	2.61	334	2.9	334	2.9			
E-01-04	E-01-04	Upper Pen	9/30/2008	E01-04	x	0	0.099	2.34	271	3.83	271	3.83			
E-01-04	E-01-04	Upper Pen	10/20/2008	E01-04-0-3	x	0	0.099	2.06	244	2.17	244	2.17			
E-01-04	E-01-04	Upper Pen	5/12/2009	E01-04-0-3	x	0	0.099	2.05	225	2.43	225	2.43			
E-01-04	E-01-04	Upper Pen	6/3/2009	E01-04-0-3	x	0	0.099	1.97	425	2.3	425	2.3			
E-01-04	E-01-04	Upper Pen	6/25/2009	E01_04-0-3	x	0	0.099	1.97	286	2.64	286	2.64			
E-01-04	E-01-04	Upper Pen	7/15/2009	E01_04-0-3	x	0	0.099	1.66	252	3.05	252	3.05			
E-01-04	E-01-04	Upper Pen	8/5/2009	E01-04-0-3	x	0	0.099	1.63	231	2.32	231	2.32			
E-01-04	E-01-04	Upper Pen	9/4/2009	E01-04-0-3	x	0	0.099	1.56	289	2.31	289	2.31			
E-01-04	E-01-04	Upper Pen	8/23/2010	E-01-04 0-3	x	0	0.099	1.87333	293	2.627	293	2.627			
E-01-04	E-01-04	Upper Pen	8/20/2012	E01-4-Surfa	x	0	0.099	2.14	163	6.84	163	6.84			
E-01-04	E-01-04	Upper Pen	8/20/2012	E01-4-Surfa	x	0	0.099	2.33	240	5.19	240	5.19			
E-01-04	E-01-04	Upper Pen	8/20/2012	E01-4-Surfa	x	0	0.099	2.85	313		313				
E-01-04	E-01-04	Upper Pen	7/28/2016	E-01-04_07	x	0	0	3.3	579	9.38	569	18.76			
ES-02	ES-02	Verona No	8/1/2006	ES-2 0-1 cm		0	0.033	5.88	950.4	13.5	950.4	13.5			
ES-02	ES-02	Verona No	8/1/2006	ES-2 1-2 cm -1-2		0.033	0.066	7.29	1009	12.6	1009	12.6			
ES-02	ES-02	Verona No	8/1/2006	ES-2 2-3 cm		0.066	0.099	6.815	837.9	15.8	837.9	15.8			
ES-02	ES-02	Verona No	8/1/2006	ES-2 3-4 cm		0.099	0.132	5.813	998.4	15.3	998.4	15.3			
ES-02	ES-02	Verona No	8/1/2006	ES-2 4-5 cm		0.132	0.165	7.632	843.5	21.2	843.5	21.2			
ES-02	ES-02	Verona No	8/1/2006	ES-2 5-6 cm		0.165	0.198	7.519	1035	15.7	1035	15.7			
ES-02	ES-02	Verona No	8/1/2006	ES-2 6-7 cm		0.198	0.231	9.73	1016	18.7	1016	18.7			
ES-02	ES-02	Verona No	8/1/2006	ES-2 7-8 cm		0.231	0.264	7.342	994.1	18.3	994.1	18.3			
ES-02	ES-02	Verona No	8/1/2006	ES-2 8-9 cm		0.264	0.297	8.84	1164	15.7	1164	15.7			
ES-02	ES-02	Verona No	8/1/2006	ES-2 9-10 cm		0.297	0.33	6.447	1098	14.1	1098	14.1			
ES-02	ES-02	Verona No	8/1/2006	ES-2 0-10 c	x			7.3308	994.63	16.09	994.63	16.09			
ES-02	ES-02	Verona No	9/6/2006	ES-2 5-6 cm		0.165	0.198	6.0097	1209	17.686	1209	17.686			
ES-02	ES-02	Verona No	9/6/2006	ES-2 6-7 cm		0.198	0.231	6.1166	1201	20.1229	1201	20.1229			
ES-02	ES-02	Verona No	9/6/2006	ES-2 7-8 cm		0.231	0.264	6.2304	1309	18.28	1309	18.28			
ES-02	ES-02	Verona No	9/6/2006	ES-2 8-9 cm		0.264	0.297	5.8661	1012	13.4531	1012	13.4531			
ES-02	ES-02	Verona No	9/6/2006	ES-2 9-10 cm		0.297	0.33	5.4653	1178	14.8016	1178	14.8016			
ES-02	ES-02	Verona No	9/6/2006	ES2 0-1 cm		0	0.033	5.6029	1005	14.4991	1005	14.4991			
ES-02	ES-02	Verona No	9/6/2006	ES2 1-2 cm		0.033	0.066	5.7708	1005	12.8397	1005	12.8397			
ES-02	ES-02	Verona No	9/6/2006	ES2 2-3 cm		0.066	0.099	6.8065	1169	11.2767	1169	11.2767			
ES-02	ES-02	Verona No	9/6/2006	ES2 3-4 cm		0.099	0.132	7.3322	906.9	17.2785	906.9	17.2785			
ES-02	ES-02	Verona No	9/6/2006	ES2 4-5 cm		0.132	0.165	7.1743	1047	17.4836	1047	17.4836			
ES-02	ES-02	Verona No	9/6/2006	ES2 0-10 cn	x			6.23748	1104.19	15.77212	1104.19	15.77212			
ES-02	ES-02	Verona No	9/26/2006	ES 2-0-1		0	0.033	4.7441	553.366	7.67629	553.366	7.67629			
ES-02	ES-02	Verona No	9/26/2006	ES 2-1-2		0.033	0.066	6.3218	638.469	10.4534	638.469	10.4534			
ES-02	ES-02	Verona No	9/26/2006	ES 2-2-3		0.066	0.099	9.1037	890.553	16.8223	890.553	16.8223			
ES-02	ES-02	Verona No	9/26/2006	ES 2-3-4		0.099	0.132	8.7933	846.138	17.5305	846.138	17.5305			
ES-02	ES-02	Verona No	9/26/2006	ES 2-4-5		0.132	0.165	8.7007	895.791	22.7667	895.791	22.7667			
ES-02	ES-02	Verona No	9/26/2006	ES 2-5-6		0.165	0.198	9.4587	1700.38	21.4991	1700.38	21.4991			
ES-02	ES-02	Verona No	9/26/2006	ES 2-6-7		0.198	0.231	7.0841	1491.08	19.0009	1491.08	19.0009			
ES-02	ES-02	Verona No	9/26/2006	ES 2-7-8		0.231	0.264	5.2726	1942.81	17.1491	1942.81	17.1491			
ES-02	ES-02	Verona No	9/26/2006	ES 2-8-9		0.264	0.297	7.1313	1745.42	13.1762	1745.42	13.1762			
ES-02	ES-02	Verona No	9/26/2006	ES 2-9-10		0.297	0.33	6.9348	1772.96	19.3891	1772.96	19.3891			
ES-02	ES-02	Verona No	9/26/2006	ES 2-0-10_	x			7.35451	1247.6967	16.546359	1247.6967	16.546359			
ES-02	ES-02	Verona No	10/23/2006	ES2-0-1		0	0.033	6.1976	1161.67	8.67654	1161.67	8.67654			
ES-02	ES-02	Verona No	10/23/2006	ES2-1-2		0.033	0.066	6.6861	1508.82	8.21114	1508.82	8.21114			
ES-02	ES-02	Verona No	10/23/2006	ES2-2-3		0.066	0.099	6.5674	1454.2	8.70832	1454.2	8.70832			
ES-02	ES-02	Verona No	10/23/2006	ES2-3-4		0.099	0.132	6.4997	1312.83	7.96706	1312.83	7.96706			
ES-02	ES-02	Verona No	10/23/2006	ES2-4-5		0.132	0.165	4.2299	1297.04	8.68717	1297.04	8.68717			
ES-02	ES-02	Verona No	10/23/2006	ES2-5-6		0.165	0.198	6.7475	1378.52	12.1433	1378.52	12.1433			
ES-02	ES-02	Verona No	10/23/2006	ES2-6-7		0.198	0.231	6.3822	1376.3	14.7418	1376.3	14.7418			
ES-02	ES-02	Verona No	10/23/2006	ES2-7-8		0.231	0.264	7.1433	1366.95	21.1365	1366.95	21.1365			
ES-02	ES-02	Verona No	10/23/2006	ES2-8-9		0.264	0.297	7.1616	1350.8	23.0163	1350.8	23.0163			
ES-02	ES-02	Verona No	10/23/2006	ES2-9-10		0.297	0.33	7.9104	1353.37	17.8153	1353.37	17.8153			
ES-02	ES-02	Verona No	10/23/2006	ES2-0-10_a	x			6.55257	1356.05	13.110343	1356.05	13.110343			
ES-02	ES-02	Verona No	6/1/2007	ES02-0-1 cm		0	0.033	6	909.612	23.5353	909.612	23.5353			
ES-02	ES-02	Verona No	6/1/2007	ES02-1-2 cm		0.033	0.066	6.57	1021.04	21.7268	1021.04	21.7268			
ES-02	ES-02	Verona No	6/1/2007	ES02-2-3 cm		0.066	0.099	6.43	1014.74	36.3221	1014.74	36.3221			
ES-02	ES-02	Verona No	6/1/2007	ES02-3-4 cm		0.099	0.132	6.99	1098.73	29.8103	1098.73	29.8103			
ES-02	ES-02	Verona No	6/1/2007	ES02-4-5 cm		0.132	0.165	6.49	1370.14	30.6193	1370.14	30.6193			
ES-02	ES-02	Verona No	6/1/2007	ES02-5-6 cm		0.165	0.198	6.7	1167.86	50.9927	1167.86	50.9927			
ES-02	ES-02	Verona No	6/1/2007	ES02-6-7 cm		0.198	0.231	7.26	1089.03	66.7195	1089.03	66.7195			
ES-02	ES-02	Verona No	6/1/2007	ES02-7-8 cm		0.231	0.264	7.18	1207.92	46.049	1207.92	46.049			
ES-02	ES-02	Verona No	6/1/2007	ES02-8-9 cm		0.264	0.297	7.52	1234.7	43.371	1234.7	43.371			
ES-02	ES-02	Verona No	6/1/2007	ES02-9-10 cm		0.297	0.33	8.08	1161.37	36.742	1161.37	36.742			
ES-02	ES-02	Verona No	6/1/2007	ES02-0-10 c	x			6.922	1127.5142	38.5888	1127.5142	38.5888			
ES-02	ES-02	Verona No	7/9/2007	ES02-0-1 cm		0	0.033	6.58	959.357	18.5105	959.357	18.5105			
ES-02	ES-02	Verona No	7/9/2007	ES02-1-2 cm		0.033	0.066	6.36	1107.15	28.7633	1107.15	28.7633			
ES-02	ES-02	Verona No	7/9/2007	ES02-2-3 cm		0.066	0.099	6.75	1110.59	28.0042	1110.59	28.0042			
ES-02	ES-02	Verona No	7/9/2007	ES02-3-4 cm		0.099	0.132	6.84	1341.22	31.7536	1341.22	31.7536			
ES-02	ES-02	Verona No	7/9/2007	ES02-4-5 cm		0.132	0.165	7.95	1527.2	24.3	1527.2	24.3			
ES-02	ES-02	Verona No	7/9/2007	ES02-5-6 cm		0.165	0.198	7.72	1528	42.2	1528	42.2			
ES-02	ES-02	Verona No	7/9/2007	ES02-6-7 cm		0.198	0.231	8.03	1667.3	51.5	1667.3	51.5			
ES-02	ES-02	Verona No	7/9/2007	ES02-7-8 cm		0.231	0.264	7.75	1908.66	26.3914	1908.66	26.3914			
ES-02	ES-02	Verona No	7/9/2007	ES02-8-9 cm		0.264	0.297	8.08	1960.6	15.8544	1960.6	15.8544			
ES-02	ES-02	Verona No	7/9/2007	ES02-9-10 cm		0.297	0.33	8.21	2247.26	27.3	2247.26	27.3			
ES-02	ES-02	Verona No	7/9/2007	ES02-0-10 c	x			7.427	1535.7337	29.45774	1535.7337	29.45774			
ES-02	ES-02	Verona No	8/22/2012	ES02-Intert	x	0	0.099	7.27	823	27.7	823	27.7			
ES-02	ES-02	Verona No	8/22/2012	ES02-Intert	x	0	0.099	6.64	1000	26.4	1000	26.4			
ES-02	ES-02	Verona No	8/22/2012	ES02-Intert	x	0	0.099	7.53	1080	16.8	1080	16.8			
ES-02	ES-02	Verona No	8/22/2012	ES02-Intert	x	0	0.099	7.15	1020		1020				
ES-02	ES-02	Verona No	8/22/2012	ES02-Intert	x	0	0.099	6.8	986		986				
ES-02	ES-02	Verona No	7/27/2016	ES-02_072	x	0	0	7.365	849	22.2	961	44.4			
ES-02-A	ES-02	Verona No	7/10/2007	2007FR ES2A						24.9		24.9			
ES-02-B	ES-02	Verona No	7/10/2007	2007FR ES2B						32.29		32.29			
ES-02-BA-0	ES-02	Verona No	3/3/2008	ES2 BA-1		0	0.099		863	27.7	863	27.7			
ES-02-C	ES-02	Verona No	7/10/2007	2007FR ES2C						33.33		33.33			
ES-02-D	ES-02	Verona No	7/10/2007	2007FR ES2D						27.01		27.01			
ES-02-F	ES-02	Verona No	7/10/2007	2007FR ES2F						30.96		30.96			
ES-02-Inter	ES-02	Verona No	8/26/2010	ES-02-Inter	x	0	0.099	4.272	780.2	15.7	780.2	15.7			
ES-13	ES-13	Verona Eas	8/4/2006	ES-13 0-1 cm		0	0.033	9.672	692.3	4.73	692.3	4.73			
ES-13	ES-13	Verona Eas	8/4/2006	ES-13 1-2 cm		0.033	0.066	3.546	726.7	25.6	726.7	25.6			
ES-13	ES-13	Verona Eas	8/4/2006	ES-13 2-3 cm		0.066	0.099	3.764	717.1	24.7	717.1	24.7			
ES-13	ES-13	Verona Eas	8/4/2006	ES-13 3-4 cm		0.099	0.132	3.537	578.5	19.1	578.5	19.1			
ES-13	ES-13	Verona Eas	8/4/2006	ES-13 4-5 cm		0.132	0.165	3.648	381.8	9.95	381.8	9.95			
ES-13	ES-13	Verona Eas	8/4/2006	ES-13 5-6 cm		0.165	0.198	4.268	461.5	9.11	461.5	9.11			
ES-13	ES-13	Verona Eas	8/4/2006	ES-13 6-7 cm		0.198	0.231	4.284	461.4	8.81	461.4	8.81			
ES-13	ES-13	Verona Eas	8/4/2006	ES-13 7-8 cm		0.231	0.264	2.429	108.8	5.07	108.8	5.07			
ES-13	ES-13	Verona Eas	8/4/2006	ES-13 8-9 cm		0.264	0.297	1.978	87.26	2.25	87.26	2.25			
ES-13	ES-13	Verona Eas	8/4/2006	ES-13 9-10 cm		0.297	0.33	3.218	85.86	2.87	85.86	2.87			
ES-13	ES-13	Verona Eas	8/4/2006	ES-13 0-10	x			4.0344	430.122	11.219	430.122	11.219			
ES-13	ES-13	Verona Eas	9/6/2006	ES13 0-1 cm		0	0.033	8.5061	1041	22.9817	1041	22.9817			
ES-13	ES-13	Verona Eas	9/6/2006	ES13 1-2 cm		0.033	0.066	11.2138	434.4	30.4889	434.4	30.4889			
ES-13	ES-13	Verona Eas	9/6/2006	ES13 2-3 cm		0.066	0.099	8.4799	603.7	32.1049	603.7	32.1049			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
ES-13	ES-13	Verona Eas	9/6/2006	ES13 3-4 cm		0.099	0.132	7.614	534.4	26.1484	534.4	26.1484			
ES-13	ES-13	Verona Eas	9/6/2006	ES13 4-5 cm		0.132	0.165	3.4256	273.6	10.8353	273.6	10.8353			
ES-13	ES-13	Verona Eas	9/6/2006	ES13 5-6 cm		0.165	0.198	2.4543	459.3	7.19324	459.3	7.19324			
ES-13	ES-13	Verona Eas	9/6/2006	ES13 6-7 cm		0.198	0.231	2.7285	341.7	12.7144	341.7	12.7144			
ES-13	ES-13	Verona Eas	9/6/2006	ES13 7-8 cm		0.231	0.264	3.3112	567.1	8.25659	567.1	8.25659			
ES-13	ES-13	Verona Eas	9/6/2006	ES13 8-9 cm		0.264	0.297	2.379	482.7	7.2801	482.7	7.2801			
ES-13	ES-13	Verona Eas	9/6/2006	ES13 9-10 cm		0.297	0.33	2.8329	336.6	4.71308	336.6	4.71308			
ES-13	ES-13	Verona Eas	9/6/2006	ES13 0-10 c	x			5.29453	507.45	16.271661	507.45	16.271661			
ES-13	ES-13	Verona Eas	9/26/2006	ES 13-0-1		0	0.033	5.797	917.116	9.63208	917.116	9.63208			
ES-13	ES-13	Verona Eas	9/26/2006	ES 13-1-2		0.033	0.066	8.1359	512.902	9.38009	512.902	9.38009			
ES-13	ES-13	Verona Eas	9/26/2006	ES 13-2-3		0.066	0.099	9.7004	490.375	8.86129	490.375	8.86129			
ES-13	ES-13	Verona Eas	9/26/2006	ES 13-3-4		0.099	0.132	10.1155	490.735	6.88392	490.735	6.88392			
ES-13	ES-13	Verona Eas	9/26/2006	ES 13-4-5		0.132	0.165	8.9547	467.752	6.90203	467.752	6.90203			
ES-13	ES-13	Verona Eas	9/26/2006	ES 13-5-6		0.165	0.198	8.2119	401.139	5.34424	401.139	5.34424			
ES-13	ES-13	Verona Eas	9/26/2006	ES 13-6-7		0.198	0.231	6.7576	415.842	3.8578	415.842	3.8578			
ES-13	ES-13	Verona Eas	9/26/2006	ES 13-7-8		0.231	0.264	3.9558	449.902	4.41933	449.902	4.41933			
ES-13	ES-13	Verona Eas	9/26/2006	ES 13-8-9		0.264	0.297	3.9558	398.671	4.424	398.671	4.424			
ES-13	ES-13	Verona Eas	9/26/2006	ES 13-9-10		0.297	0.33	4.1832	477.778	5.83234	477.778	5.83234			
ES-13	ES-13	Verona Eas	9/26/2006	ES 13-0-10_	x			6.97678	502.2212	6.553712	502.2212	6.553712			
ES-13	ES-13	Verona Eas	10/23/2006	ES13-0-1		0	0.033	7.1159	984.024	17.5326	984.024	17.5326			
ES-13	ES-13	Verona Eas	10/23/2006	ES13-1-2		0.033	0.066	6.9844	1045.22	26.7805	1045.22	26.7805			
ES-13	ES-13	Verona Eas	10/23/2006	ES13-2-3		0.066	0.099	7.6335	1234.53	27.1103	1234.53	27.1103			
ES-13	ES-13	Verona Eas	10/23/2006	ES13-3-4		0.099	0.132	9.8381	1402.52	31.7135	1402.52	31.7135			
ES-13	ES-13	Verona Eas	10/23/2006	ES13-4-5		0.132	0.165	9.3856	1393.64	28.654	1393.64	28.654			
ES-13	ES-13	Verona Eas	10/23/2006	ES13-5-6		0.165	0.198	8.4878	1396.84	27.5056	1396.84	27.5056			
ES-13	ES-13	Verona Eas	10/23/2006	ES13-6-7		0.198	0.231	7.9354	1325.89	23.0025	1325.89	23.0025			
ES-13	ES-13	Verona Eas	10/23/2006	ES13-7-8		0.231	0.264	7.1458	1224.91	18.0802	1224.91	18.0802			
ES-13	ES-13	Verona Eas	10/23/2006	ES13-8-9		0.264	0.297	7.7642	1295.28	19.7315	1295.28	19.7315			
ES-13	ES-13	Verona Eas	10/23/2006	ES13-9-10		0.297	0.33	8.7746	1457.04	22.6515	1457.04	22.6515			
ES-13	ES-13	Verona Eas	10/23/2006	ES13-0-10_	x			8.10653	1275.9894	24.27622	1275.9894	24.27622			
ES-13	ES-13	Verona Eas	6/1/2007	ES13-0-1 cm		0	0.033	10.5	1103.97	41.6777	1103.97	41.6777			
ES-13	ES-13	Verona Eas	6/1/2007	ES13-1-2 cm		0.033	0.066	6.69	1119.8	41.4	1119.8	41.4			
ES-13	ES-13	Verona Eas	6/1/2007	ES13-2-3 cm		0.066	0.099	6.98	785.54	47.4624	785.54	47.4624			
ES-13	ES-13	Verona Eas	6/1/2007	ES13-3-4 cm		0.099	0.132	3.8	501.982	35.7335	501.982	35.7335			
ES-13	ES-13	Verona Eas	6/1/2007	ES13-4-5 cm		0.132	0.165	3.63	608.516	20.9841	608.516	20.9841			
ES-13	ES-13	Verona Eas	6/1/2007	ES13-5-6 cm		0.165	0.198	3.55	538.905	28.6665	538.905	28.6665			
ES-13	ES-13	Verona Eas	6/1/2007	ES13-6-7 cm		0.198	0.231	2.66	511.286	11.7407	511.286	11.7407			
ES-13	ES-13	Verona Eas	6/1/2007	ES13-7-8 cm		0.231	0.264	2.7	344.167	15.9159	344.167	15.9159			
ES-13	ES-13	Verona Eas	6/1/2007	ES13-8-9 cm		0.264	0.297	3.15	552.057	20.4323	552.057	20.4323			
ES-13	ES-13	Verona Eas	6/1/2007	ES13-9-10 cm		0.297	0.33	3.39	597.052	24.5378	597.052	24.5378			
ES-13	ES-13	Verona Eas	6/1/2007	ES13-0-10 c	x			4.705	666.3275	28.85509	666.3275	28.85509			
ES-13	ES-13	Verona Eas	7/10/2007	ES13-0-1 cm		0	0.033	7.28221	1066.34	29.771	1066.34	29.771			
ES-13	ES-13	Verona Eas	7/10/2007	ES13-1-2 cm		0.033	0.066	6.06505	1929.39	32.3117	1929.39	32.3117			
ES-13	ES-13	Verona Eas	7/10/2007	ES13-2-3 cm		0.066	0.099	4.63812	723.087	25.9393	723.087	25.9393			
ES-13	ES-13	Verona Eas	7/10/2007	ES13-3-4 cm		0.099	0.132	2.23294	366.516	25.2	366.516	25.2			
ES-13	ES-13	Verona Eas	7/10/2007	ES13-4-5 cm		0.132	0.165	2.56602	395.346	20.098	395.346	20.098			
ES-13	ES-13	Verona Eas	7/10/2007	ES13-5-6 cm		0.165	0.198	2.47656	364.923	23.6619	364.923	23.6619			
ES-13	ES-13	Verona Eas	7/10/2007	ES13-6-7 cm		0.198	0.231	2.12884	303.496	11.537	303.496	11.537			
ES-13	ES-13	Verona Eas	7/10/2007	ES13-7-8 cm		0.231	0.264	2.5045	332.495	23.2961	332.495	23.2961			
ES-13	ES-13	Verona Eas	7/10/2007	ES13-8-9 cm		0.264	0.297	2.457	399.588	15.3055	399.588	15.3055			
ES-13	ES-13	Verona Eas	7/10/2007	ES13-9-10 cm		0.297	0.33	2.16825	373.937	12.771	373.937	12.771			
ES-13	ES-13	Verona Eas	7/10/2007	ES13-0-10 c	x			3.451949	625.5118	21.98915	625.5118	21.98915			
ES-13	ES-13	Verona Eas	8/23/2012	ES13-Intert	x	0	0.099	4.2	432	13.3	432	13.3			
ES-13	ES-13	Verona Eas	8/23/2012	ES13-Intert	x	0	0.099	0.84	188	4.92	188	4.92			
ES-13	ES-13	Verona Eas	8/23/2012	ES13-Intert	x	0	0.099	0.96	169	5.58	169	5.58			
ES-13	ES-13	Verona Eas	8/23/2012	ES13-Intert	x	0	0.099	1.29	238		238				
ES-13	ES-13	Verona Eas	8/23/2012	ES13-Intert	x	0	0.099	1.31	190		190				
ES-13	ES-13	Verona Eas	7/27/2016	ES-13_072	x	0	0	2.96	395	16.8	416	33.6			
ES-13-Inter	ES-13	Verona Eas	8/26/2010	ES13-Intert	x	0	0.099	18.4	2310	55.2	2310	55.2			
ES-13-Inter	ES-13	Verona Eas	8/26/2010	ES13-Intert	x	0	0.099	11.1	1640	46.6	1640	46.6			
ES-13-Inter	ES-13	Verona Eas	8/26/2010	ES13-Intert	x	0	0.099	8.97	1550	51.2	1550	51.2			
ES-13-Inter	ES-13	Verona Eas	8/26/2010	ES13-Intert	x	0	0.099	5.97	1710	73.1	1710	73.1			
ES-13-Inter	ES-13	Verona Eas	8/26/2010	ES13-Intert	x	0	0.099	8.51	1550	62.6	1550	62.6			
OV-01	OV-01	Veazie	8/1/2006	OV-1-0-3	x	0	0.099	0.6491	11.49	0.378	11.49	0.378			
OV-01	OV-01	Veazie	9/10/2006	OV-1 0-3 cr	x	0	0.099	2.3676	43.44	1.14881	43.44	1.14881			
OV-01	OV-01	Veazie	10/1/2006	OV 1-0-3	x	0	0.099	0.7515	27.74815	0.3794	27.74815	0.3794			
OV-01	OV-01	Veazie	10/24/2006	OV-1 core 1-0-3		0	0.099	0.4524	23.95	0.32276	23.95	0.32276			
OV-01	OV-01	Veazie	10/24/2006	OV-1 core 2-0-3		0	0.099	0.6454	17.9	0.22649	17.9	0.22649			
OV-01	OV-01	Veazie	10/24/2006	OV-1 core 1	x			0.5489	20.925	0.274625	20.925	0.274625			
OV-01	OV-01	Veazie	5/31/2007	OV1 -0-3 cr	x	0	0.099	0.6195	19.61317	0.16182	19.61317	0.16182			
OV-01	OV-01	Veazie	7/11/2007	OV1 -0-3 cr	x	0	0.099	0.92	21.4	0.44205	21.4	0.44205			
OV-01	OV-01	Veazie	8/20/2012	OV1-Interti	x	0	0.099	0.76	20.3	0.62	20.3	0.62			
OV-01	OV-01	Veazie	8/20/2012	OV1-Interti	x	0	0.099	0.83	19.1	0.7	19.1	0.7			
OV-01	OV-01	Veazie	8/20/2012	OV1-Interti	x	0	0.099	0.95	17.8	0.64	17.8	0.64			
OV-01	OV-01	Veazie	8/20/2012	OV1-Interti	x	0	0.099	0.7	17.1		17.1				
OV-01	OV-01	Veazie	8/20/2012	OV1-Interti	x	0	0.099	0.84	17.8		17.8				
OV-01	OV-01	Veazie	7/22/2016	OV-01_072	x	0	0	0.367	29.3	0.02	27.7	0.04			
OV-01-Inte	OV-01	Veazie	8/24/2010	OV-01-Inte	x	0	0.099	1.28	21.844	0.098	21.844	0.098			
OV-02	OV-02	Veazie	8/1/2006	OV-2-0-3	x	0	0.099	2.4201	34.57	0.663	34.57	0.663			
OV-02	OV-02	Veazie	9/10/2006	OV-2 0-3 cr	x	0	0.099	2.211	76.34	0.92482	76.34	0.92482			
OV-02	OV-02	Veazie	10/1/2006	OV 2-0-3	x	0	0.099	1.7775	61.6718	0.54117	61.6718	0.54117			
OV-02	OV-02	Veazie	10/24/2006	OV-2-0-1		0	0.033	4.3498	88.4713	0.82401	88.4713	0.82401			
OV-02	OV-02	Veazie	10/24/2006	OV-2-1-2		0.033	0.066	4.6898	89.9169	1.07392	89.9169	1.07392			
OV-02	OV-02	Veazie	10/24/2006	OV-2-2-3		0.066	0.099	7.8217	83.2751	0.78666	83.2751	0.78666			
OV-02	OV-02	Veazie	10/24/2006	OV-2-3-4		0.099	0.132	7.4658	99.0765	1.1697	99.0765	1.1697			
OV-02	OV-02	Veazie	10/24/2006	OV-2-4-5		0.132	0.165	3.8285	135.015	1.3228	135.015	1.3228			
OV-02	OV-02	Veazie	10/24/2006	OV-2-5-6		0.165	0.198	4.0993	140.383	0.9139	140.383	0.9139			
OV-02	OV-02	Veazie	10/24/2006	OV-2-6-7		0.198	0.231	3.5134	196.223	1.47745	196.223	1.47745			
OV-02	OV-02	Veazie	10/24/2006	OV-2-7-8		0.231	0.264	3.6063	150.294	1.25854	150.294	1.25854			
OV-02	OV-02	Veazie	10/24/2006	OV-2-8-9		0.264	0.297	4.6464	113.213	1.18551	113.213	1.18551			
OV-02	OV-02	Veazie	10/24/2006	OV-2-9-10		0.297	0.33	6.6831	168.811	1.58589	168.811	1.58589			
OV-02	OV-02	Veazie	10/24/2006	OV-2-0-10_	x			5.07041	126.46788	1.159838	126.46788	1.159838			
OV-02	OV-02	Veazie	5/31/2007	OV2 -0-1 cm		0	0.033	2.45	50.9251	1.10326	50.9251	1.10326			
OV-02	OV-02	Veazie	5/31/2007	OV2 -1-2 cm		0.033	0.066	2.51	86.5084	1.3431	86.5084	1.3431			
OV-02	OV-02	Veazie	5/31/2007	OV2 -2-3 cm		0.066	0.099	4.1	91.7971	1.89184	91.7971	1.89184			
OV-02	OV-02	Veazie	5/31/2007	OV2 -3-4 cm		0.099	0.132	5.04	62.2945	1.16787	62.2945	1.16787			
OV-02	OV-02	Veazie	5/31/2007	OV2 -4-5 cm		0.132	0.165	1.3	60.3834	0.87947	60.3834	0.87947			
OV-02	OV-02	Veazie	5/31/2007	OV2 -5-6 cm		0.165	0.198	0.637	61.1418	0.59188	61.1418	0.59188			
OV-02	OV-02	Veazie	5/31/2007	OV2 -6-7 cm		0.198	0.231	0.832	56.1176	0.44335	56.1176	0.44335			
OV-02	OV-02	Veazie	5/31/2007	OV2 -8-9 cm		0.264	0.297	2.62	186.03	4.35532	186.03	4.35532			
OV-02	OV-02	Veazie	5/31/2007	OV2 -9-10 cm		0.297	0.33	1.07	107.189	1.81644	107.189	1.81644			
OV-02	OV-02	Veazie	5/31/2007	OV2-7-8		0.231	0.264	1.47	65.3289	0.81317	65.3289	0.81317			
OV-02	OV-02	Veazie	5/31/2007	OV2-0-10_	x			2.2029	82.77158	1.44057	82.77158	1.44057			
OV-02	OV-02	Veazie	7/11/2007	OV2 -0-1 cm		0	0.033	1.41	44.5	0.63691	44.5	0.63691			
OV-02	OV-02	Veazie	7/11/2007	OV2 -1-2 cm		0.033	0.066	1.92	59.4	0.815	59.4	0.815			
OV-02	OV-02	Veazie	7/11/2007	OV2 -2-3 cm		0.066	0.099	2.18	72.9	1.37009	72.9	1.37009			
OV-02	OV-02	Veazie	7/11/2007	OV2 -3-4 cm		0.099	0.132	2.41	75.3	1.18734	75.3	1.18734			
OV-02	OV-02	Veazie	7/11/2007	OV2 -4-5 cm		0.132	0.165	1.51	76.1	3.42073	76.1	3.42073			
OV-02	OV-02	Veazie	7/11/2007	OV2 -5-6 cm		0.165	0.198	1.31	84.2	1.27493	84.2	1.27493			
OV-02	OV-02	Veazie	7/11/2007	OV2 -6-7 cm		0.198	0.231	1.96	102.2	0.93041	102.2	0.93041			
OV-02	OV-02	Veazie	7/11/2007	OV2 -7-8 cm		0.231	0.264	1.46	91.2	1.373	91.2	1.373			
OV-02	OV-02	Veazie	7/11/2007	OV2 -8-9 cm		0.264	0.297	0.64	67.3	0.28996	67.3	0.28996			
OV-02	OV-02	Veazie	7/11/2007	OV2 -9-10 cm		0.297	0.33	0.22	37.4	0.30875	37.4	0.30875			
OV-02	OV-02	Veazie	7/11/2007	OV2 -0-10 c	x			1.502	71.05	1.160712	71.05	1.160712			
OV-02	OV-02	Veazie	8/20/2012	OV2-Interti	x	0	0.099	0.7	33.1	0.21	33.1	0.21			
OV-02	OV-02	Veazie	8/20/2012	OV2-Interti	x	0	0.099	0.43	25.7	0.3	25.7	0.3			
OV-02	OV-02	Veazie	8/20/2012	OV2-Interti	x	0	0.099	0.77	24.6	0.18	24.6	0.18			
OV-02	OV-02	Veazie	8/20/2012	OV2-Interti	x	0	0.099	1.19	28.3		28.3				
OV-02	OV-02	Veazie	8/20/2012	OV2-Interti	x	0	0.099	1.37	28.2		28.2				
OV-02	OV-02	Veazie	7/22/2016	OV-02_072	x	0	0	4.37	46.5	3.68	62.8	7.36			
OV-04	OV-04	Veazie	8/1/2006	OV-4 0-1 cm		0	0.033	14.5923	10.54	0.898	10.54	0.898			
OV-04	OV-04	Veazie	8/1/2006	OV-4 1-2 cm		0.033	0.066	16.9307	116.4	0.63	116.4	0.63			
OV-04	OV-04	Veazie	8/1/2006	OV-4 2-3 cm		0.066	0.099	19.3904	29.22	0.569	29.22	0.569			
OV-04	OV-04	Veazie	8/1/2006	OV-4 3-4 cm		0.099	0.132	19.8121	298.7	0.72	298.7	0.72			
OV-04	OV-04	Veazie	8/1/2006	OV-4 4-5 cm		0.132	0.165	33.8414	161.6	0.516	161.6	0.516			
OV-04	OV-04	Veazie	8/1/2006	OV-4 5-6 cm		0.165	0.198	33.5282	228.2	0.609	228.2	0.609			
OV-04	OV-04	Veazie	8/1/2006	OV-4 6-7 cm		0.198	0.231	28.9454	144.4	0.644	144.4	0.644			
OV-04	OV-04	Veazie	8/1/2006	OV-4 7-8 cm		0.231	0.264	27.2527	165	0.706	165	0.706			
OV-04	OV-04	Veazie	8/1/2006	OV-4 8-9 cm		0.264	0.297	22.1382	185.2	0.626	185.2	0.626			
OV-04	OV-04	Veazie	8/1/2006	OV-4 9-10 cm		0.297	0.33	19.5963	130.4	0.766	130.4	0.766			
OV-04	OV-04	Veazie	8/1/2006	OV-4 0-10 c	x			23.60277	146.966	0.6684	146.966	0.6684			
OV-04	OV-04	Veazie	9/10/2006	OV-4 0-1 cm		0	0.033	8.2077	128.142	6.42627	128.142	6.42627			
OV-04	OV-04	Veazie	9/10/2006	OV-4 1-2 cm		0.033	0.066	9.3314	196.366	3.019	196.366	3.019			
OV-04	OV-04	Veazie	9/10/2006	OV-4 2-3 cm		0.066	0.099	9.7362	176.268	3.23908	176.268	3.23908			
OV-04	OV-04	Veazie	9/10/2006	OV-4 3-4 cm		0.099	0.132	11.0026	191.078	2.95145	191.078	2.95145			
OV-04	OV-04	Veazie	9/10/2006	OV-4 4-5 cm		0.132	0.165	11.7522	200.122	3.18098	200.122	3.18098			
OV-04	OV-04	Veazie	9/10/2006	OV-4 5-6 cm		0.165	0.198	12.1516	136.874	2.58626	136.874	2.58626			
OV-04	OV-04	Veazie	9/10/2006	OV-4 6-7 cm		0.198	0.231	10.7412	189.398	2.87392	189.398	2.87392			
OV-04	OV-04	Veazie	9/10/2006	OV-4 7-8 cm		0.231	0.264	10.5951	186.966	1.68877	186.966	1.68877			
OV-04	OV-04	Veazie	9/10/2006	OV-4 8-9 cm		0.264	0.297	12.0079	134.953	2.03097	134.953	2.03097			
OV-04	OV-04	Veazie	9/10/2006	OV-4 9-10 cm		0.297	0.33	12.749	137.419	1.90073	137.419	1.90073			
OV-04	OV-04	Veazie	9/10/2006	OV-4 0-10	x			10.82749	167.7586	2.989743	167.7586	2.989743			
OV-04	OV-04	Veazie	10/1/2006	OV 4-0-1		0	0.033	10.4526	258.093	4.50503	258.093	4.50503			
OV-04	OV-04	Veazie	10/1/2006	OV 4-1-2		0.033	0.066	10.052	259.547	2.45552	259.547	2.45552			
OV-04	OV-04	Veazie	10/1/2006	OV 4-2-3		0.066	0.099	8.534	410.431	1.90679	410.431	1.90679			
OV-04	OV-04	Veazie	10/1/2006	OV 4-3-4		0.099	0.132	9.1411	469.524	1.38563	469.524	1.38563			
OV-04	OV-04	Veazie	10/1/2006	OV 4-4-5		0.132	0.165	8.9339	501.69	1.11367	501.69	1.11367			
OV-04	OV-04	Veazie	10/1/2006	OV 4-5-6		0.165	0.198	7.7752	481.861	1.32479	481.861	1.32479			
OV-04	OV-04	Veazie	10/1/2006	OV 4-6-7		0.198	0.231	10.649	450.667	1.3999	450.667	1.3999			
OV-04	OV-04	Veazie	10/1/2006	OV 4-7-8		0.231	0.264	12.5127	879.87	1.0719	879.87	1.0719			
OV-04	OV-04	Veazie	10/1/2006	OV 4-8-9		0.264	0.297	14.7982	514.653	1.36399	514.653	1.36399			
OV-04	OV-04	Veazie	10/1/2006	OV 4-9-10		0.297	0.33	15.6105	703.002	1.23128	703.002	1.23128			
OV-04	OV-04	Veazie	10/1/2006	OV 4-0-10_	x			10.84592	492.9338	1.77585	492.9338	1.77585			
OV-04	OV-04	Veazie	10/25/2006	OV-4-0-1		0	0.033	13.9092	237.466	1.05541	237.466	1.05541			
OV-04	OV-04	Veazie	10/25/2006	OV-4-1-2		0.033	0.066	11.471	180.752	0.57567	180.752	0.57567			
OV-04	OV-04	Veazie	10/25/2006	OV-4-2-3		0.066	0.099	11.3438	321.247	0.5736	321.247	0.5736			
OV-04	OV-04	Veazie	10/25/2006	OV-4-3-4		0.099	0.132	19.1331	281.734	0.47095	281.734	0.47095			
OV-04	OV-04	Veazie	10/25/2006	OV-4-4-5		0.132	0.165	11.3893	177.262	0.40669	177.262	0.40669			
OV-04	OV-04	Veazie	10/25/2006	OV-4-5-6		0.165	0.198	18.7943	255.042	0.41518	255.042	0.41518			
OV-04	OV-04	Veazie	10/25/2006	OV-4-6-7		0.198	0.231	12.3733	205.16	0.35194	205.16	0.35194			
OV-04	OV-04	Veazie	10/25/2006	OV-4-7-8		0.231	0.264	12.3337	228.68	0.36585	228.68	0.36585			
OV-04	OV-04	Veazie	10/25/2006	OV-4-8-9		0.264	0.297	13.7741	250.615	0.25859	250.615	0.25859			
OV-04	OV-04	Veazie	10/25/2006	OV-4-9-10		0.297	0.33	12.0143	240.699	0.38252	240.699	0.38252			
OV-04	OV-04	Veazie	10/25/2006	OV-4-0-10_	x			13.65361	237.8657	0.48564	237.8657	0.48564			
OV-04	OV-04	Veazie	5/31/2007	OV4 -0-1 cm		0	0.033	12.1	283.24	4.1328	283.24	4.1328			
OV-04	OV-04	Veazie	5/31/2007	OV4 -1-2 cm		0.033	0.066	10.2	352.09	2.88254	352.09	2.88254			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
OV-04	OV-04	Veazie	5/31/2007	OV4 -2-3 cm		0.066	0.099	9.81	283.291	2.36957	283.291	2.36957			
OV-04	OV-04	Veazie	5/31/2007	OV4 -3-4 cm		0.099	0.132	9.64	260.51	2.33616	260.51	2.33616			
OV-04	OV-04	Veazie	5/31/2007	OV4 -4-5 cm		0.132	0.165	9.49	246.039	1.98616	246.039	1.98616			
OV-04	OV-04	Veazie	5/31/2007	OV4 -5-6 cm		0.165	0.198	9.94	300.804	2.4494	300.804	2.4494			
OV-04	OV-04	Veazie	5/31/2007	OV4 -6-7 cm		0.198	0.231	10.8	264.914	1.63459	264.914	1.63459			
OV-04	OV-04	Veazie	5/31/2007	OV4 -7-8 cm		0.231	0.264	9.53	301.945	1.33807	301.945	1.33807			
OV-04	OV-04	Veazie	5/31/2007	OV4 -8-9 cm		0.264	0.297	11.1	267.822	1.98332	267.822	1.98332			
OV-04	OV-04	Veazie	5/31/2007	OV4 -9-10 cm		0.297	0.33	12.3	263.122	1.57552	263.122	1.57552			
OV-04	OV-04	Veazie	5/31/2007	OV4 -0-10 c	x			10.491	282.3777	2.268813	282.3777	2.268813			
OV-04	OV-04	Veazie	7/11/2007	OV4 -0-1 cm		0	0.033	12.15	347	9.01282	347	9.01282			
OV-04	OV-04	Veazie	7/11/2007	OV4 -1-2 cm		0.033	0.066	9.5	324	2.39641	324	2.39641			
OV-04	OV-04	Veazie	7/11/2007	OV4 -2-3 cm		0.066	0.099	9.95	286	1.59653	286	1.59653			
OV-04	OV-04	Veazie	7/11/2007	OV4 -3-4 cm		0.099	0.132	9.95	280	1.4083	280	1.4083			
OV-04	OV-04	Veazie	7/11/2007	OV4 -4-5 cm		0.132	0.165	9.21	346	1.55	346	1.55			
OV-04	OV-04	Veazie	7/11/2007	OV4 -5-6 cm		0.165	0.198	8.35	346	0.876	346	0.876			
OV-04	OV-04	Veazie	7/11/2007	OV4 -6-7 cm		0.198	0.231	8.66	277	0.80763	277	0.80763			
OV-04	OV-04	Veazie	7/11/2007	OV4 -7-8 cm		0.231	0.264	8.75	330	0.98392	330	0.98392			
OV-04	OV-04	Veazie	7/11/2007	OV4 -8-9 cm		0.264	0.297	8.52	244	0.78357	244	0.78357			
OV-04	OV-04	Veazie	7/11/2007	OV4 -9-10 cm		0.297	0.33	8.41	274	0.64353	274	0.64353			
OV-04	OV-04	Veazie	7/11/2007	OV4 -0-10 c	x			9.345	305.4	2.005871	305.4	2.005871			
OV-04	OV-04	Veazie	8/21/2012	OV4-Interti	x	0	0.099	8.88	161	3.9	161	3.9			
OV-04	OV-04	Veazie	8/21/2012	OV4-Interti	x	0	0.099	8.07	120	4.49	120	4.49			
OV-04	OV-04	Veazie	8/21/2012	OV4-Interti	x	0	0.099	7.29	113	2.77	113	2.77			
OV-04	OV-04	Veazie	8/21/2012	OV4-Interti	x	0	0.099	9.75	126		126				
OV-04	OV-04	Veazie	8/21/2012	OV4-Interti	x	0	0.099	8	102		102				
OV-04	OV-04	Veazie	7/22/2016	OV-04_072	x	0	0	0.438	31.1	0.009	22.3	0.018			
OV-04-Inte	OV-04	Veazie	8/26/2010	OV-04-Inte	x	0	0.099	5.734	146.6	3.504	146.6	3.504			
W-17-High	W-17_High	Frankfort F	7/21/2016	W-17-HIGH	x			8.515	962	22.2	1267	44.4			
W-17-Inter	W-17-Inter	Frankfort F	8/18/2007	W17-Intert	x	0	0.099	12.24	1400	38.5	1400	38.5			
W-17-Inter	W-17-Inter	Frankfort F	7/22/2008	W17-Intert	x	0	0.099	18.33	507	10.8	507	10.8			
W-17-Inter	W-17-Inter	Frankfort F	8/4/2008	W17-INTER	x	0	0.099	10.82	872	17.9	872	17.9			
W-17-Inter	W-17-Inter	Frankfort F	8/20/2008	W17-Intert	x	0	0.099	11.54	906	20.4	906	20.4			
W-17-Inter	W-17-Inter	Frankfort F	9/3/2008	W17-Intert	x	0	0.099	16.67	932	18.8	932	18.8			
W-17-Inter	W-17-Inter	Frankfort F	9/18/2008	W17-Intert	x	0	0.099	6.51	790	18.2	790	18.2			
W-17-Inter	W-17-Inter	Frankfort F	9/30/2008	W17 Interti	x	0	0.099	7.49	628	16	628	16			
W-17-Inter	W-17-Inter	Frankfort F	10/21/2008	W17-INTER	x	0	0.099	7.67	882	13.2	882	13.2			
W-17-Inter	W-17-Inter	Frankfort F	5/12/2009	W17-INTER	x	0	0.099	3.88	658	17	658	17			
W-17-Inter	W-17-Inter	Frankfort F	6/2/2009	W17-INTER	x	0	0.099	4.98	708	27.4	708	27.4			
W-17-Inter	W-17-Inter	Frankfort F	6/24/2009	W17-Intert	x	0	0.099	4.84	1290	9.44	1290	9.44			
W-17-Inter	W-17-Inter	Frankfort F	7/15/2009	W17-Intert	x	0	0.099	3.13	752	13.9	752	13.9			
W-17-Inter	W-17-Inter	Frankfort F	8/4/2009	W17-Intert	x	0	0.099	5.24	1440	28.8	1440	28.8			
W-17-Inter	W-17-Inter	Frankfort F	8/11/2009	PB09-5480-0-3		0	0.099		566	18.4	566	18.4			
W-17-Inter	W-17-Inter	Frankfort F	8/11/2009	PB09-5481-3-6		0.099	0.198		805	16.9	805	16.9			
W-17-Inter	W-17-Inter	Frankfort F	8/11/2009	PB09-5482-6-9		0.198	0.297		877	31.4	877	31.4			
W-17-Inter	W-17-Inter	Frankfort F	8/11/2009	PB09-5483-9-12		0.297	0.396		859	25.7	859	25.7			
W-17-Inter	W-17-Inter	Frankfort F	8/11/2009	PB09-0-12_	x				776.75	23.1	776.75	23.1			
W-17-Inter	W-17-Inter	Frankfort F	9/2/2009	W17-Intert	x	0	0.099	4.43	2670	42.1	2670	42.1			
W-17-Inter	W-17-Inter	Frankfort F	8/24/2010	W-17-Inter	x	0	0.099	3.2575	774.25	16.7	774.25	16.7			
W-17-Inter	W-17-Inter	Frankfort F	7/26/2016	W-17-INTE	x	0	0	1.655	374	2.2	518	4.4			
W-17-Inter	W-17-Inter	Frankfort F	8/22/2012	W17-Intert	x	0	0.099	4.71	664	15.4	664	15.4			
W-17-Inter	W-17-Inter	Frankfort F	8/22/2012	W17-Intert	x	0	0.099	4.37	524	15.5	524	15.5			
W-17-Inter	W-17-Inter	Frankfort F	8/22/2012	W17-Intert	x	0	0.099	4.95	567		567				
W-17-Inter	W-17-Inter	Frankfort F	8/22/2012	W17-Intert	x	0	0.099	4.73	609		609				
W-17-Low	W-17-Low	Frankfort F	8/18/2007	W17-Low-0	x	0	0.099	11.76	1230	67.9	1230	67.9			
W-17-Low	W-17-Low	Frankfort F	7/22/2008	W17-Low-0	x	0	0.099	6.79	413	6.81	413	6.81			
W-17-Low	W-17-Low	Frankfort F	8/4/2008	W17-LOW-	x	0	0.099	13.75	1540	16.8	1540	16.8			
W-17-Low	W-17-Low	Frankfort F	8/20/2008	W17-Low-0	x	0	0.099	19.36	996	48.3	996	48.3			
W-17-Low	W-17-Low	Frankfort F	9/3/2008	W17-Low-0	x	0	0.099	17.12	908	69.9	908	69.9			
W-17-Low	W-17-Low	Frankfort F	9/18/2008	W17-Low-0	x	0	0.099	16.45	1220	29.1	1220	29.1			
W-17-Low	W-17-Low	Frankfort F	9/30/2008	W17 Low	x	0	0.099	16.09	1050	26.5	1050	26.5			
W-17-Low	W-17-Low	Frankfort F	10/21/2008	W17-LOW-	x	0	0.099	19.18	1060	20.4	1060	20.4			
W-17-Low	W-17-Low	Frankfort F	5/12/2009	W17-LOW-	x	0	0.099	7.89	305	12.9	305	12.9			
W-17-Low	W-17-Low	Frankfort F	6/2/2009	W17-LOW-	x	0	0.099	4.86	785	12.4	785	12.4			
W-17-Low	W-17-Low	Frankfort F	6/24/2009	W17-Low	x	0	0.099	9.98	1410	40.7	1410	40.7			
W-17-Low	W-17-Low	Frankfort F	7/15/2009	W17 Low	x	0	0.099	7.22	565	17.6	565	17.6			
W-17-Low	W-17-Low	Frankfort F	8/4/2009	W17-Low-0	x	0	0.099	3.16	566	11.6	566	11.6			
W-17-Low	W-17-Low	Frankfort F	8/13/2009	PB09-5540-0-3		0	0.099		689	29	689	29			
W-17-Low	W-17-Low	Frankfort F	8/13/2009	PB09-5541-3-6		0.099	0.198		436	10.8	436	10.8			
W-17-Low	W-17-Low	Frankfort F	8/13/2009	PB09-5542-6-9		0.198	0.297		466	5.68	466	5.68			
W-17-Low	W-17-Low	Frankfort F	8/13/2009	PB09-5543-9-12		0.297	0.396		377	3.83	377	3.83			
W-17-Low	W-17-Low	Frankfort F	8/13/2009	PB09-0-12_	x				492	12.3275	492	12.3275			
W-17-Low	W-17-Low	Frankfort F	9/2/2009	W17-Low-0	x	0	0.099	10.5	2510	75.2	2510	75.2			
W-17-Low	W-17-Low	Frankfort F	6/3/2010	PB10-8145-0-3		0	0.099		849	17.6	849	17.6			
W-17-Low	W-17-Low	Frankfort F	6/3/2010	PB10-8146-3-6		0.099	0.198		324	3.18	324	3.18			
W-17-Low	W-17-Low	Frankfort F	6/3/2010	PB10-8147-6-9		0.198	0.297		213	0.38	213	0.38			
W-17-Low	W-17-Low	Frankfort F	6/3/2010	PB10-0-9_a	x				462	7.053333333	462	7.053333333			
W-17-Low	W-17-Low	Frankfort F	8/24/2010	W-17-Low	x	0	0.099	6.3475	1405.25	26.15	1405.25	26.15			
W-17-Low	W-17-Low	Frankfort F	7/26/2016	W-17-LOW	x	0	0	2.565	364	2.85	471	5.7			
W-17-Low-	W-17-Low	Frankfort F	8/22/2012	W17-Low-A	x	0	0.099	9.19	866	61.5	866	61.5			
W-17-Low-	W-17-Low	Frankfort F	8/22/2012	W17-Low-B	x	0	0.099	11.3	933	58.6	933	58.6			
W-17-Low-	W-17-Low	Frankfort F	8/22/2012	W17-Low-C	x	0	0.099	10.2	915		915				
W-17-Low-	W-17-Low	Frankfort F	8/22/2012	W17-Low-D	x	0	0.099	11.1	1000		1000				
W-17-Mid	W-17-Mid	Frankfort F	7/21/2016	W-17-MID_	x			4.86	699	3.01	1179	6.02			
W-21-High	W-21-High	Mendall M	8/22/2007	W21-High-	x	0	0.099	4.8	779	49.3	779	49.3			
W-21-High	W-21-High	Mendall M	7/23/2008	W21-High-	x	0	0.099	11.5	873	28.6	873	28.6			
W-21-High	W-21-High	Mendall M	8/5/2008	W21-HIGH-	x	0	0.099	19.2	595	47.2	595	47.2			
W-21-High	W-21-High	Mendall M	8/20/2008	W21-High-	x	0	0.099	12.9	755	35	755	35			
W-21-High	W-21-High	Mendall M	9/3/2008	W21-High-	x	0	0.099	10.7	654	21.1	654	21.1			
W-21-High	W-21-High	Mendall M	9/18/2008	W21-High-	x	0	0.099	13.6	608	30	608	30			
W-21-High	W-21-High	Mendall M	9/30/2008	W21 High	x	0	0.099	15.8	600	46.4	600	46.4			
W-21-High	W-21-High	Mendall M	10/21/2008	W21-HIGH-	x	0	0.099	17.4	589	44.5	589	44.5			
W-21-High	W-21-High	Mendall M	5/12/2009	W21-HIGH-	x	0	0.099	8.48	908	46.5	908	46.5			
W-21-High	W-21-High	Mendall M	6/3/2009	W21-HIGH-	x	0	0.099	7.54	378	22	378	22			
W-21-High	W-21-High	Mendall M	6/25/2009	W21-High	x	0	0.099	11	413	40.7	413	40.7			
W-21-High	W-21-High	Mendall M	7/15/2009	W21-High	x	0	0.099	9.57	706	49.4	706	49.4			
W-21-High	W-21-High	Mendall M	8/4/2009	W21-High-	x	0	0.099	8.68	341	25.4	341	25.4			
W-21-High	W-21-High	Mendall M	8/26/2009	PB09-6120-0-3		0	0.099		923	42.6	923	42.6			
W-21-High	W-21-High	Mendall M	8/26/2009	PB09-6121-3-6		0.099	0.198		820	32.7	820	32.7			
W-21-High	W-21-High	Mendall M	8/26/2009	PB09-6122-6-9		0.198	0.297		1221	17.3	1221	17.3			
W-21-High	W-21-High	Mendall M	8/26/2009	PB09-6123-9-12		0.297	0.396		1321	32.2	1321	32.2			
W-21-High	W-21-High	Mendall M	8/26/2009	PB09-0-12_	x				1071.25	31.2	1071.25	31.2			
W-21-High	W-21-High	Mendall M	9/2/2009	W21-High-	x	0	0.099	7.21	441	35.6	441	35.6			
W-21-High	W-21-High	Mendall M	6/1/2010	PB10-8268-0-3		0	0.099		762	36.3	762	36.3			
W-21-High	W-21-High	Mendall M	6/1/2010	PB10-8269-3-6		0.099	0.198		1259	32.4	1259	32.4			
W-21-High	W-21-High	Mendall M	6/1/2010	PB10-8270-6-9		0.198	0.297		931	37.2	931	37.2			
W-21-High	W-21-High	Mendall M	6/1/2010	PB10-0-9_a	x				984	35.3	984	35.3			
W-21-High	W-21-High	Mendall M	8/26/2010	W-21-High	x	0	0.099	8.315	588	31.35	588	31.35			
W-21-High	W-21-High	Mendall M	4/12/2011	PB11-5000-	x	0	0.099		536	39	536	39			
W-21-High	W-21-High	Mendall M	8/22/2012	W21-High-A	x			16	429	44.8	429	44.8			
W-21-High	W-21-High	Mendall M	8/22/2012	W21-High-B	x			16.7	684	27.9	684	27.9			
W-21-High	W-21-High	Mendall M	8/22/2012	W21-High-C	x			13.2	821		821				
W-21-High	W-21-High	Mendall M	8/22/2012	W21-High-D	x			15.5	488		488				
W-21-High	W-21-High	Mendall M	7/25/2016	W-21-HIGH	x	0	0	7.86	871	15.8	929	31.6			
W-21-Inter	W-21-Inter	Mendall M	8/22/2007	W21-Intert	x	0	0.099	3.2	1400	29.9	1400	29.9			
W-21-Inter	W-21-Inter	Mendall M	7/23/2008	W21-Intert	x	0	0.099	6.9	959	29.5	959	29.5			
W-21-Inter	W-21-Inter	Mendall M	8/5/2008	W21-INTER	x	0	0.099	6.88	962	22.6	962	22.6			
W-21-Inter	W-21-Inter	Mendall M	8/20/2008	W21-Intert	x	0	0.099	8.8	1100	38.1	1100	38.1			
W-21-Inter	W-21-Inter	Mendall M	9/3/2008	W21-Intert	x	0	0.099	7.78	1340	29.6	1340	29.6			
W-21-Inter	W-21-Inter	Mendall M	9/18/2008	W21-Intert	x	0	0.099	7.28	890	24.7	890	24.7			
W-21-Inter	W-21-Inter	Mendall M	9/30/2008	W21 Intert	x	0	0.099	9.14	1090	22.2	1090	22.2			
W-21-Inter	W-21-Inter	Mendall M	10/21/2008	W21-INTER	x	0	0.099	5.75	789	17.1	789	17.1			
W-21-Inter	W-21-Inter	Mendall M	5/12/2009	W21-INTER	x	0	0.099	4.98	1120	33.2	1120	33.2			
W-21-Inter	W-21-Inter	Mendall M	6/3/2009	W21-INTER	x	0	0.099	5.76	866	19.2	866	19.2			
W-21-Inter	W-21-Inter	Mendall M	6/25/2009	W21-Intert	x	0	0.099	4.72	1220	30.3	1220	30.3			
W-21-Inter	W-21-Inter	Mendall M	7/15/2009	W21-Intert	x	0	0.099	5.85	1450	35.8	1450	35.8			
W-21-Inter	W-21-Inter	Mendall M	8/4/2009	W21-Intert	x	0	0.099	6.5	863	23.5	863	23.5			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5820-0-3		0	0.099		1154	24.9	1154	24.9			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5821-3-6		0.099	0.198		1192	32.6	1192	32.6			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5822-6-9		0.198	0.297		1126	33	1126	33			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5823-9-12		0.297	0.396		1129	21	1129	21			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-0-12					1150.25	27.875	1150.25	27.875			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5824-0-3		0	0.099		1004	26.9	1004	26.9			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5825-3-6		0.099	0.198		1130	26.1	1130	26.1			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5826-6-9		0.198	0.297		1197	26	1197	26			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5827-9-12		0.297	0.396		1228	23.6	1228	23.6			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-0-12					1139.75	25.65	1139.75	25.65			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5828-0-3		0	0.099		1314	26.1	1314	26.1			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5829-3-6		0.099	0.198		1221	28.5	1221	28.5			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5830-6-9		0.198	0.297		1036	25.2	1036	25.2			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-5831-9-12		0.297	0.396		1130	24.6	1130	24.6			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-0-12					1175.25	26.1	1175.25	26.1			
W-21-Inter	W-21-Inter	Mendall M	8/10/2009	PB09-all-0-	x				1155.083333	26.54166667	1155.083333	26.54166667			
W-21-Inter	W-21-Inter	Mendall M	9/2/2009	W21-Intert	x	0	0.099	5.71	1140	21.6	1140	21.6			
W-21-Inter	W-21-Inter	Mendall M	8/26/2010	W-21-Inter	x	0	0.099	3.575	657.75	13.2075	657.75	13.2075			
W-21-Inter	W-21-Inter	Mendall M	8/22/2012	W21-Intert	x			5.37	591	16.2	591	16.2			
W-21-Inter	W-21-Inter	Mendall M	8/22/2012	W21-Intert	x			6.5	723	22.2	723	22.2			
W-21-Inter	W-21-Inter	Mendall M	8/22/2012	W21-Intert	x			6.47	738		738				
W-21-Inter	W-21-Inter	Mendall M	8/22/2012	W21-Intert	x			6.85	759		759				
W-21-Inter	W-21-Inter	Mendall M	7/25/2016	W-21-INTE	x	0	0	5.125	467	2.36	543	4.72			
W-21-Low	W-21-Low	Mendall M	8/22/2007	W21-Low-0	x	0	0.099	2.7	1030	36.7	1030	36.7			
W-21-Low	W-21-Low	Mendall M	7/23/2008	W21-Low-0	x	0	0.099	7.39	1040	29.1	1040	29.1			
W-21-Low	W-21-Low	Mendall M	8/5/2008	W21-LOW-	x	0	0.099	8.03	944	28.4	944	28.4			
W-21-Low	W-21-Low	Mendall M	8/20/2008	W21-Low-0	x	0	0.099	7.16	1040	39.4	1040	39.4			
W-21-Low	W-21-Low	Mendall M	9/3/2008	W21-Low-0	x	0	0.099	5.38	1240	37.8	1240	37.8			
W-21-Low	W-21-Low	Mendall M	9/18/2008	W21-Low-0	x	0	0.099	11.2	903	32.2	903	32.2			
W-21-Low	W-21-Low	Mendall M	9/30/2008	W21 Low	x	0	0.099	8.48	1100	15.5	1100	15.5			
W-21-Low	W-21-Low	Mendall M	10/21/2008	W21-LOW-	x	0	0.099	8.53	1030	24.4	1030	24.4			
W-21-Low	W-21-Low	Mendall M	5/12/2009	W21-LOW-	x	0	0.099	4.76	892	30.2	892	30.2			
W-21-Low	W-21-Low	Mendall M	6/3/2009	W21-LOW-	x	0	0.099	4.49	848	15.9	848	15.9			
W-21-Low	W-21-Low	Mendall M	6/25/2009	W21-Low	x	0	0.099	4.83	893	38	893	38			
W-21-Low	W-21-Low	Mendall M	7/15/2009	W21-Low	x	0	0.099	4.76	1050	41.5	1050	41.5			
W-21-Low	W-21-Low	Mendall M	8/4/2009	W21-Low-0	x	0	0.099	5.19	872	24.9	872	24.9			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5920-0-3		0	0.099		911	29.3	911	29.3			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5921-3-6		0.099	0.198		1156	20	1156	20			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5922-6-9		0.198	0.297		1177	17.3	1177	17.3			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5923-9-12		0.297	0.396		1279	8.91	1279	8.91			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-0-12					1130.75	18.8775	1130.75	18.8775			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5924-0-3		0	0.099		1066	33.7	1066	33.7			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5925-3-6		0.099	0.198		1063	27.4	1063	27.4			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5926-6-9		0.198	0.297		1192	9.89	1192	9.89			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5927-9-12		0.297	0.396		1292	6.46	1292	6.46			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-0-12					1153.25	19.3625	1153.25	19.3625			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5928-0-3		0	0.099		1076	29.1	1076	29.1			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5929-3-6		0.099	0.198		1075	28.6	1075	28.6			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5930-6-9		0.198	0.297		1201	25.5	1201	25.5			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-5931-9-12		0.297	0.396		1306	5.91	1306	5.91			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-0-12					1164.5	22.2775	1164.5	22.2775			
W-21-Low	W-21-Low	Mendall M	8/13/2009	PB09-all-0-	x				1149.5	20.1725	1149.5	20.1725			
W-21-Low	W-21-Low	Mendall M	9/2/2009	W21-Low-0	x	0	0.099	4.51	823	25.5	823	25.5			
W-21-Low	W-21-Low	Mendall M	6/2/2010	PB10-8227-0-3		0	0.099		1212	22.1	1212	22.1			
W-21-Low	W-21-Low	Mendall M	6/2/2010	PB10-8228-3-6		0.099	0.198		1237	23.4	1237	23.4			
W-21-Low	W-21-Low	Mendall M	6/2/2010	PB10-8229-6-9		0.198	0.297		1147	17.5	1147	17.5			
W-21-Low	W-21-Low	Mendall M	6/2/2010	PB10-0-9_a	x				1198.666667	21	1198.666667	21			
W-21-Low	W-21-Low	Mendall M	8/26/2010	W-21-Low	x	0	0.099	5.1775	1029.25	20.25	1029.25	20.25			
W-21-Low	W-21-Low	Mendall M	4/12/2011	PB11-5003-	x	0	0.099		584	36.2	584	36.2			
W-21-Low	W-21-Low	Mendall M	8/22/2012	W21-Low-A	x			7.88	770	32.5	770	32.5			
W-21-Low	W-21-Low	Mendall M	8/22/2012	W21-Low-B	x			8.19	919	22.8	919	22.8			
W-21-Low	W-21-Low	Mendall M	8/22/2012	W21-Low-C	x			8.44	890		890				
W-21-Low	W-21-Low	Mendall M	8/22/2012	W21-Low-D	x			8.27	816		816				
W-21-Low	W-21-Low	Mendall M	7/25/2016	W-21-LOW_	x	0	0	7.1	729	2.68	705	5.36			
W-21-Mid	W-21-Mid	Mendall M	8/19/2007	W31-Medi	x	0	0.099	0.92	17.6	0.58	17.6	0.58			
W-21-Mid	W-21-Mid	Mendall M	8/22/2007	W21-Medi	x	0	0.099	3	948	29.4	948	29.4			
W-21-Mid	W-21-Mid	Mendall M	7/23/2008	W21-Medi	x	0	0.099	6.53	1110	37.4	1110	37.4			
W-21-Mid	W-21-Mid	Mendall M	8/5/2008	W21-MEDI	x	0	0.099	10.3	666	17.6	666	17.6			
W-21-Mid	W-21-Mid	Mendall M	8/20/2008	W21-Medi	x	0	0.099	9.1	1000	73.3	1000	73.3			
W-21-Mid	W-21-Mid	Mendall M	9/3/2008	W21-Medi	x	0	0.099	11.5	885	57.1	885	57.1			
W-21-Mid	W-21-Mid	Mendall M	9/18/2008	W21-Medi	x	0	0.099	18.9	786	37.8	786	37.8			
W-21-Mid	W-21-Mid	Mendall M	9/30/2008	W21 Mid	x	0	0.099	12.5	785	27	785	27			
W-21-Mid	W-21-Mid	Mendall M	10/21/2008	W21-MEDI	x	0	0.099	12.4	1020	30.5	1020	30.5			
W-21-Mid	W-21-Mid	Mendall M	5/12/2009	W21-MID-C	x	0	0.099	6.78	775	49.2	775	49.2			
W-21-Mid	W-21-Mid	Mendall M	6/3/2009	W21-MID-C	x	0	0.099	7.16	859	25.3	859	25.3			
W-21-Mid	W-21-Mid	Mendall M	6/25/2009	W21-Mid	x	0	0.099	7.52	839	65	839	65			
W-21-Mid	W-21-Mid	Mendall M	7/15/2009	W21-Mid	x	0	0.099	7.21	796	64.4	796	64.4			
W-21-Mid	W-21-Mid	Mendall M	8/4/2009	W21-Mid-0	x	0	0.099	7.56	752	52.4	752	52.4			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6020-0-3		0	0.099		968	29.8	968	29.8			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6021-3-6		0.099	0.198		1086	18.3	1086	18.3			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6022-6-9		0.198	0.297		995	9.26	995	9.26			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6023-9-12		0.297	0.396		1222	6.98	1222	6.98			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-0-12					1067.75	16.085	1067.75	16.085			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6024-0-3		0	0.099		1068	31	1068	31			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6025-3-6		0.099	0.198		1061	24.4	1061	24.4			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6026-6-9		0.198	0.297		1032	14.1	1032	14.1			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6027-9-12		0.297	0.396		1064	6.54	1064	6.54			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-0-12					1056.25	19.01	1056.25	19.01			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6028-0-3		0	0.099		1082	25.6	1082	25.6			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6029-3-6		0.099	0.198		1081	22	1081	22			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6030-6-9		0.198	0.297		931	14.1	931	14.1			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-6031-9-12		0.297	0.396		1252	9.45	1252	9.45			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-0-12					1086.5	17.7875	1086.5	17.7875			
W-21-Mid	W-21-Mid	Mendall M	8/26/2009	PB09-all-0-	x				1070.166667	17.6275	1070.166667	17.6275			
W-21-Mid	W-21-Mid	Mendall M	9/2/2009	W21-Mid-0	x	0	0.099	4.92	702	37.3	702	37.3			
W-21-Mid	W-21-Mid	Mendall M	8/26/2010	W-21-Mid	x	0	0.099	6.2475	834	18.625	834	18.625			
W-21-Mid	W-21-Mid	Mendall M	8/22/2012	W21-Mid-A	x			11.9	626	38.5	626	38.5			
W-21-Mid	W-21-Mid	Mendall M	8/22/2012	W21-Mid-B	x			11.8	796	46.3	796	46.3			
W-21-Mid	W-21-Mid	Mendall M	8/22/2012	W21-Mid-C	x			12.3	622		622				
W-21-Mid	W-21-Mid	Mendall M	8/22/2012	W21-Mid-D	x			11.4	714		714				
W-21-Mid	W-21-Mid	Mendall M	7/25/2016	W-21-MID_	x	0	0	5.775	813	2.77	869	5.54			
W-21-UM-	W-21-UM-	Mendall M	5/29/2010	PB10-8555-0-3		0	0.099		641	19.4	641	19.4			
W-21-UM-	W-21-UM-	Mendall M	5/29/2010	PB10-8556-3-6		0.099	0.198		826	64.1	826	64.1			
W-21-UM-	W-21-UM-	Mendall M	5/29/2010	PB10-8557-6-9		0.198	0.297		1121	43.5	1121	43.5			
W-21-UM-	W-21-UM-	Mendall M	5/29/2010	PB10-0-9_a	x				862.6666667	42.33333333	862.6666667	42.33333333			
W-21-UM-	W-21-UM-	Mendall M	5/31/2010	PB10-8838-	x	0	0.099		535	18.7	535	18.7			
W-21-UM-	W-21-UM-	Mendall M	6/2/2010	PB10-8876-	x	0	0.099		676	14.2	676	14.2			
W-21-UM-	W-21-UM-	Mendall M	6/5/2010	PB10-8850-	x	0	0.099		640	22.9	640	22.9			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-C	x	0	0.099	8.96	569	29.1	569	29.1			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-C	x	0	0.099	10.8	496	18	496	18			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-C	x	0	0.099	10.8	546	17.2	546	17.2			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-C	x	0	0.099	13	472	10.7	472	10.7			
W-21-UM-	W-21-UM-	Mendall M	4/12/2011	PB11-5012-	x	0	0.099		405	40	405	40			
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-C	x	0	0.099	26.2	189	13.7	189	13.7			
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-C	x	0	0.099	28.3	218	15.5	218	15.5			
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-C	x	0	0.099	29.7	197		197				
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-C	x	0	0.099	23.8	200		200				
W-21-UM-	W-21-UM-	Mendall M	7/27/2016	W-21UM-C	x	0	0	13.45	552	7.02	617	14.04			
W-21-UM-	W-21-UM-	Mendall M	5/28/2010	PB10-8514-0-3		0	0.099		673	51.8	673	51.8			
W-21-UM-	W-21-UM-	Mendall M	5/28/2010	PB10-8515-3-6		0.099	0.198		719	49.2	719	49.2			
W-21-UM-	W-21-UM-	Mendall M	5/28/2010	PB10-8516-6-9		0.198	0.297		900	41.2	900	41.2			
W-21-UM-	W-21-UM-	Mendall M	5/28/2010	PB10-0-9_a	x				764	47.4	764	47.4			
W-21-UM-	W-21-UM-	Mendall M	5/31/2010	PB10-8762-	x	0	0.099		575	69.4	575	69.4			
W-21-UM-	W-21-UM-	Mendall M	6/2/2010	PB10-8864-	x	0	0.099		652	75.5	652	75.5			
W-21-UM-	W-21-UM-	Mendall M	6/5/2010	PB10-8774-	x	0	0.099		598	76.3	598	76.3			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-E	x	0	0.099	8.6	682	80	682	80			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-E	x	0	0.099	8.44	563	35.5	563	35.5			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-E	x	0	0.099	9.25	444	36.4	444	36.4			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-E	x	0	0.099	10	705	31.8	705	31.8			
W-21-UM-	W-21-UM-	Mendall M	4/12/2011	PB11-5015-	x	0	0.099		518	98.4	518	98.4			
W-21-UM-	W-21-UM-	Mendall M	8/22/2012	W21-UM-E	x	0	0.099	14.1	593	55.1	593	55.1			
W-21-UM-	W-21-UM-	Mendall M	8/22/2012	W21-UM-E	x	0	0.099	14.9	494	27.1	494	27.1			
W-21-UM-	W-21-UM-	Mendall M	8/22/2012	W21-UM-E	x	0	0.099	12.7	632		632				
W-21-UM-	W-21-UM-	Mendall M	8/22/2012	W21-UM-E	x	0	0.099	14.3	559		559				
W-21-UM-	W-21-UM-	Mendall M	7/25/2016	W-21UM-E	x	0	0	5.775	685	1.28	752	2.56			
W-21-UM-	W-21-UM-	Mendall M	6/1/2010	PB10-8596-0-3		0	0.099		484	39.7	484	39.7			
W-21-UM-	W-21-UM-	Mendall M	6/1/2010	PB10-8597-3-6		0.099	0.198		514	18.4	514	18.4			
W-21-UM-	W-21-UM-	Mendall M	6/1/2010	PB10-8598-6-9		0.198	0.297		1160	15.3	1160	15.3			
W-21-UM-	W-21-UM-	Mendall M	6/1/2010	PB10-0-9_a	x				719.3333333	24.46666667	719.3333333	24.46666667			
W-21-UM-	W-21-UM-	Mendall M	8/24/2010	W21-South	x	0	0.099	4.72	952	22.6	952	22.6			
W-21-UM-	W-21-UM-	Mendall M	8/24/2010	W21-South	x	0	0.099	5.12	938	22.2	938	22.2			
W-21-UM-	W-21-UM-	Mendall M	8/24/2010	W21-South	x	0	0.099	5.69	882	19.5	882	19.5			
W-21-UM-	W-21-UM-	Mendall M	8/24/2010	W21-South	x	0	0.099	5.29	1230	6.32	1230	6.32			
W-21-UM-	W-21-UM-	Mendall M	4/12/2011	PB11-5006-	x	0	0.099		284	61.1	284	61.1			
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-S	x	0	0.099	20.7	266	43	266	43			
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-S	x	0	0.099	23.7	216	32	216	32			
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-S	x	0	0.099	18.3	365		365				
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-S	x	0	0.099	18.5	348		348				
W-21-UM-	W-21-UM-	Mendall M	7/27/2016	W-21UM-S	x	0	0	10.9	318	3.47	267	6.94			
W-21-UM-	W-21-UM-	Mendall M	8/13/2009	W21-Upper	x	0	0.099		304	24.3	304	24.3			
W-21-UM-	W-21-UM-	Mendall M	8/21/2009	W21-Upper	x	0	0.099		161	14.5	161	14.5			
W-21-UM-	W-21-UM-	Mendall M	8/24/2009	W21-Upper	x	0	0.099		198	24.4	198	24.4			
W-21-UM-	W-21-UM-	Mendall M	8/28/2009	PB09-6779-0-3		0	0.099		180	15.1	180	15.1			
W-21-UM-	W-21-UM-	Mendall M	8/28/2009	PB09-6780-3-6		0.099	0.198		258	13.3	258	13.3			
W-21-UM-	W-21-UM-	Mendall M	8/28/2009	PB09-6781-6-9		0.198	0.297		761	8	761	8			
W-21-UM-	W-21-UM-	Mendall M	8/28/2009	PB09-6782-9-12		0.297	0.396		588	4.34	588	4.34			
W-21-UM-	W-21-UM-	Mendall M	8/28/2009	PB09-0-12_	x				446.75	10.185	446.75	10.185			
W-21-UM-	W-21-UM-	Mendall M	5/27/2010	PB10-8634-	x	0	0.099		241	13.2	241	13.2			
W-21-UM-	W-21-UM-	Mendall M	5/30/2010	PB10-8473-0-3		0	0.099		245	35.6	245	35.6			
W-21-UM-	W-21-UM-	Mendall M	5/30/2010	PB10-8474-3-6		0.099	0.198		470	10.1	470	10.1			
W-21-UM-	W-21-UM-	Mendall M	5/30/2010	PB10-8475-6-9		0.198	0.297		664	7.19	664	7.19			
W-21-UM-	W-21-UM-	Mendall M	5/30/2010	PB10-0-9_a	x				459.6666667	17.63	459.6666667	17.63			
W-21-UM-	W-21-UM-	Mendall M	6/2/2010	PB10-8686-	x	0	0.099		185	22.3	185	22.3			
W-21-UM-	W-21-UM-	Mendall M	6/5/2010	PB10-8698-	x	0	0.099		187	15.2	187	15.2			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-W	x	0	0.099	14.3	237	4.1	237	4.1			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-W	x	0	0.099	15.7	179	6.58	179	6.58			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-W	x	0	0.099	13.7	377	10.5	377	10.5			
W-21-UM-	W-21-UM-	Mendall M	8/25/2010	W21-UM-W	x	0	0.099	14.8	348	7.46	348	7.46			
W-21-UM-	W-21-UM-	Mendall M	9/21/2010	PB10-9008-0-3		0	0.099		235	9.06	235	9.06			
W-21-UM-	W-21-UM-	Mendall M	9/21/2010	PB10-9020-0-3		0	0.099		202	9.71	202	9.71			
W-21-UM-	W-21-UM-	Mendall M	9/21/2010	PB10-9032-0-3		0	0.099		302	7.54	302	7.54			
W-21-UM-	W-21-UM-	Mendall M	9/21/2010	PB10-9044-0-3		0	0.099		277	9.52	277	9.52			
W-21-UM-	W-21-UM-	Mendall M	9/21/2010	PB10-9056-0-3		0	0.099		282	9.64	282	9.64			
W-21-UM-	W-21-UM-	Mendall M	9/21/2010	PB10-0-3_a	x				259.6	9.094	259.6	9.094			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9089-0-3		0	0.099		212	15.7	212	15.7			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9102-0-3		0	0.099		142	11.2	142	11.2			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9115-0-3		0	0.099		188	11.1	188	11.1			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9129-0-3		0	0.099		258	7.33	258	7.33			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9142-0-3		0	0.099		171	7.42	171	7.42			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9155-0-3		0	0.099		144	11.3	144	11.3			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9169-0-3		0	0.099		164	10	164	10			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9182-0-3		0	0.099		192	17.9	192	17.9			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9195-0-3		0	0.099		208	17.2	208	17.2			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9209-0-3		0	0.099		248	8.95	248	8.95			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9222-0-3		0	0.099		301	14.9	301	14.9			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9235-0-3		0	0.099		260	10.7	260	10.7			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9249-0-3		0	0.099		172	9.78	172	9.78			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9262-0-3		0	0.099		185	25.5	185	25.5			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-9275-0-3		0	0.099		210	38.2	210	38.2			
W-21-UM-	W-21-UM-	Mendall M	10/19/2010	PB10-0-3_a	x				203.6666667	14.47866667	203.6666667	14.47866667			
W-21-UM-	W-21-UM-	Mendall M	10/20/2010	PB10-9489-0-3		0	0.099		29	1.45	29	1.45			
W-21-UM-	W-21-UM-	Mendall M	10/20/2010	PB10-9502-0-3		0	0.099		10	1.12	10	1.12			
W-21-UM-	W-21-UM-	Mendall M	10/20/2010	PB10-9515-0-3		0	0.099		203	6.8	203	6.8			
W-21-UM-	W-21-UM-	Mendall M	10/20/2010	PB10-0-3_a	x				80.66666667	3.123333333	80.66666667	3.123333333			
W-21-UM-	W-21-UM-	Mendall M	4/12/2011	PB11-5018-	x	0	0.099		193	19.5	193	19.5			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5029-0-3		0	0.099		233	13.9	233	13.9			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5041-0-3		0	0.099		309	24	309	24			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5053-0-3		0	0.099		237	24.5	237	24.5			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5065-0-3		0	0.099		295	27.1	295	27.1			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5077-0-3		0	0.099		166	16.1	166	16.1			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5089-0-3		0	0.099		226	13.1	226	13.1			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5101-0-3		0	0.099		302	13.2	302	13.2			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5113-0-3		0	0.099		208	9.6	208	9.6			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5125-0-3		0	0.099		298	15.6	298	15.6			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5137-0-3		0	0.099		202	10	202	10			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5149-0-3		0	0.099		337	38.2	337	38.2			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5161-0-3		0	0.099		306	39.9	306	39.9			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5173-0-3		0	0.099		268	31	268	31			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5185-0-3		0	0.099		282	13.9	282	13.9			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-5197-0-3		0	0.099		280	34.4	280	34.4			
W-21-UM-	W-21-UM-	Mendall M	6/7/2011	PB11-0-3_a	x				263.2666667	21.63333333	263.2666667	21.63333333			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5868-0-3		0	0.099		189	28.8	189	28.8			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5879-0-3		0	0.099		183	37	183	37			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5890-0-3		0	0.099		140	17.1	140	17.1			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5901-0-3		0	0.099		222	22.5	222	22.5			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5912-0-3		0	0.099		194	17.7	194	17.7			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5923-0-3		0	0.099		182	16.9	182	16.9			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5934-0-3		0	0.099		188	31	188	31			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5945-0-3		0	0.099		184	12.7	184	12.7			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5956-0-3		0	0.099		206	28.4	206	28.4			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5967-0-3		0	0.099		247	13.3	247	13.3			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5978-0-3		0	0.099		243	28.7	243	28.7			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-5989-0-3		0	0.099		260	32.5	260	32.5			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-6000-0-3		0	0.099		218	37.5	218	37.5			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-6011-0-3		0	0.099		196	17.8	196	17.8			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-6022-0-3		0	0.099		238	23.1	238	23.1			
W-21-UM-	W-21-UM-	Mendall M	9/29/2011	PB11-0-3_a	x				206	24.33333333	206	24.33333333			
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-W	x	0	0.099	31	134	5.83	134	5.83			
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-W	x	0	0.099	32	131	6.93	131	6.93			
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-W	x	0	0.099	28.9	214		214				
W-21-UM-	W-21-UM-	Mendall M	8/21/2012	W21-UM-W	x	0	0.099	29.8	142		142				
W-21-UM-	W-21-UM-	Mendall M	9/25/2012	PB12-6229-0-3		0	0.099		179	23.4	179	23.4			
W-21-UM-	W-21-UM-	Mendall M	9/25/2012	PB12-6241-0-3		0	0.099		150	11.3	150	11.3			
W-21-UM-	W-21-UM-	Mendall M	9/25/2012	PB12-6253-0-3		0	0.099		128	7.75	128	7.75			
W-21-UM-	W-21-UM-	Mendall M	9/25/2012	PB12-6265-0-3		0	0.099		136	12.1	136	12.1			
W-21-UM-	W-21-UM-	Mendall M	9/25/2012	PB12-6277-0-3		0	0.099		176	17.3	176	17.3			
W-21-UM-	W-21-UM-	Mendall M	9/25/2012	PB12-6289-0-3		0	0.099		161	19.9	161	19.9			
W-21-UM-	W-21-UM-	Mendall M	9/25/2012	PB12-6301-0-3		0	0.099		246	16.6	246	16.6			
W-21-UM-	W-21-UM-	Mendall M	9/25/2012	PB12-6313-0-3		0	0.099		201	31	201	31			
W-21-UM-	W-21-UM-	Mendall M	9/25/2012	PB12-6325-0-3		0	0.099		175	8.67	175	8.67			
W-21-UM-	W-21-UM-	Mendall M	9/25/2012	PB12-0-3_a	x				172.4444444	16.44666667	172.4444444	16.44666667			
W-21-UM-	W-21-UM-	Mendall M	7/27/2016	W-21UM-W	x	0	0	11.35	437	0.713	434	1.426			
W-61-High	W-61-High	Verona Eas	8/19/2007	W61-High-	x	0	0.099	6.2	259	3.5	259	3.5			
W-61-High	W-61-High	Verona Eas	8/23/2012	W61-High-	x	0	0.099	11.4	147	4.93	147	4.93			
W-61-High	W-61-High	Verona Eas	8/23/2012	W61-High-	x	0	0.099	29.1	640	18.9	640	18.9			
W-61-High	W-61-High	Verona Eas	8/23/2012	W61-High-	x	0	0.099	26.4	529		529				
W-61-High	W-61-High	Verona Eas	8/23/2012	W61-High-	x	0	0.099	7.16	76.2		76.2				
W-61-High	W-61-High	Verona Eas	11/8/2016	W-61-HIGH	x	0	0	15.8	318	4.87	594	9.74			
W-61-Inter	W-61-Inter	Verona Eas	8/19/2007	W61-Intert	x	0	0.099	2.9	651	18	651	18			
W-61-Inter	W-61-Inter	Verona Eas	8/23/2012	W61-Intert	x	0	0.099	2.5	362	12	362	12			
W-61-Inter	W-61-Inter	Verona Eas	8/23/2012	W61-Intert	x	0	0.099	2.12	276	10.9	276	10.9			
W-61-Inter	W-61-Inter	Verona Eas	8/23/2012	W61-Intert	x	0	0.099	2.16	309		309				
W-61-Inter	W-61-Inter	Verona Eas	8/23/2012	W61-Intert	x	0	0.099		467		467				
W-61-Inter	W-61-Inter	Verona Eas	7/27/2016	W-61-HIGH	x	0	0	2.34							
W-61-Inter	W-61-Inter	Verona Eas	11/8/2016	W-61-INT_	x	0	0	10.9	980	5.59	1163	11.18			
W-61-Low	W-61-Low	Verona Eas	8/19/2007	W61-Low-0	x	0	0.099	4.5	880	25.8	880	25.8			
W-61-Low	W-61-Low	Verona Eas	8/23/2012	W61-Low-A	x	0	0.099	10.4	502	13.3	502	13.3			
W-61-Low	W-61-Low	Verona Eas	8/23/2012	W61-Low-B	x	0	0.099	11.3	483	11.5	483	11.5			
W-61-Low	W-61-Low	Verona Eas	8/23/2012	W61-Low-C	x	0	0.099	10.5	498		498				
W-61-Low	W-61-Low	Verona Eas	8/23/2012	W61-Low-	x	0	0.099	10.1	576		576				
W-61-Low	W-61-Low	Verona Eas	11/8/2016	W-61-LOW_	x	0	0	8.51	773	18.8	927	37.6			
W-61-Mid	W-61-Mid	Verona Eas	8/19/2007	W61-Medi	x	0	0.099	4.5	742	25.7	742	25.7			
W-61-Mid	W-61-Mid	Verona Eas	8/23/2012	W61-Mid-A	x	0	0.099	9.27	274	9.07	274	9.07			
W-61-Mid	W-61-Mid	Verona Eas	8/23/2012	W61-Mid-B	x	0	0.099	15.5	382	12.5	382	12.5			
W-61-Mid	W-61-Mid	Verona Eas	8/23/2012	W61-Mid-C	x	0	0.099	10.2	236		236				
W-61-Mid	W-61-Mid	Verona Eas	8/23/2012	W61-Mid-	x	0	0.099	12.8	530		530				
W-61-Mid	W-61-Mid	Verona Eas	11/8/2016	W-61-MID_	x	0	0	12.05	682	6.65	1483	13.3			
W-63-Low	W-63-Low	Orrington	11/8/2016	W-63-LOW_	x	0	0	2.5	217	2.25	229	4.5			
W-63-High	W-63-High	Orrington	7/22/2008	W63-High-	x	0	0.099	4.87	727	12.4	727	12.4			
W-63-High	W-63-High	Orrington	8/4/2008	W63-HIGH-	x	0	0.099	6.94	1030	25.2	1030	25.2			
W-63-High	W-63-High	Orrington	8/20/2008	W63-High-	x	0	0.099	5.64	371	6.45	371	6.45			
W-63-High	W-63-High	Orrington	9/3/2008	W63-High-	x	0	0.099	5.92	603	21.1	603	21.1			
W-63-High	W-63-High	Orrington	9/16/2008	W63-High-	x	0	0.099	5.81	420	9.15	420	9.15			
W-63-High	W-63-High	Orrington	9/30/2008	W63-High-	x	0	0.099	5.53	752	8.29	752	8.29			
W-63-High	W-63-High	Orrington	10/21/2008	W63-HIGH-	x	0	0.099	8.89	242	4.91	242	4.91			
W-63-High	W-63-High	Orrington	5/12/2009	W63-HIGH-	x	0	0.099	2.39	320	4.2	320	4.2			
W-63-High	W-63-High	Orrington	6/2/2009	W63-HIGH-	x	0	0.099	2.95	319	19.2	319	19.2			
W-63-High	W-63-High	Orrington	6/24/2009	W63-High	x	0	0.099	2.02	214	3.57	214	3.57			
W-63-High	W-63-High	Orrington	7/16/2009	W63-High	x	0	0.099	2.44	299	7.1	299	7.1			
W-63-High	W-63-High	Orrington	8/4/2009	W63-High-	x	0	0.099	2.41	221	9.73	221	9.73			
W-63-High	W-63-High	Orrington	9/1/2009	W63-High-	x	0	0.099	2.63	405	19.9	405	19.9			
W-63-High	W-63-High	Orrington	8/25/2010	W-63-High	x	0	0.099	2.4525	300.25	6.055	300.25	6.055			
W-63-High	W-63-High	Orrington	7/21/2016	W-63-HIGH	x	0	0	2.065							
W-63-High	W-63-High	Orrington	11/8/2016	W-63-HIGH	x	0	0	0.4075	37.9	0.232	36.8	0.464			
W-63-Inter	W-63-Inter	Orrington	11/8/2016	W-63-INT_	x	0	0	9.8	1050	11.2	1123	22.4			
W-65-High	W-65-High	Mendall M	8/25/2010	W-65-High	x	0	0.099	11.7225	186.5	15.2925	186.5	15.2925			
W-65-High	W-65-High	Mendall M	8/22/2012	W65-High-	x			30.4	279	48.3	279	48.3			
W-65-High	W-65-High	Mendall M	8/22/2012	W65-High-	x			32.2	239	14.9	239	14.9			
W-65-High	W-65-High	Mendall M	8/22/2012	W65-High-	x			32.9	126		126				
W-65-High	W-65-High	Mendall M	8/22/2012	W65-High-	x			30.2	125		125				
W-65-High	W-65-High	Mendall M	7/25/2016	W-65-HIGH	x	0	0	15.3	91.5	0.034	84.3	0.068			
W-65-Inter	W-65-Inter	Mendall M	8/26/2010	W-65-Inter	x	0	0.099	3.84	655.25	12.745	655.25	12.745			
W-65-Inter	W-65-Inter	Mendall M	8/22/2012	W65-Intert	x			4.01	308	8.55	308	8.55			
W-65-Inter	W-65-Inter	Mendall M	8/22/2012	W65-Intert	x			3.44	320	9.6	320	9.6			
W-65-Inter	W-65-Inter	Mendall M	8/22/2012	W65-Intert	x			5.93	552		552				
W-65-Inter	W-65-Inter	Mendall M	8/22/2012	W65-Intert	x			6.28	635		635				
W-65-Inter	W-65-Inter	Mendall M	7/25/2016	W-65-INTE	x	0	0	0.458	42.2	0.207	41.8	0.414			
W-65-Mid	W-65-Mid	Mendall M	8/26/2010	W-65-Mid	x	0	0.099	10.025	238.5	13.2267	238.5	13.2267			
W-65-Mid	W-65-Mid	Mendall M	8/22/2012	W65-Mid-A	x			28.4	385	27.9	385	27.9			
W-65-Mid	W-65-Mid	Mendall M	8/22/2012	W65-Mid-B	x			28.1	233	10.6	233	10.6			
W-65-Mid	W-65-Mid	Mendall M	8/22/2012	W65-Mid-C	x			29.6	295		295				
W-65-Mid	W-65-Mid	Mendall M	8/22/2012	W65-Mid-	x			26.2	427		427				
W-65-Mid	W-65-Mid	Mendall M	7/25/2016	W-65-MID_	x	0	0	26	267	5.27	226	10.54			
W-65-UM-	W-65-High	Mendall M	8/26/2010	W-65-UM-	x	0	0.099	11.395	395.75	17.925	395.75	17.925			
OB-05	OB-05	Orrington	8/8/2006	OB-5 0-1 cm		0	0.033	7.192	792.3	20.3	792.3	20.3			
OB-05	OB-05	Orrington	8/8/2006	OB-5 1-2 cm		0.033	0.066	6.851	1180	29.1	1180	29.1			
OB-05	OB-05	Orrington	8/8/2006	OB-5 2-3 cm		0.066	0.099	7.986	1303	12.5	1303	12.5			
OB-05	OB-05	Orrington	8/8/2006	OB-5 3-4 cm		0.099	0.132	8.888	1332	9.24	1332	9.24			
OB-05	OB-05	Orrington	8/8/2006	OB-5 4-5 cm		0.132	0.165	9.367							
OB-05	OB-05	Orrington	8/8/2006	OB-5 4-5 cm		0.132	0.165		1456	5.46	1456	5.46			
OB-05	OB-05	Orrington	8/8/2006	OB-5 5-6 cm		0.165	0.198	9.34	1420	5.74	1420	5.74			
OB-05	OB-05	Orrington	8/8/2006	OB-5 6-7 cm		0.198	0.231	7.8987	1412	4.7	1412	4.7			
OB-05	OB-05	Orrington	8/8/2006	OB-5 7-8 cm		0.231	0.264	7.8672	1406	4.46	1406	4.46			
OB-05	OB-05	Orrington	8/8/2006	OB-5 8-9 cm		0.264	0.297	8.6044	567.2	5.33	567.2	5.33			
OB-05	OB-05	Orrington	8/8/2006	OB-5 9-10 cm		0.297	0.33	9.1547	1530	4.47	1530	4.47			
OB-05	OB-05	Orrington	8/8/2006	OB-5 0-10 c	x			8.3149	1239.85	10.13	1239.85	10.13			
OB-05	OB-05	Orrington	9/7/2006	OB-5 0-1 cm		0	0.033	7.5557	951.4	20.637	951.4	20.637			
OB-05	OB-05	Orrington	9/7/2006	OB-5 1-2 cm		0.033	0.066	10.6036	1183	13.6613	1183	13.6613			
OB-05	OB-05	Orrington	9/7/2006	OB-5 8-9 cm		0.264	0.297	6.3881							
OB-05	OB-05	Orrington	9/7/2006	OB5 2-3 cm		0.066	0.099	9.332	1351	6.37649	1351	6.37649			
OB-05	OB-05	Orrington	9/7/2006	OB5 3-4 cm		0.099	0.132	8.9579	1334	5.47754	1334	5.47754			
OB-05	OB-05	Orrington	9/7/2006	OB5 4-5 cm		0.132	0.165	8.9659	1315	5.96428	1315	5.96428			
OB-05	OB-05	Orrington	9/7/2006	OB5 5-6 cm		0.165	0.198	8.936	1093	4.22031	1093	4.22031			
OB-05	OB-05	Orrington	9/7/2006	OB5 6-7 cm		0.198	0.231	8.8394	1311	3.70674	1311	3.70674			
OB-05	OB-05	Orrington	9/7/2006	OB5 7-8 cm		0.231	0.264	7.5277	1105	1.63359	1105	1.63359			
OB-05	OB-05	Orrington	9/7/2006	OB5 8-9 cm		0.264	0.297		457.1	0.71726	457.1	0.71726			
OB-05	OB-05	Orrington	9/7/2006	OB5 9-10 cm		0.297	0.33	5.621	281.8	0.36079	281.8	0.36079			
OB-05	OB-05	Orrington	9/7/2006	OB5 0-10 c	x			8.27273	1038.23	6.27553	1038.23	6.27553			
OB-05	OB-05	Orrington	9/26/2006	OB 5-0-1		0	0.033	6.7703	958.729	14.1	958.729	14.1			
OB-05	OB-05	Orrington	9/26/2006	OB 5-2-3		0.066	0.099	9.6	986.468	17.2	986.468	17.2			
OB-05	OB-05	Orrington	9/26/2006	OB 5-3-4		0.099	0.132	8.0905	1161.74	20.5	1161.74	20.5			
OB-05	OB-05	Orrington	9/26/2006	OB 5-4-5		0.132	0.165		1153.2	12.5	1153.2	12.5			
OB-05	OB-05	Orrington	9/26/2006	OB 5-5-6		0.165	0.198	8.5723	1404.59	7.62	1404.59	7.62			
OB-05	OB-05	Orrington	9/26/2006	OB 5-6-7		0.198	0.231	9.2617	1140.6	3.33352	1140.6	3.33352			
OB-05	OB-05	Orrington	9/26/2006	OB 5-8-9		0.264	0.297		1662.13	4.86501	1662.13	4.86501			
OB-05	OB-05	Orrington	9/26/2006	OB-05-4-5		0.132	0.165	6.8295							
OB-05	OB-05	Orrington	9/26/2006	OB-05-8-9		0.264	0.297	7.9487							
OB-05	OB-05	Orrington	9/26/2006	OB5-1-2		0.033	0.066	7.8883	937.842	14.8	937.842	14.8			
OB-05	OB-05	Orrington	9/26/2006	OB5-7-8		0.231	0.264	6.7674	1410.46	5.08887	1410.46	5.08887			
OB-05	OB-05	Orrington	9/26/2006	OB5-9-10		0.297	0.33	7.4363	1587.34	4.78369	1587.34	4.78369			
OB-05	OB-05	Orrington	9/26/2006	OB5-0-10_	x			7.9165	1240.3099	10.479109	1240.3099	10.479109			
OB-05	OB-05	Orrington	10/24/2006	OB5-0-1		0	0.033	8.7085	1168.56	17.6637	1168.56	17.6637			
OB-05	OB-05	Orrington	10/24/2006	OB5-1-2		0.033	0.066	8.7848	1120.98	36.1446	1120.98	36.1446			
OB-05	OB-05	Orrington	10/24/2006	OB5-2-3		0.066	0.099	9.9746	1753.5	37.3466	1753.5	37.3466			
OB-05	OB-05	Orrington	10/24/2006	OB5-3-4		0.099	0.132	9.6647	1439.85	21.0903	1439.85	21.0903			
OB-05	OB-05	Orrington	10/24/2006	OB5-4-5		0.132	0.165	9.2839	1391.38	12.1695	1391.38	12.1695			
OB-05	OB-05	Orrington	10/24/2006	OB5-5-6		0.165	0.198	9.3889	1610.03	5.47465	1610.03	5.47465			
OB-05	OB-05	Orrington	10/24/2006	OB5-6-7		0.198	0.231	9.5508	1525.24	5.10387	1525.24	5.10387			
OB-05	OB-05	Orrington	10/24/2006	OB5-7-8		0.231	0.264	10.5902	1805.51	5.56929	1805.51	5.56929			
OB-05	OB-05	Orrington	10/24/2006	OB5-8-9		0.264	0.297	12.0968	2048.13	5.84364	2048.13	5.84364			
OB-05	OB-05	Orrington	10/24/2006	OB5-9-10		0.297	0.33	10.2295	2071.58	7.33758	2071.58	7.33758			
OB-05	OB-05	Orrington	10/24/2006	OB5-0-10_	x			9.82727	1593.476	15.374373	1593.476	15.374373			
OB-05	OB-05	Orrington	5/30/2007	OB5 -1-2 cm		0.033	0.066	8.42	1218.47	48.8846	1218.47	48.8846			
OB-05	OB-05	Orrington	5/30/2007	OB5 -5-6 cm		0.165	0.198	6.09	983.987	33.163	983.987	33.163			
OB-05	OB-05	Orrington	5/30/2007	OB5 -7-8 cm		0.231	0.264	2.41	255.263	7.14904	255.263	7.14904			
OB-05	OB-05	Orrington	5/30/2007	OB5 -9-10 cm		0.297	0.33	1.58	218.539	2.65	218.539	2.65			
OB-05	OB-05	Orrington	5/30/2007	OB5-0-1		0	0.033	7.59	1107.81	44.8956	1107.81	44.8956			
OB-05	OB-05	Orrington	5/30/2007	OB5-2-3		0.066	0.099	8.57	1130.86	49.2118	1130.86	49.2118			
OB-05	OB-05	Orrington	5/30/2007	OB5-3-4		0.099	0.132	8.09	1113.28	40.7434	1113.28	40.7434			
OB-05	OB-05	Orrington	5/30/2007	OB5-4-5		0.132	0.165	7.07	1035.15	29.7668	1035.15	29.7668			
OB-05	OB-05	Orrington	5/30/2007	OB5-6-7		0.198	0.231	7.02	856.098	31.8475	856.098	31.8475			
OB-05	OB-05	Orrington	5/30/2007	OB5-8-9		0.264	0.297	0.88	63.2895	1.49914	63.2895	1.49914			
OB-05	OB-05	Orrington	5/30/2007	OB5-0-10_	x			5.772	798.27465	28.981088	798.27465	28.981088			
OB-05	OB-05	Orrington	7/9/2007	OB5 -0-1 cm		0	0.033	6.17	1120	36.8256	1120	36.8256			
OB-05	OB-05	Orrington	7/9/2007	OB5 -1-2 cm		0.033	0.066	6.15	1190	21.7769	1190	21.7769			
OB-05	OB-05	Orrington	7/9/2007	OB5 -2-3 cm		0.066	0.099	6.49	1290	18.095	1290	18.095			
OB-05	OB-05	Orrington	7/9/2007	OB5 -3-4 cm		0.099	0.132	7.69	1570	12.737	1570	12.737			
OB-05	OB-05	Orrington	7/9/2007	OB5 -4-5 cm		0.132	0.165	7.86	1520	12.502	1520	12.502			
OB-05	OB-05	Orrington	7/9/2007	OB5 -5-6 cm		0.165	0.198	7.89	1660	10.7306	1660	10.7306			
OB-05	OB-05	Orrington	7/9/2007	OB5 -6-7 cm		0.198	0.231	7.96	1640	11.0544	1640	11.0544			
OB-05	OB-05	Orrington	7/9/2007	OB5 -7-8 cm		0.231	0.264	8.39	1630	12.7981	1630	12.7981			
OB-05	OB-05	Orrington	7/9/2007	OB5 -8-9 cm		0.264	0.297	8.22	1860	12.2318	1860	12.2318			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
OB-05	OB-05	Orrington	7/9/2007	OB5 -9-10 cm		0.297	0.33	7.1	1510	11.6738	1510	11.6738			
OB-05	OB-05	Orrington	7/9/2007	OB5 -0-10 c	x			7.392	1499	16.04252	1499	16.04252			
OB-05-Inte	OB-05	Orrington	8/25/2010	OB-05-Inte	x	0	0.099	4.21	1004.8	13.84	1004.8	13.84			
OB-05	OB-05	Orrington	8/21/2012	OB5-Interti	x	0	0.099	6.97	948	12.6	948	12.6			
OB-05	OB-05	Orrington	8/21/2012	OB5-Interti	x	0	0.099	6.63	1150	9.28	1150	9.28			
OB-05	OB-05	Orrington	8/21/2012	OB5-Interti	x	0	0.099	7.55	1550	14	1550	14			
OB-05	OB-05	Orrington	8/21/2012	OB5-Interti	x	0	0.099	5.72	1040		1040				
OB-05	OB-05	Orrington	8/21/2012	OB5-Interti	x	0	0.099	4.79	663		663				
OB-05	OB-05	Orrington	7/26/2016	OB-05_072	x	0	0	5.745	550	11.3	755	22.6			
ADD-02	ADD-02	Out	7/24/2017	ADD-02_072417_SED_		0	0.1	2.81	35.1	4	35.1	4			U
ADD-02	ADD-02	Out	7/24/2017	ADD-02_072417_SED_		0.1	0.3	3.055	35.8	4.3	35.8	4.3			U
ADD-02	ADD-02	Out	7/24/2017	ADD-02_07	x			2.973333333	35.56666667	4.2	35.56666667	4.2			U
BO-05	BO-05	Bangor	7/25/2017	BO-05_072517_SED_0		0	0.1	4.605	191	4.5	191	4.5		J	J
BO-05	BO-05	Bangor	7/25/2017	BO-05_072517_SED_0		0.1	0.3	2.73	70.9	1.5	70.9	1.5			J
BO-05	BO-05	Bangor	7/25/2017	BO-05_072	x			3.355	110.9333333	2.5	110.9333333	2.5			J
E-01-01	E-01-01	Fort Point C	7/21/2017	E-01-01_07	x	0	0.3	4.94	612.3	9.13	612.3	9.13			
E-01-03	E-01-03	Upper Pen	7/21/2017	E-01-03_07	x	0	0.3	3.295	475	4.1	475	4.1			
E-01-04	E-01-04	Upper Pen	7/21/2017	E-01-04_07	x	0	0.3	2.47	293.3	2.3	293.3	2.3			J
ES-13	ES-13	Verona Eas	8/15/2017	ES-13_081517_SED_0C		0	0.1	3.895	702	6.9	702	6.9			
ES-13	ES-13	Verona Eas	8/15/2017	ES-13_081517_SED_01		0.1	0.3	4.32	637	7.7	637	7.7			
ES-13	ES-13	Verona Eas	8/15/2017	ES-13_0815	x			4.178333333	658.6666667	7.433333333	658.6666667	7.433333333			
OV-01	OV-01	Veazie	7/26/2017	OV-01_072	x	0	0.3	0.147	16.1	2.1	16.1	2.1			U
OV-02	OV-02	Veazie	7/26/2017	OV-02_072	x	0	0.3	0.1545	11.4	2	11.4	2			U
W-17-High	W-17-High	Frankfort F	7/24/2017	W-17-High_072417_SE		0	0.1	18.65	513	33.7	513	33.7			
W-17-High	W-17-High	Frankfort F	7/24/2017	W-17-High_072417_SE		0.1	0.3	21.45	595	7.6	595	7.6			
W-17-High	W-17-High	Frankfort F	7/24/2017	W-17-High_	x			20.51666667	567.6666667	16.3	567.6666667	16.3			
W-17-Inter	W-17-Inter	Frankfort F	7/25/2017	W-17-Intertidal_07251		0	0.1	2.645	510	4.1	510	4.1			
W-17-Inter	W-17-Inter	Frankfort F	7/25/2017	W-17-Intertidal_07251		0.1	0.3	4.81	583	5.7	583	5.7			
W-17-Inter	W-17-Inter	Frankfort F	7/25/2017	W-17-Inter	x			4.088333333	558.6666667	5.166666667	558.6666667	5.166666667			
W-17-Low	W-17-Low	Frankfort F	7/18/2017	W-17-Low_071817_SE		0	0.1	9.915	620	17.1	620	17.1			
W-17-Low	W-17-Low	Frankfort F	7/18/2017	W-17-Low_071817_SE		0.1	0.3	11.8	745	5.1	745	5.1			J
W-17-Low	W-17-Low	Frankfort F	7/18/2017	W-17-Low_	x			11.17166667	703.3333333	9.1	703.3333333	9.1			
W-17-Mid	W-17-Mid	Frankfort F	7/18/2017	W-17-Mid_071817_SE		0	0.1	18	592	18.7	592	18.7	J		
W-17-Mid	W-17-Mid	Frankfort F	7/18/2017	W-17-Mid_071817_SE		0.1	0.3	14.75	946	8.3	946	8.3			
W-17-Mid	W-17-Mid	Frankfort F	7/18/2017	W-17-Mid_	x			15.83333333	828	11.76666667	828	11.76666667			
W-21-High	W-21-High	Mendall M	7/25/2017	W-21-High_072517_SE		0	0.1	14.55	206	7.2	206	7.2			
W-21-High	W-21-High	Mendall M	7/25/2017	W-21-High_072517_SE		0.1	0.3	20.35	511	1.3	511	1.3			J
W-21-High	W-21-High	Mendall M	7/25/2017	W-21-High_	x			18.41666667	409.3333333	3.266666667	409.3333333	3.266666667			
W-21-Inter	W-21-Inter	Mendall M	7/25/2017	W-21-Intertidal_07251		0	0.1	6.93	827	3.4	827	3.4			
W-21-Inter	W-21-Inter	Mendall M	7/25/2017	W-21-Intertidal_07251		0.1	0.3	6.47	730	3.1	730	3.1			
W-21-Inter	W-21-Inter	Mendall M	7/25/2017	W-21-Inter	x			6.623333333	762.3333333	3.2	762.3333333	3.2			
W-21-Low	W-21-Low	Mendall M	7/25/2017	W-21-Low_072517_SE		0	0.1	8.885	804	7.2	804	7.2			
W-21-Low	W-21-Low	Mendall M	7/25/2017	W-21-Low_072517_SE		0.1	0.3	8.995	771	2.9	771	2.9			
W-21-Low	W-21-Low	Mendall M	7/25/2017	W-21-Low_	x			8.958333333	782	4.333333333	782	4.333333333			
W-21-Mid	W-21-Mid	Mendall M	7/25/2017	W-21-Mid_072517_SE		0	0.1	11.65	515	3.3	515	3.3			
W-21-Mid	W-21-Mid	Mendall M	7/25/2017	W-21-Mid_072517_SE		0.1	0.3	12.3	670	4.2	670	4.2			
W-21-Mid	W-21-Mid	Mendall M	7/25/2017	W-21-Mid_	x			12.08333333	618.3333333	3.9	618.3333333	3.9			
W-21-UM-C	W-21-UM-C	Mendall M	7/18/2017	W-21-UM-Central-C_0		0	0.1	20.8	155	19.3	155	19.3			
W-21-UM-C	W-21-UM-C	Mendall M	7/18/2017	W-21-UM-Central-C_0		0.1	0.3	22.3	306	11.6	306	11.6	J		
W-21-UM-C	W-21-UM-C	Mendall M	7/18/2017	W-21-UM-C	x			21.8	255.6666667	14.16666667	255.6666667	14.16666667			
W-21-UM-E	W-21-UM-E	Mendall M	7/25/2017	W-21-UM-East-C_0725		0	0.1	12.25	525	15.2	525	15.2			
W-21-UM-E	W-21-UM-E	Mendall M	7/25/2017	W-21-UM-East-C_0725		0.1	0.3	13.35	848	20.8	848	20.8			
W-21-UM-E	W-21-UM-E	Mendall M	7/25/2017	W-21-UM-E	x			12.98333333	740.3333333	18.93333333	740.3333333	18.93333333			
W-21-UM-S	W-21-UM-S	Mendall M	8/1/2017	W-21-UM-South_0801		0	0.1	14.85	312	3.8	312	3.8			
W-21-UM-S	W-21-UM-S	Mendall M	8/1/2017	W-21-UM-South_0801		0.1	0.3	16	605	6.2	605	6.2			
W-21-UM-S	W-21-UM-S	Mendall M	8/1/2017	W-21-UM-S	x			15.61666667	507.3333333	5.4	507.3333333	5.4			
W-61-High	W-61-High	Verona Eas	7/24/2017	W-61-High_072417_SE		0	0.1	20.4	209	10.1	209	10.1			
W-61-High	W-61-High	Verona Eas	7/24/2017	W-61-High_072417_SE		0.1	0.3	3.6	212	4.7	212	4.7			
W-61-High	W-61-High	Verona Eas	7/24/2017	W-61-High_	x			9.2	211	6.5	211	6.5			
W-61-Inter	W-61-Inter	Verona Eas	7/24/2017	W-61-Intertidal_07241		0	0.1	2.44	343	5.3	343	5.3			
W-61-Inter	W-61-Inter	Verona Eas	7/24/2017	W-61-Intertidal_07241		0.1	0.3	3.35	512	7.6	512	7.6			
W-61-Inter	W-61-Inter	Verona Eas	7/24/2017	W-61-Inter	x			3.046666667	455.6666667	6.833333333	455.6666667	6.833333333			
W-61-Low	W-61-Low	Verona Eas	7/24/2017	W-61-Low_072417_SE		0	0.1	16.4	417	9.3	417	9.3			
W-61-Low	W-61-Low	Verona Eas	7/24/2017	W-61-Low_072417_SE		0.1	0.3	14.4	752	21	752	21			
W-61-Low	W-61-Low	Verona Eas	7/24/2017	W-61-Low_	x			15.06666667	640.3333333	17.1	640.3333333	17.1			
W-61-Mid	W-61-Mid	Verona Eas	7/24/2017	W-61-Mid_072417_SE		0	0.1	25.6	835	39.5	835	39.5			
W-61-Mid	W-61-Mid	Verona Eas	7/24/2017	W-61-Mid_072417_SE		0.1	0.3	13.45	684	11	684	11			
W-61-Mid	W-61-Mid	Verona Eas	7/24/2017	W-61-Mid_	x			17.5	734.3333333	20.5	734.3333333	20.5			
W-63-High	W-63-High	Orrington	7/18/2017	W-63-High_071817_SE		0	0.1	3.85	209	5.4	209	5.4			
W-63-High	W-63-High	Orrington	7/18/2017	W-63-High_071817_SE		0.1	0.3	2.72	168	1.7	168	1.7			J
W-63-High	W-63-High	Orrington	7/18/2017	W-63-High_	x			3.096666667	181.6666667	2.933333333	181.6666667	2.933333333			
W-63-Low	W-63-Low	Orrington	8/1/2017	W-63-Low_080117_SE		0	0.1	8.885	906	7.6	906	7.6			J
W-63-Low	W-63-Low	Orrington	8/1/2017	W-63-Low_080117_SE		0.1	0.3	9.075	824	8.2	824	8.2			
W-63-Low	W-63-Low	Orrington	8/1/2017	W-63-Low_	x			9.011666667	851.3333333	8	851.3333333	8			
W-63-Mid	W-63-Mid	Orrington	7/18/2017	W-63-Mid_071817_SE		0	0.1	7.145	839	19.9	839	19.9			
W-63-Mid	W-63-Mid	Orrington	7/18/2017	W-63-Mid_071817_SE		0.1	0.3	8.63	786	11.5	786	11.5			
W-63-Mid	W-63-Mid	Orrington	7/18/2017	W-63-Mid_	x			8.135	803.6666667	14.3	803.6666667	14.3			
W-65-High	W-65-High	Mendall M	7/18/2017	W-65-High_071817_SE		0	0.1	21.8	259	22.2	259	22.2			
W-65-High	W-65-High	Mendall M	7/18/2017	W-65-High_071817_SE		0.1	0.3	23.15	251	15.7	251	15.7			
W-65-High	W-65-High	Mendall M	7/18/2017	W-65-High_	x			22.7	253.6666667	17.86666667	253.6666667	17.86666667			
W-65-Inter	W-65-Inter	Mendall M	7/25/2017	W-65-Intertidal_07251		0	0.1	4.645	571	5.3	571	5.3			
W-65-Inter	W-65-Inter	Mendall M	7/25/2017	W-65-Intertidal_07251		0.1	0.3	3.13	174	1.5	174	1.5			J
W-65-Inter	W-65-Inter	Mendall M	7/25/2017	W-65-Inter	x			3.635	306.3333333	2.766666667	306.3333333	2.766666667			
W-65-Low	W-65-Low	Mendall M	7/18/2017	W-65-Low_071817_SE		0	0.1	10.66	623	7.8	623	7.8			
W-65-Low	W-65-Low	Mendall M	7/18/2017	W-65-Low_071817_SE		0.1	0.3	8.065	1340	4.6	1340	4.6			J
W-65-Low	W-65-Low	Mendall M	7/18/2017	W-65-Low_	x			8.93	1101	5.666666667	1101	5.666666667			
W-65-Mid	W-65-Mid	Mendall M	7/18/2017	W-65-Mid_071817_SE		0	0.1	20.25	350	32.6	350	32.6			
W-65-Mid	W-65-Mid	Mendall M	7/18/2017	W-65-Mid_071817_SE		0.1	0.3	24.15	205	5.1	205	5.1			J
W-65-Mid	W-65-Mid	Mendall M	7/18/2017	W-65-Mid_	x			22.85	253.3333333	14.26666667	253.3333333	14.26666667			

APPENDIX F-2
R CODE FOR SEDIMENT STATISTICAL ANALYSES
(0 TO 0.3 FOOT INTERVAL SEDIMENT SAMPLES)

```r
### File created for analysis of SED data for SW/SED Report (2017)
### Updated Appendix E code from 2016 SW and Sed Report with corresponding 2017 sampling locations.
### Code prepared by LO 10/30/2017
### Code checked by NTG 11/06/2017

sink("Annual Report Stats.txt")
library(reshape) #for melt()
library(lattice) #for xyplot()
library(stringr) #for str_sub()
library(PMCMR) #for post-hoc Nemenyi test
library(Kendall) # for Kendall's Tau check on log linear regression

p.sed = read.csv("~Louise/Professional/AMEC/Penobscot/SW_Sed Rep/2017 Report/F-1.p.sed_Data_Depth0_03.csv") # file brought back in once averages
 on samples are calculated
p.sed = p.sed[p.sed$use == "x",] # samples with only one depth or average of a set of samples was marked in excel with an x in the "use" column

## next line will filter out Reaches "Out" and "Bangor"
p.sed = p.sed[p.sed$Reach != "Out" & p.sed$Reach != "Bangor",]

p.sed$Date = as.Date(p.sed$Sample.date, format = "%m/%d/%y")
p.sed$year = as.numeric(substring(p.sed$Date, 1, 4))
p.sed$month = as.numeric(substring(p.sed$Date, 6, 7))
p.sed$day = as.numeric(substring(p.sed$Date, 9, 10))

p.sed$Adj.Methyl.mercury.NG.G.Result[p.sed$year == 2006] = p.sed$Methyl.mercury.NG.G.Result[p.sed$year == 2006] * 2 #adjust 2006 methyl mercury
 data (as methylene chloride) in dataset to KOH/distillation equivalent concentrations

#next two lines copy adusted data cells into working data cells for THg and MeHg
p.sed$Mercury.NG.G.Result = p.sed$Adj.Mercury.NG.G.Result
p.sed$Methyl.mercury.NG.G.Result <- p.sed$Adj.Methyl.mercury.NG.G.Result


p.sed$Reach = factor(p.sed$Reach)

p.sed$u.d = "down"
p.sed$u.d[p.sed$Reach == "Veazie"] = "up"
p.sed$u.d = factor(p.sed$u.d)

## next line will replace instances of "W-17_High" with "W-17-High"
p.sed$alt_loc = str_replace(p.sed$alt_loc, "W-17_High", "W-17-High")

p.sed$alt_loc = factor(p.sed$alt_loc)

p.sed$reach.facd = factor(p.sed$Reach, levels(p.sed$Reach)[c(6,4,2,3,8,7,5,1)]) #putting reaches in order of N to S
p.sed$alt.facd = factor(p.sed$alt_loc, levels(p.sed$alt_loc)[c(9,7,8,26,6,10,13,12,11,27,29,28,30, 33, 32, 31,
 14,17,18,19,20,21,16,15,4,22,25,24,23,5,1,2,3)])


cat("========================\n")
cat("Summary of p.sed Dataset\n")
cat("========================\n")
summary(p.sed)


#Normalization of Hg and MeHg by MEDIAN TOC#
in.tid = p.sed[!substring(p.sed$Loc, 1,1) == "W" &! substring(p.sed$Loc, 1,3) == "E-0",]
in.tid$norm.Hg = in.tid$Mercury.NG.G.Result / in.tid$Total.Organic.Carbon.PERCENT.Result * median(in.tid$Total.Organic.Carbon.PERCENT.Result)
in.tid$norm.MeHg = in.tid$Methyl.mercury.NG.G.Result / in.tid$Total.Organic.Carbon.PERCENT.Result * median(in.tid
 $Total.Organic.Carbon.PERCENT.Result)

sub.ti = p.sed[substring(p.sed$Loc, 1,3) == "E-0",]
sub.ti$norm.Hg = sub.ti$Mercury.NG.G.Result / sub.ti$Total.Organic.Carbon.PERCENT.Result * median(sub.ti$Total.Organic.Carbon.PERCENT.Result,
 na.rm = T)
sub.ti$norm.MeHg = sub.ti$Methyl.mercury.NG.G.Result / sub.ti$Total.Organic.Carbon.PERCENT.Result * median(sub.ti
 $Total.Organic.Carbon.PERCENT.Result, na.rm = T)

wetlnd = p.sed[substring(p.sed$Loc, 1,1) == "W",]
wetlnd$Reach = factor(wetlnd$Reach)
wetlnd$reach.facd = factor(wetlnd$reach.facd)
wetlnd$alt_loc = factor(wetlnd$alt_loc)
wetlnd$alt.facd = substring(wetlnd$alt.facd, 1, 4)
wetlnd$alt.facd = factor(wetlnd$alt.facd)
wetlnd$alt.facd = factor(wetlnd$alt.facd, levels(wetlnd$alt.facd)[c(4,1,5,2,3)])
wetlnd$norm.Hg = wetlnd$Mercury.NG.G.Result / wetlnd$Total.Organic.Carbon.PERCENT.Result * median(wetlnd$Total.Organic.Carbon.PERCENT.Result,
 na.rm = T)
wetlnd$norm.MeHg = wetlnd$Methyl.mercury.NG.G.Result / wetlnd$Total.Organic.Carbon.PERCENT.Result * median(wetlnd
 $Total.Organic.Carbon.PERCENT.Result, na.rm = T)


w.hi = wetlnd[str_sub(wetlnd$alt_loc,-4) == "High",]
w.md = wetlnd[str_sub(wetlnd$alt_loc,-3) == "Mid",]
w.lo = wetlnd[str_sub(wetlnd$alt_loc,-3) == "Low",]
w.it = wetlnd[str_sub(wetlnd$alt_loc,-5) == "tidal",]
```

```
################
### Kruskal Wallis Tests (all types
# code modified by KPA to gather stats in order of Table 4.1-1 appearance to aid QC
################

Table4_1_1 <- vector("list",18)

Table4_1_1[[1]] <- kruskal.test(sub.ti$Mercury.NG.G.Result ~ sub.ti$Reach)
Table4_1_1[[2]] <- kruskal.test(sub.ti$Methyl.mercury.NG.G.Result ~ sub.ti$Reach)
Table4_1_1[[3]] <- kruskal.test(sub.ti$Total.Organic.Carbon.PERCENT.Result ~ sub.ti$Reach)

Table4_1_1[[4]] <- kruskal.test(in.tid$Mercury.NG.G.Result ~ in.tid$Reach)
Table4_1_1[[5]] <- kruskal.test(in.tid$Methyl.mercury.NG.G.Result ~ in.tid$Reach)
Table4_1_1[[6]] <- kruskal.test(in.tid$Total.Organic.Carbon.PERCENT.Result ~ in.tid$Reach)


Table4_1_1[[7]] <- kruskal.test(w.hi$Mercury.NG.G.Result ~ w.hi$Reach)
Table4_1_1[[8]] <- kruskal.test(Methyl.mercury.NG.G.Result ~ Reach, data = w.hi)
Table4_1_1[[9]] <- kruskal.test(Total.Organic.Carbon.PERCENT.Result ~ Reach, data = w.hi)


Table4_1_1[[10]] <- kruskal.test(w.md$Mercury.NG.G.Result ~ w.md$Reach)
Table4_1_1[[11]] <- kruskal.test(Methyl.mercury.NG.G.Result ~ Reach, data = w.md)
Table4_1_1[[12]] <- kruskal.test(Total.Organic.Carbon.PERCENT.Result ~ Reach, data = w.md)


Table4_1_1[[13]] <- kruskal.test(w.lo$Mercury.NG.G.Result ~ w.lo$Reach)
Table4_1_1[[14]] <- kruskal.test(Methyl.mercury.NG.G.Result ~ Reach, data = w.lo)
Table4_1_1[[15]] <- kruskal.test(Total.Organic.Carbon.PERCENT.Result ~ Reach, data = w.lo)


Table4_1_1[[16]] <- kruskal.test(w.it$Mercury.NG.G.Result ~ w.it$Reach)
Table4_1_1[[17]] <- kruskal.test(Methyl.mercury.NG.G.Result ~ Reach, data = w.it)
Table4_1_1[[18]] <- kruskal.test(Total.Organic.Carbon.PERCENT.Result ~ Reach, data = w.it)


Table4_1_1.out <- as.data.frame(matrix(data = unlist(Table4_1_1[1:18]), nrow=18, ncol=5, byrow = TRUE))

#Following line will add column headers
colnames(Table4_1_1.out) <- c("Chi-Sq", "DF", "p-val", "method", "data")
print(Table4_1_1.out)
write.csv(Table4_1_1.out, "~Louise/Professional/AMEC/Penobscot/SW_Sed Rep/2017 Report/Table4_1.csv")


################
### SUBTIDAL ###
################


posthoc.kruskal.nemenyi.test(sub.ti$Mercury.NG.G.Result ~ sub.ti$Reach, dist = "Chisq") #post-hoc comparison for non-parametric data
posthoc.kruskal.nemenyi.test(sub.ti$Methyl.mercury.NG.G.Result ~ sub.ti$Reach, dist = "Chisq") #post-hoc comparison for non-parametric data
posthoc.kruskal.nemenyi.test(sub.ti$Total.Organic.Carbon.PERCENT.Result ~ sub.ti$Reach, dist = "Chisq") #post-hoc comparison for non-parametric
 data

print("Table 4.1-2")
sub.ti.med.sum = data.frame(Hg = tapply(sub.ti$Mercury.NG.G.Result, factor(sub.ti$Reach), mean, na.rm = TRUE))
sub.ti.med.sum$Hg.se = tapply(sub.ti$Mercury.NG.G.Result, factor(sub.ti$Reach), sd, na.rm = TRUE)/sqrt(tapply(sub.ti$Mercury.NG.G.Result,
 factor(sub.ti$Reach), length))
sub.ti.med.sum$MeHg = tapply(sub.ti$Methyl.mercury.NG.G.Result, factor(sub.ti$Reach), mean, na.rm = TRUE)
sub.ti.med.sum$MeHg.se = tapply(sub.ti$Methyl.mercury.NG.G.Result, factor(sub.ti$Reach), sd, na.rm = TRUE)/sqrt(tapply(sub.ti
 $Methyl.mercury.NG.G.Result, factor(sub.ti$Reach), length))
sub.ti.med.sum$TOC.perc = tapply(sub.ti$Total.Organic.Carbon.PERCENT.Result, factor(sub.ti$Reach), mean, na.rm = TRUE)
sub.ti.med.sum$TOCperc.se = tapply(sub.ti$Total.Organic.Carbon.PERCENT.Result, factor(sub.ti$Reach), sd, na.rm = TRUE)/sqrt(tapply(sub.ti
 $Total.Organic.Carbon.PERCENT.Result, factor(sub.ti$Reach), length))
sub.ti.med.sum


cat("===================================================\n")
cat("SUBTIDAL SEDIMENT ANCOVA - Hg~TOC:REACH INTERACTION\n")
cat("===================================================\n")
anova(lm(Mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * factor(Reach), data = sub.ti))

cat("=======================================================\n")
cat("SUBTIDAL SEDIMENT ANCOVA - Hg~TOC+REACH; NO INTERACTION\n")
cat("=======================================================\n")
anova(lm(Mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result + factor(Reach), data = sub.ti))

cat("=====================================================\n")
cat("SUBTIDAL SEDIMENT ANCOVA - MeHg~TOC:REACH INTERACTION\n")
cat("=====================================================\n")
anova(lm(Methyl.mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * factor(Reach), data = sub.ti))


### SUBTIDAL BOXPLOTS ###
pdf("~Louise/Professional/AMEC/Penobscot/SW_Sed Rep/2017 Report/2017.sub.ti.Hg_MeHg_plots.pdf", paper = "USr")
```

```
boxplot(Mercury.NG.G.Result ~ factor(reach.facd), data = sub.ti, xaxt = "n", las = 1, main = "Figure 4-1\nSubtidal Sediment Mercury by River
 Reach", ylab = "Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(sub.ti$reach.facd))), levels(factor(sub.ti$reach.facd)), cex.axis = 0.65)

boxplot(Mercury.NG.G.Result ~ factor(alt_loc), data = sub.ti, xaxt = "n", las = 1, main = "Figure 4-2\nSubtidal Sediment Mercury by Sample
 Location", ylab = "Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(sub.ti$alt.facd))), levels(factor(sub.ti$alt.facd)), cex.axis = 0.5)


boxplot(Methyl.mercury.NG.G.Result ~ factor(reach.facd), data = sub.ti, xaxt = "n", las = 1, main = "Figure 4-3\nSubtidal Sediment Methyl Mercury
 by River Reach", ylab = "Methyl Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(sub.ti$reach.facd))), levels(factor(sub.ti$reach.facd)), cex.axis = 0.65)

boxplot(Methyl.mercury.NG.G.Result ~ factor(alt_loc), data = sub.ti, xaxt = "n", las = 1, main = "Figure 4-4\nSubtidal Sediment Methyl Mercury by
 Sample Location", ylab = "Methyl Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(sub.ti$alt.facd))), levels(factor(sub.ti$alt.facd)), cex.axis = 0.5)


boxplot(Total.Organic.Carbon.PERCENT.Result ~ factor(reach.facd), data = sub.ti, xaxt = "n", las = 1, main = "Figure 4-5\nSubtidal Sediment Total
 Organic Carbon by River Reach", ylab = "TOC (%)")
axis(1, at = 1:length(levels(factor(sub.ti$reach.facd))), levels(factor(sub.ti$reach.facd)), cex.axis = 0.65)

boxplot(Total.Organic.Carbon.PERCENT.Result ~ factor(alt_loc), data = sub.ti, xaxt = "n", las = 1, main = "Figure 4-6\nSubtidal Sediment Total
 Organic Carbon by Sample Location", ylab = "TOC (%)")
axis(1, at = 1:length(levels(factor(sub.ti$alt.facd))), levels(factor(sub.ti$alt.facd)), cex.axis = 0.5)

dev.off()


##################
### INTERTIDAL ###
##################


posthoc.kruskal.nemenyi.test(in.tid$Mercury.NG.G.Result ~ in.tid$Reach, dist="Chisq") #post-hoc comparison for non-parametric data
posthoc.kruskal.nemenyi.test(in.tid$Methyl.mercury.NG.G.Result ~ in.tid$Reach, dist="Chisq") #post-hoc comparison for non-parametric data
posthoc.kruskal.nemenyi.test(in.tid$Total.Organic.Carbon.PERCENT.Result ~ in.tid$Reach, dist="Chisq") #post-hoc comparison for non-parametric data


print("Table 4.1-7")
in.tid.med.sum = data.frame(Hg = tapply(in.tid$Mercury.NG.G.Result, factor(in.tid$Reach), mean, na.rm = TRUE))
in.tid.med.sum$Hg.se = tapply(in.tid$Mercury.NG.G.Result, factor(in.tid$Reach), sd, na.rm = TRUE)/sqrt(tapply(in.tid$Mercury.NG.G.Result,
 factor(in.tid$Reach), length))
in.tid.med.sum$MeHg = tapply(in.tid$Methyl.mercury.NG.G.Result, factor(in.tid$Reach), mean, na.rm = TRUE)
in.tid.med.sum$MeHg.se = tapply(in.tid$Methyl.mercury.NG.G.Result, factor(in.tid$Reach), sd, na.rm = TRUE)/sqrt(tapply(in.tid
 $Methyl.mercury.NG.G.Result, factor(in.tid$Reach), length))
in.tid.med.sum$TOC.perc = tapply(in.tid$Total.Organic.Carbon.PERCENT.Result, factor(in.tid$Reach), mean, na.rm = TRUE)
in.tid.med.sum$TOC.se = tapply(in.tid$Total.Organic.Carbon.PERCENT.Result, factor(in.tid$Reach), sd, na.rm = TRUE)/sqrt(tapply(in.tid
 $Total.Organic.Carbon.PERCENT.Result, factor(in.tid$Reach), length))
in.tid.med.sum

write.csv(in.tid.med.sum,"~Louise/Professional/AMEC/Penobscot/SW_Sed Rep/2017 Report/Table4_7.csv")


cat("=============================================================\n")
cat("INTERTIDAL SEDIMENT ANCOVA - Hg~TOC:Up/DownStream INTERACTION\n")
cat("=============================================================\n")
anova(lm(Mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * u.d, data = in.tid))

cat("===============================================================\n")
cat("INTERTIDAL SEDIMENT ANCOVA - MeHg~TOC:Up/DownStream INTERACTION\n")
cat("===============================================================\n")
anova(lm(Methyl.mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * u.d, data = in.tid))

cat("=====================================================\n")
cat("INTERTIDAL SEDIMENT ANCOVA - Hg~TOC:Reach INTERACTION\n")
cat("=====================================================\n")
anova(lm(Mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * Reach, data = in.tid))

cat("=======================================================\n")
cat("INTERTIDAL SEDIMENT ANCOVA - MeHg~TOC:Reach INTERACTION\n")
cat("=======================================================\n")
anova(lm(Methyl.mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * Reach, data = in.tid))


### INTERTIDAL BOXPLOTS ###
pdf("~Louise/Professional/AMEC/Penobscot/SW_Sed Rep/2017 Report/2017.in.tid.Hg_MeHg_plots.pdf", paper = "USr")
boxplot(Mercury.NG.G.Result ~ factor(reach.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure 4-11\nIntertidal Sediment Mercury by River
 Reach", ylab = "Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(in.tid$reach.facd))), levels(factor(in.tid$reach.facd)), cex.axis = 0.65)

boxplot(Mercury.NG.G.Result ~ factor(alt.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure 4-12\nIntertidal Sediment Mercury by Sample
 Location", ylab = "Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(in.tid$alt.facd))), levels(factor(in.tid$alt.facd)), cex.axis = 0.7)
```

```
boxplot(Methyl.mercury.NG.G.Result ~ factor(reach.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure 4-13\nIntertidal Sediment Methyl
 Mercury by River Reach", ylab = "Methyl Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(in.tid$reach.facd))), levels(factor(in.tid$reach.facd)), cex.axis = 0.65)

boxplot(Methyl.mercury.NG.G.Result ~ factor(alt.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure 4-14\nIntertidal Sediment Methyl Mercury
 by Sample Location", ylab = "Methyl Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(in.tid$alt.facd))), levels(factor(in.tid$alt.facd)), cex.axis = 0.7)


boxplot(Total.Organic.Carbon.PERCENT.Result ~ factor(reach.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure 4-15\nIntertidal Sediment
 Total Organic Carbon by River Reach", ylab = "TOC (%)")
axis(1, at = 1:length(levels(factor(in.tid$reach.facd))), levels(factor(in.tid$reach.facd)), cex.axis = 0.65)

boxplot(Total.Organic.Carbon.PERCENT.Result ~ factor(alt.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure 4-16\nIntertidal Sediment Total
 Organic Carbon by Sample Location", ylab = "TOC (%)")
axis(1, at = 1:length(levels(factor(in.tid$alt.facd))), levels(factor(in.tid$alt.facd)), cex.axis = 0.7)

dev.off()



################
### WETLANDS ###
################

print("Table4.1-11")
posthoc.kruskal.nemenyi.test(Mercury.NG.G.Result ~ Reach, data = w.lo, dist = "Chisq") #post-hoc comparison for non-parametric data
posthoc.kruskal.nemenyi.test(Total.Organic.Carbon.PERCENT.Result ~ Reach, data = w.lo, dist = "Chisq") #post-hoc comparison for non-parametric
 data

print("Table 4.1-12")
posthoc.kruskal.nemenyi.test(Methyl.mercury.NG.G.Result ~ Reach, data = w.hi, dist = "Chisq") #post-hoc comparison for non-parametric data
posthoc.kruskal.nemenyi.test(Total.Organic.Carbon.PERCENT.Result ~ Reach, data = w.hi, dist = "Chisq") #post-hoc comparison for non-parametric
 data

print("Table4.1-13")
posthoc.kruskal.nemenyi.test(Total.Organic.Carbon.PERCENT.Result ~ Reach, data = w.it, dist = "Chisq") #post-hoc comparison for non-parametric
 data



# Summary Tables for wetland sediment
wetlnd.mdn.sum = data.frame(hi.Hg = tapply(w.hi$Mercury.NG.G.Result, w.hi$Reach, median, na.rm = T))
wetlnd.mdn.sum$hi.Hg.x = tapply(w.hi$Mercury.NG.G.Result, w.hi$Reach, mean, na.rm = T)
wetlnd.mdn.sum$hi.Hg.se = tapply(w.hi$Mercury.NG.G.Result, factor(w.hi$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.hi$Mercury.NG.G.Result, factor(w.hi
 $Reach), length))
wetlnd.mdn.sum$hi.MeHg = tapply(w.hi$Methyl.mercury.NG.G.Result, w.hi$Reach, median, na.rm = T)
wetlnd.mdn.sum$hi.MeHg.x = tapply(w.hi$Methyl.mercury.NG.G.Result, w.hi$Reach, mean, na.rm = T)
wetlnd.mdn.sum$hi.MeHg.se = tapply(w.hi$Methyl.mercury.NG.G.Result, factor(w.hi$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.hi
 $Methyl.mercury.NG.G.Result, factor(w.hi$Reach), length))
wetlnd.mdn.sum$hi.TOC.perc = tapply(w.hi$Total.Organic.Carbon.PERCENT.Result, w.hi$Reach, median, na.rm = T)
wetlnd.mdn.sum$hi.TOC.perc.x = tapply(w.hi$Total.Organic.Carbon.PERCENT.Result, w.hi$Reach, mean, na.rm = T)
wetlnd.mdn.sum$hi.TOC.se = tapply(w.hi$Total.Organic.Carbon.PERCENT.Result, factor(w.hi$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.hi
 $Total.Organic.Carbon.PERCENT.Result, factor(w.hi$Reach), length))


wetlnd.mdn.sum$md.Hg = tapply(w.md$Mercury.NG.G.Result, w.md$Reach, median, na.rm = T)
wetlnd.mdn.sum$md.Hg.x = tapply(w.md$Mercury.NG.G.Result, w.md$Reach, mean, na.rm = T)
wetlnd.mdn.sum$md.Hg.se = tapply(w.md$Mercury.NG.G.Result, factor(w.md$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.md$Mercury.NG.G.Result, factor(w.md
 $Reach), length))
wetlnd.mdn.sum$md.MeHg = tapply(w.md$Methyl.mercury.NG.G.Result, w.md$Reach, median, na.rm = T)
wetlnd.mdn.sum$md.MeHg.x = tapply(w.md$Methyl.mercury.NG.G.Result, w.md$Reach, mean, na.rm = T)
wetlnd.mdn.sum$md.MeHg.se = tapply(w.md$Methyl.mercury.NG.G.Result, factor(w.md$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.md
 $Methyl.mercury.NG.G.Result, factor(w.md$Reach), length))
wetlnd.mdn.sum$md.TOC.perc = tapply(w.md$Total.Organic.Carbon.PERCENT.Result, w.md$Reach, median, na.rm = T)
wetlnd.mdn.sum$md.TOC.perc.x = tapply(w.md$Total.Organic.Carbon.PERCENT.Result, w.md$Reach, mean, na.rm = T)
wetlnd.mdn.sum$md.TOC.se = tapply(w.md$Total.Organic.Carbon.PERCENT.Result, factor(w.md$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.md
 $Total.Organic.Carbon.PERCENT.Result, factor(w.md$Reach), length))


wetlnd.mdn.sum$lo.Hg = tapply(w.lo$Mercury.NG.G.Result, w.lo$Reach, median, na.rm = T)
wetlnd.mdn.sum$lo.Hg.x = tapply(w.lo$Mercury.NG.G.Result, w.lo$Reach, mean, na.rm = T)
wetlnd.mdn.sum$lo.Hg.se = tapply(w.lo$Mercury.NG.G.Result, factor(w.lo$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.lo$Mercury.NG.G.Result, factor(w.lo
 $Reach), length))
wetlnd.mdn.sum$lo.MeHg = tapply(w.lo$Methyl.mercury.NG.G.Result, w.lo$Reach, median, na.rm = T)
wetlnd.mdn.sum$lo.MeHg.x = tapply(w.lo$Methyl.mercury.NG.G.Result, w.lo$Reach, mean, na.rm = T)
wetlnd.mdn.sum$lo.MeHg.se = tapply(w.lo$Methyl.mercury.NG.G.Result, factor(w.lo$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.lo
 $Methyl.mercury.NG.G.Result, factor(w.lo$Reach), length))
wetlnd.mdn.sum$lo.TOC.perc = tapply(w.lo$Total.Organic.Carbon.PERCENT.Result, w.lo$Reach, median, na.rm = T)
wetlnd.mdn.sum$lo.TOC.perc.x = tapply(w.lo$Total.Organic.Carbon.PERCENT.Result, w.lo$Reach, mean, na.rm = T)
wetlnd.mdn.sum$lo.TOC.se = tapply(w.lo$Total.Organic.Carbon.PERCENT.Result, factor(w.lo$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.lo
 $Total.Organic.Carbon.PERCENT.Result, factor(w.lo$Reach), length))
```

```
wetlnd.mdn.sum$it.Hg = tapply(w.it$Mercury.NG.G.Result, w.it$Reach, median, na.rm = T)
wetlnd.mdn.sum$it.Hg.x = tapply(w.it$Mercury.NG.G.Result, w.it$Reach, mean, na.rm = T)
wetlnd.mdn.sum$it.Hg.se = tapply(w.it$Mercury.NG.G.Result, factor(w.it$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.it$Mercury.NG.G.Result, factor(w.it
 $Reach), length))
wetlnd.mdn.sum$it.MeHg = tapply(w.it$Methyl.mercury.NG.G.Result, w.it$Reach, median, na.rm = T)
wetlnd.mdn.sum$it.MeHg.x = tapply(w.it$Methyl.mercury.NG.G.Result, w.it$Reach, mean, na.rm = T)
wetlnd.mdn.sum$it.MeHg.se = tapply(w.it$Methyl.mercury.NG.G.Result, factor(w.it$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.it
 $Methyl.mercury.NG.G.Result, factor(w.it$Reach), length))
wetlnd.mdn.sum$it.TOC.perc = tapply(w.it$Total.Organic.Carbon.PERCENT.Result, w.it$Reach, median, na.rm = T)
wetlnd.mdn.sum$it.TOC.perc.x = tapply(w.it$Total.Organic.Carbon.PERCENT.Result, w.it$Reach, mean, na.rm = T)
wetlnd.mdn.sum$it.TOC.se = tapply(w.it$Total.Organic.Carbon.PERCENT.Result, factor(w.it$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.it
 $Total.Organic.Carbon.PERCENT.Result, factor(w.it$Reach), length))

write.csv(wetlnd.mdn.sum,"~Louise/Professional/AMEC/Penobscot/SW_Sed Rep/2017 Report/Table4_10.csv")



### WETLAND BOXPLOTS ####

pdf("~Louise/Professional/AMEC/Penobscot/SW_Sed Rep/2017 Report/2017 wetlnd.Hg_MeHg_plots.pdf", paper = "USr")
par(mfrow = c(2,2), oma=c(0.2,0.1,3,0.2))

  boxplot(Mercury.NG.G.Result ~ reach.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.48)

  boxplot(Mercury.NG.G.Result ~ reach.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.48)

  boxplot(Mercury.NG.G.Result ~ reach.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.48)

  boxplot(Mercury.NG.G.Result ~ reach.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Mercury", ylab = "Mercury
 (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.48)

title("Figure 4-21\nWetland Sediment Mercury by River Reach", outer = TRUE)


par(mfrow = c(2,2), oma=c(0.2,0.1,3,0.2))
  boxplot(Mercury.NG.G.Result ~ alt.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Mercury.NG.G.Result ~ alt.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Mercury.NG.G.Result ~ alt.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Mercury.NG.G.Result ~ alt.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Mercury", ylab = "Mercury (ng/
 g)", yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)
title("Figure 4-22\nWetland Sediment Mercury by Sample Location", outer = TRUE)


par(mfrow = c(2,2), oma=c(0.2,0.1,3,0.2))
  boxplot(Methyl.mercury.NG.G.Result ~ reach.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Methyl Mercury", ylab =
 "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)

  boxplot(Methyl.mercury.NG.G.Result ~ reach.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Methyl Mercury", ylab =
 "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)

  boxplot(Methyl.mercury.NG.G.Result ~ reach.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Methyl Mercury", ylab =
 "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)

  boxplot(Methyl.mercury.NG.G.Result ~ reach.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Methyl Mercury", ylab
 = "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)
title("Figure 4-23\nWetland Sediment Methyl Mercury by River Reach", outer = TRUE)


par(mfrow = c(2,2), oma=c(0.2,0.1,3,0.2))
  boxplot(Methyl.mercury.NG.G.Result ~ alt.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Methyl Mercury", ylab =
 "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Methyl.mercury.NG.G.Result ~ alt.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Methyl Mercury", ylab = "Methyl
```

```
 Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Methyl.mercury.NG.G.Result ~ alt.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Methyl Mercury", ylab = "Methyl
 Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Methyl.mercury.NG.G.Result ~ alt.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Methyl Mercury", ylab =
 "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)
title("Figure 4-24\nWetland Sediment Methyl Mercury by Sample Location", outer = TRUE)


par(mfrow = c(2,2), oma=c(0.2, 0.2, 3, 0.2))
  boxplot(Total.Organic.Carbon.PERCENT.Result ~ reach.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ reach.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ reach.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ reach.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)
title("Figure 4-25\nWetland Sediment TOC by River Reach", outer = TRUE)


par(mfrow = c(2,2), oma=c(0.2, 0.2, 3, 0.2))
  boxplot(Total.Organic.Carbon.PERCENT.Result ~ alt.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ alt.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Total Organic Carbon",
 ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ alt.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Total Organic Carbon",
 ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ alt.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)
title("Figure 4-26\nWetland Sediment TOC by Sample Location", outer = TRUE)


dev.off()




########################
### LOGLINEAR trends ###
########################
# SUBTIDAL TEMPORAL TREND TEST
Table4_1_5 <- list(lmsum = summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]))


# INTERTIDAL TEMPORAL PLOTS TREND TEST
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]))
```

```
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-61-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-61-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-61-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-61-Intertidal",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-65-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-65-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-65-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-65-Intertidal",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]))


# WETLAND TEMPORAL PLOTS TREND TEST
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-61-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-61-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-61-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-61-High",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-65-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-65-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-65-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-65-High",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]))
```

```
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-61-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-61-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-61-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-61-Mid",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-65-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-65-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-65-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-65-Mid",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-61-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-61-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-61-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-61-Low",]))


# Check same stats via Kendall's tau

Table4_1_5a <- list(ktaum = Kendall(sub.ti[sub.ti$Loc == "E-01-01",]$year, log(sub.ti[sub.ti$Loc == "E-01-01",]$Mercury.NG.G.Result)))
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-01",]$year, sub.ti[sub.ti$Loc == "E-01-01",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-01",]$year, sub.ti[sub.ti$Loc == "E-01-01",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-01",]$year, sub.ti[sub.ti$Loc == "E-01-01",]$norm.MeHg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-03",]$year, sub.ti[sub.ti$Loc == "E-01-03",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-03",]$year, sub.ti[sub.ti$Loc == "E-01-03",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-03",]$year, sub.ti[sub.ti$Loc == "E-01-03",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-03",]$year, sub.ti[sub.ti$Loc == "E-01-03",]$norm.MeHg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-04",]$year, sub.ti[sub.ti$Loc == "E-01-04",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-04",]$year, sub.ti[sub.ti$Loc == "E-01-04",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-04",]$year, sub.ti[sub.ti$Loc == "E-01-04",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-04",]$year, sub.ti[sub.ti$Loc == "E-01-04",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-04",]$year, in.tid[in.tid$Loc == "OV-04",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-04",]$year, in.tid[in.tid$Loc == "OV-04",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-04",]$year, in.tid[in.tid$Loc == "OV-04",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-04",]$year, in.tid[in.tid$Loc == "OV-04",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-01",]$year, in.tid[in.tid$Loc == "OV-01",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-01",]$year, in.tid[in.tid$Loc == "OV-01",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-01",]$year, in.tid[in.tid$Loc == "OV-01",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-01",]$year, in.tid[in.tid$Loc == "OV-01",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-02",]$year, in.tid[in.tid$Loc == "OV-02",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-02",]$year, in.tid[in.tid$Loc == "OV-02",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-02",]$year, in.tid[in.tid$Loc == "OV-02",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-02",]$year, in.tid[in.tid$Loc == "OV-02",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OB-05",]$year, in.tid[in.tid$Loc == "OB-05",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OB-05",]$year, in.tid[in.tid$Loc == "OB-05",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OB-05",]$year, in.tid[in.tid$Loc == "OB-05",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OB-05",]$year, in.tid[in.tid$Loc == "OB-05",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-17-Intertidal",]$year, w.it[w.it$Loc == "W-17-Intertidal",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-17-Intertidal",]$year, w.it[w.it$Loc == "W-17-Intertidal",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-17-Intertidal",]$year, w.it[w.it$Loc == "W-17-Intertidal",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-17-Intertidal",]$year, w.it[w.it$Loc == "W-17-Intertidal",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-21-Intertidal",]$year, w.it[w.it$Loc == "W-21-Intertidal",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-21-Intertidal",]$year, w.it[w.it$Loc == "W-21-Intertidal",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-21-Intertidal",]$year, w.it[w.it$Loc == "W-21-Intertidal",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-21-Intertidal",]$year, w.it[w.it$Loc == "W-21-Intertidal",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-61-Intertidal",]$year, w.it[w.it$Loc == "W-61-Intertidal",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-61-Intertidal",]$year, w.it[w.it$Loc == "W-61-Intertidal",]
```

```
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-61-Intertidal",]$year, w.it[w.it$Loc == "W-61-Intertidal",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-61-Intertidal",]$year, w.it[w.it$Loc == "W-61-Intertidal",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-02",]$year, in.tid[in.tid$Loc == "ES-02",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-02",]$year, in.tid[in.tid$Loc == "ES-02",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-02",]$year, in.tid[in.tid$Loc == "ES-02",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-02",]$year, in.tid[in.tid$Loc == "ES-02",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-65-Intertidal",]$year, w.it[w.it$Loc == "W-65-Intertidal",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-65-Intertidal",]$year, w.it[w.it$Loc == "W-65-Intertidal",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-65-Intertidal",]$year, w.it[w.it$Loc == "W-65-Intertidal",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-65-Intertidal",]$year, w.it[w.it$Loc == "W-65-Intertidal",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-13",]$year, in.tid[in.tid$Loc == "ES-13",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-13",]$year, in.tid[in.tid$Loc == "ES-13",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-13",]$year, in.tid[in.tid$Loc == "ES-13",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-13",]$year, in.tid[in.tid$Loc == "ES-13",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]
 $norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]
 $norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-East-C",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-East-C",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-South",]$year, wetlnd[wetlnd$Loc == "W-21-UM-South",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-South",]$year, wetlnd[wetlnd$Loc == "W-21-UM-South",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-South",]$year, wetlnd[wetlnd$Loc == "W-21-UM-South",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-South",]$year, wetlnd[wetlnd$Loc == "W-21-UM-South",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$year, wetlnd[wetlnd$Loc == "W-21-UM-West-A",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$year, wetlnd[wetlnd$Loc == "W-21-UM-West-A",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$year, wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$year, wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-21-High",]$year, w.hi[w.hi$Loc == "W-21-High",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-21-High",]$year, w.hi[w.hi$Loc == "W-21-High",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-21-High",]$year, w.hi[w.hi$Loc == "W-21-High",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-21-High",]$year, w.hi[w.hi$Loc == "W-21-High",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-61-High",]$year, w.hi[w.hi$Loc == "W-61-High",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-61-High",]$year, w.hi[w.hi$Loc == "W-61-High",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-61-High",]$year, w.hi[w.hi$Loc == "W-61-High",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-61-High",]$year, w.hi[w.hi$Loc == "W-61-High",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-63-High",]$year, w.hi[w.hi$Loc == "W-63-High",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-63-High",]$year, w.hi[w.hi$Loc == "W-63-High",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-63-High",]$year, w.hi[w.hi$Loc == "W-63-High",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-63-High",]$year, w.hi[w.hi$Loc == "W-63-High",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-65-High",]$year, w.hi[w.hi$Loc == "W-65-High",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-65-High",]$year, w.hi[w.hi$Loc == "W-65-High",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-65-High",]$year, w.hi[w.hi$Loc == "W-65-High",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-65-High",]$year, w.hi[w.hi$Loc == "W-65-High",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-21-Mid",]$year, w.md[w.md$Loc == "W-21-Mid",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-21-Mid",]$year, w.md[w.md$Loc == "W-21-Mid",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-21-Mid",]$year, w.md[w.md$Loc == "W-21-Mid",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-21-Mid",]$year, w.md[w.md$Loc == "W-21-Mid",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-61-Mid",]$year, w.md[w.md$Loc == "W-61-Mid",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-61-Mid",]$year, w.md[w.md$Loc == "W-61-Mid",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-61-Mid",]$year, w.md[w.md$Loc == "W-61-Mid",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-61-Mid",]$year, w.md[w.md$Loc == "W-61-Mid",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-65-Mid",]$year, w.md[w.md$Loc == "W-65-Mid",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-65-Mid",]$year, w.md[w.md$Loc == "W-65-Mid",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-65-Mid",]$year, w.md[w.md$Loc == "W-65-Mid",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-65-Mid",]$year, w.md[w.md$Loc == "W-65-Mid",]$norm.MeHg)
```

```
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-21-Low",]$year, w.lo[w.lo$Loc == "W-21-Low",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-21-Low",]$year, w.lo[w.lo$Loc == "W-21-Low",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-21-Low",]$year, w.lo[w.lo$Loc == "W-21-Low",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-21-Low",]$year, w.lo[w.lo$Loc == "W-21-Low",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-17-Low",]$year, w.lo[w.lo$Loc == "W-17-Low",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-17-Low",]$year, w.lo[w.lo$Loc == "W-17-Low",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-17-Low",]$year, w.lo[w.lo$Loc == "W-17-Low",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-17-Low",]$year, w.lo[w.lo$Loc == "W-17-Low",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-61-Low",]$year, w.lo[w.lo$Loc == "W-61-Low",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-61-Low",]$year, w.lo[w.lo$Loc == "W-61-Low",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-61-Low",]$year, w.lo[w.lo$Loc == "W-61-Low",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-61-Low",]$year, w.lo[w.lo$Loc == "W-61-Low",]$norm.MeHg)


Table4_1_5.out <- data.frame(
Station = toString(Table4_1_5[[1]]$call[3]),
Param =  toString(Table4_1_5[[1]]$call[2]),
Intercept = coef(Table4_1_5[[1]])["(Intercept)","Estimate"],
year = coef(Table4_1_5[[1]])["year","Pr(>|t|)"],
r.squared = as.numeric(Table4_1_5[[1]]$r.squared),
p =coef(Table4_1_5[[1]])["year","Pr(>|t|)"],
seintercept = coef(Table4_1_5[[1]])["(Intercept)","Std. Error"],
seyear = coef(Table4_1_5[[1]])["year","Std. Error"],
ktau = as.numeric(Table4_1_5a[[1]][1]),
ktaup = as.numeric(Table4_1_5a[[1]][2]),
stringsAsFactors=FALSE
   )

for (i in 2:length(Table4_1_5)) {

Table4_1_5.out[i,1] <- toString(Table4_1_5[[i]]$call[3])
Table4_1_5.out[i,2] <- toString(Table4_1_5[[i]]$call[2])
Table4_1_5.out[i,3] <- coef(Table4_1_5[[i]])["(Intercept)","Estimate"]
Table4_1_5.out[i,4] <- coef(Table4_1_5[[i]])["year","Estimate"]
Table4_1_5.out[i,5] <- as.numeric(Table4_1_5[[i]]$r.squared)
Table4_1_5.out[i,6] <- coef(Table4_1_5[[i]])["year","Pr(>|t|)"]
Table4_1_5.out[i,7] <- coef(Table4_1_5[[i]])["(Intercept)","Std. Error"]
Table4_1_5.out[i,8] <- coef(Table4_1_5[[i]])["year","Std. Error"]
Table4_1_5.out[i,9] <- as.numeric(Table4_1_5a[[i]][1])
Table4_1_5.out[i,10] <- as.numeric(Table4_1_5a[[i]][2])
   }


write.csv(Table4_1_5.out, "~Louise/Professional/AMEC/Penobscot/SW_Sed Rep/2017 Report/Table4_5.csv")




###########################
### TEMPORAL STATISTICS ###
###########################

# Function to put lines on figures when the slope is significantly different than zero


LR_equation_label <- function (LR_summary)  {

# LR_summary - a summary from linear regression model

#returns

#.Line1 - regression equation in y = mx + b form
#.Line2 - r^2 and p description
#.line_type - "solid" or "blank" if p<=0.05, > 0.05, respectively

# stash regression summary info

  new_rez <- LR_summary

# pick out pertinent numbers to report

  new_intercept <- NA
  new_slope <- NA
  new_Intercept_p <- NA
  new_slope_p <- NA
  new_rsquared <- NA


  new_intercept <- new_rez$coefficients[1]
  new_slope <- new_rez$coefficients[2]
  new_Intercept_p <- new_rez$coefficients[7]
  new_slope_p <- new_rez$coefficients[8]
```

```
  new_rsquared <- new_rez$adj.r.squared


results <- list()


#### fix up funky returned values

  if(new_slope_p == "NaN") new_slope_p <- 1.0  # fix returned NaN
  if(new_slope_p < 0) new_slope_p <- 0.0  # fix returned p < 0 - not sure how this can happen? check later
  if(new_rsquared == "NaN") new_rsquared <- 1.0  # fix returned NaN

  if(is.na(new_slope_p)) new_slope_p <- 0.0  # fix returned Na - generally a zero slope?
  if(is.na(new_slope)) new_slope <- 1E32  # fix returned Na - generally an infinite slope?

#  new_rsquared <- new_rez$adj.r.squared
  if(new_rsquared < 0) new_rsquared <- 0  # fix returned negative adjusted r^2


#prepare default line type
  line_type <- "blank"


#line_type
   if(new_slope_p <= 0.05) line_type <- "solid"


# prepare returned lines of text
  Line1 <- ""
  Line2 <- ""


#Pretty up  p <0.05
    tpval <- round(new_slope_p,3)
    if(new_slope_p < 0.05) {
        tpval <- "<0.05"
      }

    Line1 <- paste(" y = ",round(new_slope,4),"* x + ",round(new_intercept,4))
    Line2 <- paste(" adj. r^2 = ",round(new_rsquared,3), "p (slope) = ", tpval)


# package up to return

results$Line1 <- Line1
results$Line2 <- Line2
results$line_type <- line_type

results

}



### Figure Generation
pdf("~Louise/Professional/AMEC/Penobscot/SW_Sed Rep/2017 Report/LN_temporal_Hg_MeHg_plots.pdf", paper = "USr")

# SUBTIDAL TEMPORAL PLOTS
par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', pch = 16, oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",], ylim = c(0, max((sub.ti$Mercury.NG.G.Result), na.rm = T) * 1.02), xlab
 = "", ylab = "Mercury (ng/g)", main = "E-01-01")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",], ylim = c(0, max((sub.ti$Mercury.NG.G.Result), na.rm = T) * 1.02), xlab
 = "", ylab = "Mercury (ng/g)", main = "E-01-03")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",], ylim = c(0, max((sub.ti$Mercury.NG.G.Result), na.rm = T) * 1.02), xlab
 = "", ylab = "Mercury (ng/g)", main = "E-01-04")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
```

```
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)
title("Figure 4-7\nTemporal Subtidal Sediment Mercury", outer = TRUE)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",], ylim = c(0, max((sub.ti$Methyl.mercury.NG.G.Result), na.rm = T)
 * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "E-01-01")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",], ylim = c(0, max((sub.ti$Methyl.mercury.NG.G.Result), na.rm = T)
 * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "E-01-03")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",], ylim = c(0, max((sub.ti$Methyl.mercury.NG.G.Result), na.rm = T)
 * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "E-01-04")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)
title("Figure 4-8\nTemporal Subtidal Sediment Methyl Mercury", outer = TRUE)


# NORMALIZED SUBTIDAL TEMPORAL PLOTS
par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', pch = 16, oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",], ylim = c(0, max((sub.ti$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "E-01-01")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",], ylim = c(0, max((sub.ti$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "E-01-03")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",], ylim = c(0, max((sub.ti$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "E-01-04")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)
```

```
title("Figure 4-9\nTemporal Subtidal Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', pch = 16, oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",], ylim = c(0, max((sub.ti$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "E-01-01")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",], ylim = c(0, max((sub.ti$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "E-01-03")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",], ylim = c(0, max((sub.ti$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "E-01-04")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

title("Figure 4-10\nTemporal Subtidal Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)



# INTERTIDAL TEMPORAL PLOTS
in.tid.max.hg.ln = max((in.tid$Mercury.NG.G.Result[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" |
 in.tid$Loc == "ES-02" | in.tid$Loc == "ES-13"]),w.it$Mercury.NG.G.Result[w.it$Loc=="W-17-Intertidal" | w.it$Loc=="W-21-Intertidal"] ,na.rm = T)
in.tid.min.hg.ln = min((in.tid$Mercury.NG.G.Result[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" |
 in.tid$Loc == "ES-02" | in.tid$Loc == "ES-13"]),w.it$Mercury.NG.G.Result[w.it$Loc=="W-17-Intertidal" | w.it$Loc=="W-21-Intertidal"] ,na.rm = T)

par(mfrow = c(2,3), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlim = c(2006,2017), xlab = "",
 ylab = "Mercury (ng/g)", main = "OV-04")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlab = "", ylab = "Mercury (ng/
 g)", main = "OV-01")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlab = "", ylab = "Mercury (ng/
 g)", main = "OV-02")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)
```

```
plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlab = "", ylab = "Mercury (ng/
 g)", main = "OB-05", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlim = c(2006, 2017), xlab = "",
 ylab = "Mercury (ng/g)", main = "ES-02")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlim = c(2006, 2017), xlab = "",
 ylab = "Mercury (ng/g)", main = "ES-13")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-17\nTemporal Intertidal Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


in.tid.max.me.ln = max((in.tid$Methyl.mercury.NG.G.Result[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc ==
 "OB-05" | in.tid$Loc == "ES-02" | in.tid$Loc == "ES-13"]),w.it$Methyl.mercury.NG.G.Result[w.it$Loc=="W-17-Intertidal" | w.it$Loc=="W-21-
 Intertidal"] ,na.rm = T)
in.tid.min.me.ln = min((in.tid$Methyl.mercury.NG.G.Result[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc ==
 "OB-05" | in.tid$Loc == "ES-02" | in.tid$Loc == "ES-13"]),w.it$Methyl.mercury.NG.G.Result[w.it$Loc=="W-17-Intertidal" | w.it$Loc=="W-21-
 Intertidal"] ,na.rm = T)

par(mfrow = c(2,3), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "OV-04", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "OV-01")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "OV-02")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "OB-05", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
```

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if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)


plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "ES-02", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "ES-13")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-18\nTemporal Intertidal Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)



# NORMALIZED INTERTIDAL TEMPORAL PLOTS
in.tid.max.nhg.ln = max((in.tid$norm.Hg[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" | in.tid$Loc
 == "ES-02" | in.tid$Loc == "ES-13"]),w.it$norm.Hg[w.it$Loc == "W-17-Intertidal" | w.it$Loc == "W-21-Intertidal"], na.rm = T)
in.tid.min.nhg.ln = min((in.tid$norm.Hg[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" | in.tid$Loc
 == "ES-02" | in.tid$Loc == "ES-13"]),w.it$norm.Hg[w.it$Loc == "W-17-Intertidal" | w.it$Loc == "W-21-Intertidal"], na.rm = T)

par(mfrow = c(2,3), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "OV-04", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "OV-01")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "OV-02")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "OB-05", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)
```

```r
plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "ES-02", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "ES-13")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

title("Figure 4-19\nTemporal Intertidal Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)



in.tid.max.nme.ln = max((in.tid$norm.MeHg[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" | in.tid
 $Loc == "ES-02" | in.tid$Loc == "ES-13"]), w.it$norm.MeHg[w.it$Loc == "W-17-Intertidal" | w.it$Loc == "W-21-Intertidal"], na.rm = T)
in.tid.min.nme.ln = min((in.tid$norm.MeHg[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" | in.tid
 $Loc == "ES-02" | in.tid$Loc == "ES-13"]), w.it$norm.MeHg[w.it$Loc == "W-17-Intertidal" | w.it$Loc == "W-21-Intertidal"], na.rm = T)


par(mfrow = c(2,3), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "OV-04", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "OV-01")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "OV-02")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "OB-05", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "ES-02", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
```

```
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "ES-13")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

title("Figure 4-20\nTemporal Intertidal Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)



# WETLAND TEMPORAL PLOTS
par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-21-High")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-21-Mid")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-21-Low")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Intertidal",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-21-Intertidal")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-27\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.", cex = 0.7), outer = T, line =
 -1)


par(mfrow = c(1,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-17-Low", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
```

```
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Intertidal",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-17-Intertidal", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-27 (cont.)\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-61-High")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-61-Mid")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-61-Low")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-61-Intertidal")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-27 (cont.)\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,1), las = 1, tck = 0.015, yaxs = 'i')
plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-63-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",])))
lines(2007:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2007:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2007:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-27 (cont.)\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)
```

```
par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-65-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-65-Mid", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-65-Intertidal", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-27 (cont.)\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-21-UM-Central-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-21-UM-East-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-21-UM-South", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-21-UM-West-A", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)
```

```
title("Figure 4-27 (cont.)\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.", cex = 0.7), outer = T, line =
 -1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-High")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-Mid")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-Low")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd $Loc == "W-21-Intertidal",], ylim = c(0, max((wetlnd $Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-Intertidal")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd $Loc == "W-21-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd $Loc == "W-21-Intertidal",]), data.frame(year=
 2006:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd $Loc == "W-21-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd $Loc == "W-21-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-29\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.", cex = 0.7), outer = T, line =
 -1)


par(mfrow = c(1,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-17-Low")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",], ylim = c(0, max((w.it$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-17-Intertidal")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-29 (cont.)\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.", cex = 0.7), outer = T, line =
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 -1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-61-High")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-61-Mid")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-61-Low")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-61-Intertidal")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-29 (cont.)\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,1), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-63-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",])))
lines(2007:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2007:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2007:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-29 (cont.)\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)



par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-65-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
```

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 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-65-Mid", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-65-Intertidal", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-29 (cont.)\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-UM-Central-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",])))
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year=
 2008:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year=
 2008:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year=
 2008:2017), interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-UM-East-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",])))
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year=
 2008:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year=
 2008:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year=
 2008:2017), interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-UM-South", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",])))
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2008:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2008:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2008:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-UM-West-A", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",])))
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year=
 2008:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year=
 2008:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year=
 2008:2017), interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-29 (cont.)\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


# NORMALIZED WETLAND TEMPORAL PLOTS
par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab = "Normalized
 Mercury (ng/g)", main = "W-21-High")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
```

```
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab = "Normalized
 Mercury (ng/g)", main = "W-21-Mid")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab = "Normalized
 Mercury (ng/g)", main = "W-21-Low")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-21-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data =w.it[w.it$Loc == "W-21-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data =w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-28\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))

plot((norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab = "Normalized
 Mercury (ng/g)", main = "W-17-Low")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-17-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-28 (cont.)\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-61-High")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-61-Mid")
```

```
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-61-Low")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-61-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-28 (cont.)\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,1), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab = "Normalized
 Mercury (ng/g)", main = "W-63-High", xlim = range(w.hi$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",])))
lines(2007:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]),data.frame(year= 2007:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2007:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]),data.frame(year= 2007:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2007:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]),data.frame(year= 2007:2017), interval="confidence")[,
 3]), lty=temp$line_type)

title("Figure 4-28 (cont.)\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-65-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-65-Mid", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-65-Intertidal", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
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 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-28 (cont.)\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-21-UM-Central-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-21-UM-East-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-21-UM-South", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-21-UM-West-A", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-28 (cont.)\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-High")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-Mid")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-Low")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
```

```
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-30\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-17-Low")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-17-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-30 (cont.)\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-61-High")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-61-Mid")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-61-Low")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab
```

```
 = "Normalized Methyl Mercury (ng/g)", main = "W-61-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-30 (cont.)\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,1), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-63-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-30 (cont.)\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-65-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-65-Mid", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab
 = "Normalized Methyl Mercury (ng/g)", main = "W-65-Intertidal", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",])))
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2009:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2009:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2009:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-30 (cont.)\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "",
 ylab = "Normalized Methyl Mercury (ng/g)", main = "W-21-UM-Central-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-UM-East-C", xlim = range(wetlnd$year))
```

```
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",])))
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2009:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2009:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2009:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-UM-South", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",])))
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2009:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2009:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2009:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-UM-West-A", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",])))
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2009:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2009:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2009:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure 4-30 (cont.)\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)

dev.off()

sink()
```

APPENDIX F-3
SEDIMENT DATA USED IN STATISTICAL ANALYSES
(0 TO 0.1 FOOT INTERVAL SEDIMENT SAMPLES)

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
BA-ES-02-A	ES-02	Verona Northeast	7/9/2007	BA-ES2A					1590	25.6267	1590	25.6267			
BA-ES-02-B	ES-02	Verona Northeast	7/9/2007	BA-ES2B					1740	32.2866	1740	32.2866			
BA-ES-02-C	ES-02	Verona Northeast	7/9/2007	BA-ES2C					1840	33.3302	1840	33.3302			
BA-ES-02-D	ES-02	Verona Northeast	7/9/2007	BA-ES2D					1730	25.7097	1730	25.7097			
BA-ES-02-E	ES-02	Verona Northeast	7/9/2007	BA-ES2E					1450	23.6219	1450	23.6219			
BA-ES-02-F	ES-02	Verona Northeast	7/9/2007	BA-ES2F					1560	24.8836	1560	24.8836			
E-01-01	E-01-01	Fort Point Cove	8/17/2007	E01-01-0-3	x	0	0.099	1.4	606	29	606	29			
E-01-01	E-01-01	Fort Point Cove	7/23/2008	E01-01-0-3	x	0	0.099	5.18	864	30.5	864	30.5			
E-01-01	E-01-01	Fort Point Cove	8/6/2008	E01-01-0-3	x	0	0.099	4.07	810	26.9	810	26.9			
E-01-01	E-01-01	Fort Point Cove	8/20/2008	E01-01-0-3	x	0	0.099	2.19	760	29.2	760	29.2			
E-01-01	E-01-01	Fort Point Cove	9/3/2008	E01-01-0-3	x	0	0.099	4.46	830	19.5	830	19.5			
E-01-01	E-01-01	Fort Point Cove	9/18/2008	E01-01-0-3	x	0	0.099	5.6	788	27.4	788	27.4			
E-01-01	E-01-01	Fort Point Cove	9/30/2008	E01-01	x	0	0.099	5.62	760	27.1	760	27.1			
E-01-01	E-01-01	Fort Point Cove	10/20/2008	E01-01-0-3	x	0	0.099	5.58	777	16.4	777	16.4			
E-01-01	E-01-01	Fort Point Cove	5/12/2009	E01-01-0-3	x	0	0.099	5.23	672	9.52	672	9.52			
E-01-01	E-01-01	Fort Point Cove	6/2/2009	E01-01-0-3	x	0	0.099	8.24	931	8.74	931	8.74			
E-01-01	E-01-01	Fort Point Cove	6/25/2009	E01_01-0-3	x	0	0.099	5.24	654	17.7	654	17.7			
E-01-01	E-01-01	Fort Point Cove	7/15/2009	E01_01-0-3-0-3	x	0	0.099	5.54	458	10.7	458	10.7			
E-01-01	E-01-01	Fort Point Cove	8/5/2009	E01-01-0-3	x	0	0.099	5.35	671	20.4	671	20.4			
E-01-01	E-01-01	Fort Point Cove	8/25/2009	PB09-6520-0-3	x	0	0.099		627	15.5	627	15.5			
E-01-01	E-01-01	Fort Point Cove	8/25/2009	PB09-6521-3-6		0.099	0.198		788	23.1	788	23.1			
E-01-01	E-01-01	Fort Point Cove	8/25/2009	PB09-6522-6-9		0.198	0.297		778	15	778	15			
E-01-01	E-01-01	Fort Point Cove	8/25/2009	PB09-0-9_ave					731	17.86666667	731	17.86666667			
E-01-01	E-01-01	Fort Point Cove	9/4/2009	E01-01-0-3	x	0	0.099	4.95	699	16.1	699	16.1			
E-01-01	E-01-01	Fort Point Cove	5/26/2010	PB10-8391-0-3	x	0	0.099		733	12.1	733	12.1			
E-01-01	E-01-01	Fort Point Cove	5/26/2010	PB10-8392-3-6		0.099	0.198		790	18.7	790	18.7			
E-01-01	E-01-01	Fort Point Cove	5/26/2010	PB10-8393-6-9		0.198	0.297		813	14.9	813	14.9			
E-01-01	E-01-01	Fort Point Cove	5/26/2010	PB10-0-9_ave					778.6666667	15.23333333	778.6666667	15.23333333			
E-01-01	E-01-01	Fort Point Cove	8/23/2010	E-01-01 0-3-0-3	x	0	0.099	4.28333	672	23.1	672	23.1			
E-01-01	E-01-01	Fort Point Cove	8/20/2012	E01-1-Surface-A-0-3	x	0	0.099	6.03	755	31.7	755	31.7			
E-01-01	E-01-01	Fort Point Cove	8/20/2012	E01-1-Surface-B-0-3	x	0	0.099	6.03	583	29	583	29			
E-01-01	E-01-01	Fort Point Cove	8/20/2012	E01-1-Surface-C-0-3	x	0	0.099	5.93	702		702				
E-01-03	E-01-03	Upper Penobscot Bay	8/17/2007	E01-03-0-3	x	0	0.099	1.3	447	6.69	447	6.69			
E-01-03	E-01-03	Upper Penobscot Bay	7/23/2008	E01-03-0-3	x	0	0.099	3.34	369	5.79	369	5.79			
E-01-03	E-01-03	Upper Penobscot Bay	8/6/2008	E01-03-0-3	x	0	0.099	4.9	651	33.2	651	33.2			
E-01-03	E-01-03	Upper Penobscot Bay	8/20/2008	E01-03-0-3	x	0	0.099	1.79	530	8.61	530	8.61			
E-01-03	E-01-03	Upper Penobscot Bay	9/3/2008	E01-03-0-3	x	0	0.099	2.2	564	7.07	564	7.07			
E-01-03	E-01-03	Upper Penobscot Bay	9/18/2008	E01-03-0-3	x	0	0.099	2.71	696	8.52	696	8.52			
E-01-03	E-01-03	Upper Penobscot Bay	9/30/2008	E01-03	x	0	0.099	2.88	456	5.88	456	5.88			
E-01-03	E-01-03	Upper Penobscot Bay	10/20/2008	E01-03-0-3	x	0	0.099	3.17	462	5.92	462	5.92			
E-01-03	E-01-03	Upper Penobscot Bay	5/12/2009	E01-03-0-3	x	0	0.099	2.6	433	5.59	433	5.59			
E-01-03	E-01-03	Upper Penobscot Bay	6/3/2009	E01-03-0-3	x	0	0.099		482	4.78	482	4.78			
E-01-03	E-01-03	Upper Penobscot Bay	6/25/2009	E01_03-0-3-0-3	x	0	0.099	2.8	500	5.25	500	5.25			
E-01-03	E-01-03	Upper Penobscot Bay	7/15/2009	E01_03-0-3-0-3	x	0	0.099	2.38	360	3.77	360	3.77			
E-01-03	E-01-03	Upper Penobscot Bay	8/5/2009	E01-03-0-3	x	0	0.099	2.38	493	6.49	493	6.49			
E-01-03	E-01-03	Upper Penobscot Bay	8/25/2009	PB09-6580-0-3	x	0	0.099		1859	7.12	1859	7.12			
E-01-03	E-01-03	Upper Penobscot Bay	9/4/2009	E01-03-0-3	x	0	0.099	1.85	403	4.74	403	4.74			
E-01-03	E-01-03	Upper Penobscot Bay	5/26/2010	PB10-8432-0-3	x	0	0.099		514	5.9	514	5.9			
E-01-03	E-01-03	Upper Penobscot Bay	8/23/2010	E-01-03 0-3-0-3	x	0	0.099	2.85667	576.33333	6.747	576.33333	6.747			
E-01-03	E-01-03	Upper Penobscot Bay	8/20/2012	E01-3-Surface-A-0-3	x	0	0.099	3.48	459	11.3	459	11.3			
E-01-03	E-01-03	Upper Penobscot Bay	8/20/2012	E01-3-Surface-B-0-3	x	0	0.099	3.41	432	10.9	432	10.9			
E-01-03	E-01-03	Upper Penobscot Bay	8/20/2012	E01-3-Surface-C-0-3	x	0	0.099	3.75	522		522				
E-01-04	E-01-04	Upper Penobscot Bay	8/17/2007	E01-04-0-3	x	0	0.099	1.5	278	3.14	278	3.14			
E-01-04	E-01-04	Upper Penobscot Bay	7/23/2008	E01-04-0-3	x	0	0.099	1.53	268	2.66	268	2.66			
E-01-04	E-01-04	Upper Penobscot Bay	8/6/2008	E01-04-0-3	x	0	0.099	4.68	369	3.8	369	3.8			
E-01-04	E-01-04	Upper Penobscot Bay	8/20/2008	E01-04-0-3	x	0	0.099	0.678	253	3.81	253	3.81			
E-01-04	E-01-04	Upper Penobscot Bay	9/3/2008	E01-04-0-3	x	0	0.099	2.02	324	3.66	324	3.66			
E-01-04	E-01-04	Upper Penobscot Bay	9/18/2008	E01-04-0-3	x	0	0.099	2.61	334	2.9	334	2.9			
E-01-04	E-01-04	Upper Penobscot Bay	9/30/2008	E01-04	x	0	0.099	2.34	271	3.83	271	3.83			
E-01-04	E-01-04	Upper Penobscot Bay	10/20/2008	E01-04-0-3	x	0	0.099	2.06	244	2.17	244	2.17			
E-01-04	E-01-04	Upper Penobscot Bay	5/12/2009	E01-04-0-3	x	0	0.099	2.05	225	2.43	225	2.43			
E-01-04	E-01-04	Upper Penobscot Bay	6/3/2009	E01-04-0-3	x	0	0.099	1.97	425	2.3	425	2.3			
E-01-04	E-01-04	Upper Penobscot Bay	6/25/2009	E01_04-0-3	x	0	0.099	1.97	286	2.64	286	2.64			
E-01-04	E-01-04	Upper Penobscot Bay	7/15/2009	E01_04-0-3	x	0	0.099	1.66	252	3.05	252	3.05			
E-01-04	E-01-04	Upper Penobscot Bay	8/5/2009	E01-04-0-3	x	0	0.099	1.63	231	2.32	231	2.32			
E-01-04	E-01-04	Upper Penobscot Bay	9/4/2009	E01-04-0-3	x	0	0.099	1.56	289	2.31	289	2.31			
E-01-04	E-01-04	Upper Penobscot Bay	8/23/2010	E-01-04 0-3-0-3	x	0	0.099	1.87333	293	2.627	293	2.627			
E-01-04	E-01-04	Upper Penobscot Bay	8/20/2012	E01-4-Surface-A-0-3	x	0	0.099	2.14	163	6.84	163	6.84			
E-01-04	E-01-04	Upper Penobscot Bay	8/20/2012	E01-4-Surface-B-0-3	x	0	0.099	2.33	240	5.19	240	5.19			
E-01-04	E-01-04	Upper Penobscot Bay	8/20/2012	E01-4-Surface-C-0-3	x	0	0.099	2.85	313		313				
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 0-1 cm		0	0.033	5.88	950.4	13.5	950.4	13.5			
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 1-2 cm -1-2		0.033	0.066	7.29	1009	12.6	1009	12.6			
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 2-3 cm		0.066	0.099	6.815	837.9	15.8	837.9	15.8			
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 0-3 cm_ave	x			6.662	932.4	13.97	932.4	13.97			
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 3-4 cm		0.099	0.132	5.813	998.4	15.3	998.4	15.3			
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 4-5 cm		0.132	0.165	7.632	843.5	21.2	843.5	21.2			
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 5-6 cm		0.165	0.198	7.519	1035	15.7	1035	15.7			
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 6-7 cm		0.198	0.231	9.73	1016	18.7	1016	18.7			
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 7-8 cm		0.231	0.264	7.342	994.1	18.3	994.1	18.3			
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 8-9 cm		0.264	0.297	8.84	1164	15.7	1164	15.7			
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 9-10 cm		0.297	0.33	6.447	1098	14.1	1098	14.1			
ES-02	ES-02	Verona Northeast	8/1/2006	ES-2 0-10 cm_ave				7.3308	994.63	16.09	994.63	16.09			
ES-02	ES-02	Verona Northeast	9/6/2006	ES-2 5-6 cm		0.165	0.198	6.0097	1209	17.686	1209	17.686			
ES-02	ES-02	Verona Northeast	9/6/2006	ES-2 6-7 cm		0.198	0.231	6.1166	1201	20.1229	1201	20.1229			
ES-02	ES-02	Verona Northeast	9/6/2006	ES-2 7-8 cm		0.231	0.264	6.2304	1309	18.28	1309	18.28			
ES-02	ES-02	Verona Northeast	9/6/2006	ES-2 8-9 cm		0.264	0.297	5.8661	1012	13.4531	1012	13.4531			
ES-02	ES-02	Verona Northeast	9/6/2006	ES-2 9-10 cm		0.297	0.33	5.4653	1178	14.8016	1178	14.8016			
ES-02	ES-02	Verona Northeast	9/6/2006	ES2 0-1 cm		0	0.033	5.6029	1005	14.4991	1005	14.4991			
ES-02	ES-02	Verona Northeast	9/6/2006	ES2 1-2 cm		0.033	0.066	5.7708	1005	12.8397	1005	12.8397			
ES-02	ES-02	Verona Northeast	9/6/2006	ES2 2-3 cm		0.066	0.099	6.8065	1169	11.2767	1169	11.2767			
ES-02	ES-02	Verona Northeast	9/6/2006	ES2 0-3 cm_ave	x			6.06	1060	12.87	1060	12.87			
ES-02	ES-02	Verona Northeast	9/6/2006	ES2 3-4 cm		0.099	0.132	7.3322	906.9	17.2785	906.9	17.2785			
ES-02	ES-02	Verona Northeast	9/6/2006	ES2 4-5 cm		0.132	0.165	7.1743	1047	17.4836	1047	17.4836			
ES-02	ES-02	Verona Northeast	9/6/2006	ES2 0-10 cm_ave				6.23748	1104.19	15.77212	1104.19	15.77212			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-0-1		0	0.033	4.7441	553.366	7.67629	553.366	7.67629			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-1-2		0.033	0.066	6.3218	638.469	10.4534	638.469	10.4534			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-2-3		0.066	0.099	9.1037	890.553	16.8223	890.553	16.8223			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-0-3_ave	x			6.723	694.1	11.65	694.1	11.65			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-3-4		0.099	0.132	8.7933	846.138	17.5305	846.138	17.5305			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-4-5		0.132	0.165	8.7007	895.791	22.7667	895.791	22.7667			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-5-6		0.165	0.198	9.4587	1700.38	21.4991	1700.38	21.4991			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-6-7		0.198	0.231	7.0841	1491.08	19.0009	1491.08	19.0009			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-7-8		0.231	0.264	5.2726	1942.81	17.1491	1942.81	17.1491			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-8-9		0.264	0.297	7.1313	1745.42	13.1762	1745.42	13.1762			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-9-10		0.297	0.33	6.9348	1772.96	19.3891	1772.96	19.3891			
ES-02	ES-02	Verona Northeast	9/26/2006	ES 2-0-10_ave				7.35451	1247.6967	16.546359	1247.6967	16.546359			
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-0-1		0	0.033	6.1976	1161.67	8.67654	1161.67	8.67654			
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-1-2		0.033	0.066	6.6861	1508.82	8.21114	1508.82	8.21114			
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-2-3		0.066	0.099	6.5674	1454.2	8.70832	1454.2	8.70832			
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-0-3_ave	x			6.484	1375	8.532	1375	8.532			
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-3-4		0.099	0.132	6.4997	1312.83	7.96706	1312.83	7.96706			
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-4-5		0.132	0.165	4.2299	1297.04	8.68717	1297.04	8.68717			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-5-6		0.165	0.198	6.7475	1378.52	12.1433	1378.52	12.1433			
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-6-7		0.198	0.231	6.3822	1376.3	14.7418	1376.3	14.7418			
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-7-8		0.231	0.264	7.1433	1366.95	21.1365	1366.95	21.1365			
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-8-9		0.264	0.297	7.1616	1350.8	23.0163	1350.8	23.0163			
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-9-10		0.297	0.33	7.9104	1353.37	17.8153	1353.37	17.8153			
ES-02	ES-02	Verona Northeast	10/23/2006	ES2-0-10_ave				6.55257	1356.05	13.110343	1356.05	13.110343			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-0-1 cm		0	0.033	6	909.612	23.5353	909.612	23.5353			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-1-2 cm		0.033	0.066	6.57	1021.04	21.7268	1021.04	21.7268			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-2-3 cm		0.066	0.099	6.43	1014.74	36.3221	1014.74	36.3221			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-0-3 cm_ave	x			6.333	981.8	27.19	981.8	27.19			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-3-4 cm		0.099	0.132	6.99	1098.73	29.8103	1098.73	29.8103			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-4-5 cm		0.132	0.165	6.49	1370.14	30.6193	1370.14	30.6193			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-5-6 cm		0.165	0.198	6.7	1167.86	50.9927	1167.86	50.9927			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-6-7 cm		0.198	0.231	7.26	1089.03	66.7195	1089.03	66.7195			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-7-8 cm		0.231	0.264	7.18	1207.92	46.049	1207.92	46.049			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-8-9 cm		0.264	0.297	7.52	1234.7	43.371	1234.7	43.371			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-9-10 cm		0.297	0.33	8.08	1161.37	36.742	1161.37	36.742			
ES-02	ES-02	Verona Northeast	6/1/2007	ES02-0-10 cm_ave				6.922	1127.5142	38.5888	1127.5142	38.5888			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-0-1 cm		0	0.033	6.58	959.357	18.5105	959.357	18.5105			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-1-2 cm		0.033	0.066	6.36	1107.15	28.7633	1107.15	28.7633			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-2-3 cm		0.066	0.099	6.75	1110.59	28.0042	1110.59	28.0042			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-0-3 cm_ave	x			6.563	1059	25.09	1059	25.09			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-3-4 cm		0.099	0.132	6.84	1341.22	31.7536	1341.22	31.7536			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-4-5 cm		0.132	0.165	7.95	1527.2	24.3	1527.2	24.3			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-5-6 cm		0.165	0.198	7.72	1528	42.2	1528	42.2			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-6-7 cm		0.198	0.231	8.03	1667.3	51.5	1667.3	51.5			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-7-8 cm		0.231	0.264	7.75	1908.66	26.3914	1908.66	26.3914			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-8-9 cm		0.264	0.297	8.08	1960.6	15.8544	1960.6	15.8544			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-9-10 cm		0.297	0.33	8.21	2247.26	27.3	2247.26	27.3			
ES-02	ES-02	Verona Northeast	7/9/2007	ES02-0-10 cm_ave				7.427	1535.7337	29.45774	1535.7337	29.45774			
ES-02	ES-02	Verona Northeast	8/22/2012	ES02-Intertidal-A-0-3	x	0	0.099	7.27	823	27.7	823	27.7			
ES-02	ES-02	Verona Northeast	8/22/2012	ES02-Intertidal-B-0-3	x	0	0.099	6.64	1000	26.4	1000	26.4			
ES-02	ES-02	Verona Northeast	8/22/2012	ES02-Intertidal-C-0-3	x	0	0.099	7.53	1080	16.8	1080	16.8			
ES-02	ES-02	Verona Northeast	8/22/2012	ES02-Intertidal-D-0-3	x	0	0.099	7.15	1020		1020				
ES-02	ES-02	Verona Northeast	8/22/2012	ES02-Intertidal-E-0-3	x	0	0.099	6.8	986		986				
ES-02-A	ES-02	Verona Northeast	7/10/2007	2007FR ES2A						24.9		24.9			
ES-02-B	ES-02	Verona Northeast	7/10/2007	2007FR ES2B						32.29		32.29			
ES-02-BA-01	ES-02	Verona Northeast	3/3/2008	ES2 BA-1	x	0	0.099		863	27.7	863	27.7			
ES-02-C	ES-02	Verona Northeast	7/10/2007	2007FR ES2C						33.33		33.33			
ES-02-D	ES-02	Verona Northeast	7/10/2007	2007FR ES2D						27.01		27.01			
ES-02-F	ES-02	Verona Northeast	7/10/2007	2007FR ES2F						30.96		30.96			
ES-02-Intertidal	ES-02	Verona Northeast	8/26/2010	ES-02-Intertidal 0-3-0-3	x	0	0.099	4.272	780.2	15.7	780.2	15.7			
ES-13	ES-13	Verona East	8/4/2006	ES-13 0-1 cm		0	0.033	9.672	692.3	4.73	692.3	4.73			
ES-13	ES-13	Verona East	8/4/2006	ES-13 1-2 cm		0.033	0.066	3.546	726.7	25.6	726.7	25.6			
ES-13	ES-13	Verona East	8/4/2006	ES-13 2-3 cm		0.066	0.099	3.764	717.1	24.7	717.1	24.7			
ES-13	ES-13	Verona East	8/4/2006	ES-13 0-3 cm_ave	x			5.661	712	18.34	712	18.34			
ES-13	ES-13	Verona East	8/4/2006	ES-13 3-4 cm		0.099	0.132	3.537	578.5	19.1	578.5	19.1			
ES-13	ES-13	Verona East	8/4/2006	ES-13 4-5 cm		0.132	0.165	3.648	381.8	9.95	381.8	9.95			
ES-13	ES-13	Verona East	8/4/2006	ES-13 5-6 cm		0.165	0.198	4.268	461.5	9.11	461.5	9.11			
ES-13	ES-13	Verona East	8/4/2006	ES-13 6-7 cm		0.198	0.231	4.284	461.4	8.81	461.4	8.81			
ES-13	ES-13	Verona East	8/4/2006	ES-13 7-8 cm		0.231	0.264	2.429	108.8	5.07	108.8	5.07			
ES-13	ES-13	Verona East	8/4/2006	ES-13 8-9 cm		0.264	0.297	1.978	87.26	2.25	87.26	2.25			
ES-13	ES-13	Verona East	8/4/2006	ES-13 9-10 cm		0.297	0.33	3.218	85.86	2.87	85.86	2.87			
ES-13	ES-13	Verona East	8/4/2006	ES-13 0-10 cm_ave				4.0344	430.122	11.219	430.122	11.219			
ES-13	ES-13	Verona East	9/6/2006	ES13 0-1 cm		0	0.033	8.5061	1041	22.9817	1041	22.9817			
ES-13	ES-13	Verona East	9/6/2006	ES13 1-2 cm		0.033	0.066	11.2138	434.4	30.4889	434.4	30.4889			
ES-13	ES-13	Verona East	9/6/2006	ES13 2-3 cm		0.066	0.099	8.4799	603.7	32.1049	603.7	32.1049			
ES-13	ES-13	Verona East	9/6/2006	ES13 0-3 cm_ave	x			9.4	693	28.53	693	28.53			
ES-13	ES-13	Verona East	9/6/2006	ES13 3-4 cm		0.099	0.132	7.614	534.4	26.1484	534.4	26.1484			
ES-13	ES-13	Verona East	9/6/2006	ES13 4-5 cm		0.132	0.165	3.4256	273.6	10.8353	273.6	10.8353			
ES-13	ES-13	Verona East	9/6/2006	ES13 5-6 cm		0.165	0.198	2.4543	459.3	7.19324	459.3	7.19324			
ES-13	ES-13	Verona East	9/6/2006	ES13 6-7 cm		0.198	0.231	2.7285	341.7	12.7144	341.7	12.7144			
ES-13	ES-13	Verona East	9/6/2006	ES13 7-8 cm		0.231	0.264	3.3112	567.1	8.25659	567.1	8.25659			
ES-13	ES-13	Verona East	9/6/2006	ES13 8-9 cm		0.264	0.297	2.379	482.7	7.2801	482.7	7.2801			
ES-13	ES-13	Verona East	9/6/2006	ES13 9-10 cm		0.297	0.33	2.8329	336.6	4.71308	336.6	4.71308			
ES-13	ES-13	Verona East	9/6/2006	ES13 0-10 cm_ave				5.29453	507.45	16.271661	507.45	16.271661			
ES-13	ES-13	Verona East	9/26/2006	ES 13-0-1		0	0.033	5.797	917.116	9.63208	917.116	9.63208			
ES-13	ES-13	Verona East	9/26/2006	ES 13-1-2		0.033	0.066	8.1359	512.902	9.38009	512.902	9.38009			
ES-13	ES-13	Verona East	9/26/2006	ES 13-2-3		0.066	0.099	9.7004	490.375	8.86129	490.375	8.86129			
ES-13	ES-13	Verona East	9/26/2006	ES 13-0-3_ave	x			7.878	640.1	9.291	640.1	9.291			
ES-13	ES-13	Verona East	9/26/2006	ES 13-3-4		0.099	0.132	10.1155	490.735	6.88392	490.735	6.88392			
ES-13	ES-13	Verona East	9/26/2006	ES 13-4-5		0.132	0.165	8.9547	467.752	6.90203	467.752	6.90203			
ES-13	ES-13	Verona East	9/26/2006	ES 13-5-6		0.165	0.198	8.2119	401.139	5.34424	401.139	5.34424			
ES-13	ES-13	Verona East	9/26/2006	ES 13-6-7		0.198	0.231	6.7576	415.842	3.8578	415.842	3.8578			
ES-13	ES-13	Verona East	9/26/2006	ES 13-7-8		0.231	0.264	3.9558	449.902	4.41933	449.902	4.41933			
ES-13	ES-13	Verona East	9/26/2006	ES 13-8-9		0.264	0.297	3.9558	398.671	4.424	398.671	4.424			
ES-13	ES-13	Verona East	9/26/2006	ES 13-9-10		0.297	0.33	4.1832	477.778	5.83234	477.778	5.83234			
ES-13	ES-13	Verona East	9/26/2006	ES 13-0-10_ave				6.97678	502.2212	6.553712	502.2212	6.553712			
ES-13	ES-13	Verona East	10/23/2006	ES13-0-1		0	0.033	7.1159	984.024	17.5326	984.024	17.5326			
ES-13	ES-13	Verona East	10/23/2006	ES13-1-2		0.033	0.066	6.9844	1045.22	26.7805	1045.22	26.7805			
ES-13	ES-13	Verona East	10/23/2006	ES13-2-3		0.066	0.099	7.6335	1234.53	27.1103	1234.53	27.1103			
ES-13	ES-13	Verona East	10/23/2006	ES13-0-3_ave	x			7.245	1088	23.81	1088	23.81			
ES-13	ES-13	Verona East	10/23/2006	ES13-3-4		0.099	0.132	9.8381	1402.52	31.7135	1402.52	31.7135			
ES-13	ES-13	Verona East	10/23/2006	ES13-4-5		0.132	0.165	9.3856	1393.64	28.654	1393.64	28.654			
ES-13	ES-13	Verona East	10/23/2006	ES13-5-6		0.165	0.198	8.4878	1396.84	27.5056	1396.84	27.5056			
ES-13	ES-13	Verona East	10/23/2006	ES13-6-7		0.198	0.231	7.9354	1325.89	23.0025	1325.89	23.0025			
ES-13	ES-13	Verona East	10/23/2006	ES13-7-8		0.231	0.264	7.1458	1224.91	18.0802	1224.91	18.0802			
ES-13	ES-13	Verona East	10/23/2006	ES13-8-9		0.264	0.297	7.7642	1295.28	19.7315	1295.28	19.7315			
ES-13	ES-13	Verona East	10/23/2006	ES13-9-10		0.297	0.33	8.7746	1457.04	22.6515	1457.04	22.6515			
ES-13	ES-13	Verona East	10/23/2006	ES13-0-10_ave				8.10653	1275.9894	24.27622	1275.9894	24.27622			
ES-13	ES-13	Verona East	6/1/2007	ES13-0-1 cm		0	0.033	10.5	1103.97	41.6777	1103.97	41.6777			
ES-13	ES-13	Verona East	6/1/2007	ES13-1-2 cm		0.033	0.066	6.69	1119.8	41.4	1119.8	41.4			
ES-13	ES-13	Verona East	6/1/2007	ES13-2-3 cm		0.066	0.099	6.98	785.54	47.4624	785.54	47.4624			
ES-13	ES-13	Verona East	6/1/2007	ES13-0-3 cm_ave	x			8.057	1003	43.51	1003	43.51			
ES-13	ES-13	Verona East	6/1/2007	ES13-3-4 cm		0.099	0.132	3.8	501.982	35.7335	501.982	35.7335			
ES-13	ES-13	Verona East	6/1/2007	ES13-4-5 cm		0.132	0.165	3.63	608.516	20.9841	608.516	20.9841			
ES-13	ES-13	Verona East	6/1/2007	ES13-5-6 cm		0.165	0.198	3.55	538.905	28.6665	538.905	28.6665			
ES-13	ES-13	Verona East	6/1/2007	ES13-6-7 cm		0.198	0.231	2.66	511.286	11.7407	511.286	11.7407			
ES-13	ES-13	Verona East	6/1/2007	ES13-7-8 cm		0.231	0.264	2.7	344.167	15.9159	344.167	15.9159			
ES-13	ES-13	Verona East	6/1/2007	ES13-8-9 cm		0.264	0.297	3.15	552.057	20.4323	552.057	20.4323			
ES-13	ES-13	Verona East	6/1/2007	ES13-9-10 cm		0.297	0.33	3.39	597.052	24.5378	597.052	24.5378			
ES-13	ES-13	Verona East	6/1/2007	ES13-0-10 cm_ave				4.705	666.3275	28.85509	666.3275	28.85509			
ES-13	ES-13	Verona East	7/10/2007	ES13-0-1 cm		0	0.033	7.28221	1066.34	29.771	1066.34	29.771			
ES-13	ES-13	Verona East	7/10/2007	ES13-1-2 cm		0.033	0.066	6.06505	1929.39	32.3117	1929.39	32.3117			
ES-13	ES-13	Verona East	7/10/2007	ES13-2-3 cm		0.066	0.099	4.63812	723.087	25.9393	723.087	25.9393			
ES-13	ES-13	Verona East	7/10/2007	ES13-0-3 cm_ave	x			5.995	1239.61	29.341	1239.61	29.341			
ES-13	ES-13	Verona East	7/10/2007	ES13-3-4 cm		0.099	0.132	2.23294	366.516	25.2	366.516	25.2			
ES-13	ES-13	Verona East	7/10/2007	ES13-4-5 cm		0.132	0.165	2.56602	395.346	20.098	395.346	20.098			
ES-13	ES-13	Verona East	7/10/2007	ES13-5-6 cm		0.165	0.198	2.47656	364.923	23.6619	364.923	23.6619			
ES-13	ES-13	Verona East	7/10/2007	ES13-6-7 cm		0.198	0.231	2.12884	303.496	11.537	303.496	11.537			
ES-13	ES-13	Verona East	7/10/2007	ES13-7-8 cm		0.231	0.264	2.5045	332.495	23.2961	332.495	23.2961			
ES-13	ES-13	Verona East	7/10/2007	ES13-8-9 cm		0.264	0.297	2.457	399.588	15.3055	399.588	15.3055			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
ES-13	ES-13	Verona East	7/10/2007	ES13-9-10 cm		0.297	0.33	2.16825	373.937	12.771	373.937	12.771			
ES-13	ES-13	Verona East	7/10/2007	ES13-0-10 cm_ave				3.451949	625.5118	21.98915	625.5118	21.98915			
ES-13	ES-13	Verona East	8/23/2012	ES13-Intertidal-A-0-3	x	0	0.099	4.2	432	13.3	432	13.3			
ES-13	ES-13	Verona East	8/23/2012	ES13-Intertidal-B-0-3	x	0	0.099	0.84	188	4.92	188	4.92			
ES-13	ES-13	Verona East	8/23/2012	ES13-Intertidal-C-0-3	x	0	0.099	0.96	169	5.58	169	5.58			
ES-13	ES-13	Verona East	8/23/2012	ES13-Intertidal-D-0-3	x	0	0.099	1.29	238		238				
ES-13	ES-13	Verona East	8/23/2012	ES13-Intertidal-E-0-3	x	0	0.099	1.31	190		190				
ES-13-Intertidal	ES-13	Verona East	8/26/2010	ES13-Intertidal-RepA-0-3	x	0	0.099	18.4	2310	55.2	2310	55.2			
ES-13-Intertidal	ES-13	Verona East	8/26/2010	ES13-Intertidal-RepB-0-3	x	0	0.099	11.1	1640	46.6	1640	46.6			
ES-13-Intertidal	ES-13	Verona East	8/26/2010	ES13-Intertidal-RepC-0-3	x	0	0.099	8.97	1550	51.2	1550	51.2			
ES-13-Intertidal	ES-13	Verona East	8/26/2010	ES13-Intertidal-RepD-0-3	x	0	0.099	5.97	1710	73.1	1710	73.1			
ES-13-Intertidal	ES-13	Verona East	8/26/2010	ES13-Intertidal-RepE-0-3	x	0	0.099	8.51	1550	62.6	1550	62.6			
OV-01	OV-01	Veazie	8/1/2006	OV-1-0-3	x	0	0.099	0.6491	11.49	0.378	11.49	0.378			
OV-01	OV-01	Veazie	9/10/2006	OV-1 0-3 cm	x	0	0.099	2.3676	43.44	1.14881	43.44	1.14881			
OV-01	OV-01	Veazie	10/1/2006	OV 1-0-3	x	0	0.099	0.7515	27.74815	0.3794	27.74815	0.3794			
OV-01	OV-01	Veazie	10/24/2006	OV-1 core 1-0-3		0	0.099	0.4524	23.95	0.32276	23.95	0.32276			
OV-01	OV-01	Veazie	10/24/2006	OV-1 core 2-0-3		0	0.099	0.6454	17.9	0.22649	17.9	0.22649			
OV-01	OV-01	Veazie	10/24/2006	OV-1 core 1n2-0-3_ave	x			0.5489	20.925	0.274625	20.925	0.274625			
OV-01	OV-01	Veazie	5/31/2007	OV1 -0-3 cm	x	0	0.099	0.6195	19.61317	0.16182	19.61317	0.16182			
OV-01	OV-01	Veazie	7/11/2007	OV1 -0-3 cm	x	0	0.099	0.92	21.4	0.44205	21.4	0.44205			
OV-01	OV-01	Veazie	8/20/2012	OV1-Intertidal-A-0-3	x	0	0.099	0.76	20.3	0.62	20.3	0.62			
OV-01	OV-01	Veazie	8/20/2012	OV1-Intertidal-B-0-3	x	0	0.099	0.83	19.1	0.7	19.1	0.7			
OV-01	OV-01	Veazie	8/20/2012	OV1-Intertidal-C-0-3	x	0	0.099	0.95	17.8	0.64	17.8	0.64			
OV-01	OV-01	Veazie	8/20/2012	OV1-Intertidal-D-0-3	x	0	0.099	0.7	17.1		17.1				
OV-01	OV-01	Veazie	8/20/2012	OV1-Intertidal-E-0-3	x	0	0.099	0.84	17.8		17.8				
OV-01-Intertidal	OV-01	Veazie	8/24/2010	OV-01-Intertidal 0-3-0-3	x	0	0.099	1.28	21.844	0.098	21.844	0.098			
OV-02	OV-02	Veazie	8/1/2006	OV-2-0-3	x	0	0.099	2.4201	34.57	0.663	34.57	0.663			
OV-02	OV-02	Veazie	9/10/2006	OV-2 0-3 cm	x	0	0.099	2.211	76.34	0.92482	76.34	0.92482			
OV-02	OV-02	Veazie	10/1/2006	OV 2-0-3	x	0	0.099	1.7775	61.6718	0.54117	61.6718	0.54117			
OV-02	OV-02	Veazie	10/24/2006	OV-2-0-1		0	0.033	4.3498	88.4713	0.82401	88.4713	0.82401			
OV-02	OV-02	Veazie	10/24/2006	OV-2-1-2		0.033	0.066	4.6898	89.9169	1.07392	89.9169	1.07392			
OV-02	OV-02	Veazie	10/24/2006	OV-2-2-3		0.066	0.099	7.8217	83.2751	0.78666	83.2751	0.78666			
OV-02	OV-02	Veazie	10/24/2006	OV-2-0-3_ave	x			5.62	87.22	0.8949	87.22	0.8949			
OV-02	OV-02	Veazie	10/24/2006	OV-2-3-4		0.099	0.132	7.4658	99.0765	1.1697	99.0765	1.1697			
OV-02	OV-02	Veazie	10/24/2006	OV-2-4-5		0.132	0.165	3.8285	135.015	1.3228	135.015	1.3228			
OV-02	OV-02	Veazie	10/24/2006	OV-2-5-6		0.165	0.198	4.0993	140.383	0.9139	140.383	0.9139			
OV-02	OV-02	Veazie	10/24/2006	OV-2-6-7		0.198	0.231	3.5134	196.223	1.47745	196.223	1.47745			
OV-02	OV-02	Veazie	10/24/2006	OV-2-7-8		0.231	0.264	3.6063	150.294	1.25854	150.294	1.25854			
OV-02	OV-02	Veazie	10/24/2006	OV-2-8-9		0.264	0.297	4.6464	113.213	1.18551	113.213	1.18551			
OV-02	OV-02	Veazie	10/24/2006	OV-2-9-10		0.297	0.33	6.6831	168.811	1.58589	168.811	1.58589			
OV-02	OV-02	Veazie	10/24/2006	OV-2-0-10_ave				5.07041	126.46788	1.159838	126.46788	1.159838			
OV-02	OV-02	Veazie	5/31/2007	OV2 -0-1 cm		0	0.033	2.45	50.9251	1.10326	50.9251	1.10326			
OV-02	OV-02	Veazie	5/31/2007	OV2 -1-2 cm		0.033	0.066	2.51	86.5084	1.3431	86.5084	1.3431			
OV-02	OV-02	Veazie	5/31/2007	OV2 -2-3 cm		0.066	0.099	4.1	91.7971	1.89184	91.7971	1.89184			
OV-02	OV-02	Veazie	5/31/2007	OV2-0-3_ave	x			3.02	76.41	1.446	76.41	1.446			
OV-02	OV-02	Veazie	5/31/2007	OV2 -3-4 cm		0.099	0.132	5.04	62.2945	1.16787	62.2945	1.16787			
OV-02	OV-02	Veazie	5/31/2007	OV2 -4-5 cm		0.132	0.165	1.3	60.3834	0.87947	60.3834	0.87947			
OV-02	OV-02	Veazie	5/31/2007	OV2 -5-6 cm		0.165	0.198	0.637	61.1418	0.59188	61.1418	0.59188			
OV-02	OV-02	Veazie	5/31/2007	OV2 -6-7 cm		0.198	0.231	0.832	56.1176	0.44335	56.1176	0.44335			
OV-02	OV-02	Veazie	5/31/2007	OV2 -8-9 cm		0.264	0.297	2.62	186.03	4.35532	186.03	4.35532			
OV-02	OV-02	Veazie	5/31/2007	OV2 -9-10 cm		0.297	0.33	1.07	107.189	1.81644	107.189	1.81644			
OV-02	OV-02	Veazie	5/31/2007	OV2-7-8		0.231	0.264	1.47	65.3289	0.81317	65.3289	0.81317			
OV-02	OV-02	Veazie	5/31/2007	OV2-0-10_ave				2.2029	82.77158	1.44057	82.77158	1.44057			
OV-02	OV-02	Veazie	7/11/2007	OV2 -0-1 cm		0	0.033	1.41	44.5	0.63691	44.5	0.63691			
OV-02	OV-02	Veazie	7/11/2007	OV2 -1-2 cm		0.033	0.066	1.92	59.4	0.815	59.4	0.815			
OV-02	OV-02	Veazie	7/11/2007	OV2 -2-3 cm		0.066	0.099	2.18	72.9	1.37009	72.9	1.37009			
OV-02	OV-02	Veazie	7/11/2007	OV2 -0-3 cm_ave	x			1.837	58.933	0.9407	58.933	0.9407			
OV-02	OV-02	Veazie	7/11/2007	OV2 -3-4 cm		0.099	0.132	2.41	75.3	1.18734	75.3	1.18734			
OV-02	OV-02	Veazie	7/11/2007	OV2 -4-5 cm		0.132	0.165	1.51	76.1	3.42073	76.1	3.42073			
OV-02	OV-02	Veazie	7/11/2007	OV2 -5-6 cm		0.165	0.198	1.31	84.2	1.27493	84.2	1.27493			
OV-02	OV-02	Veazie	7/11/2007	OV2 -6-7 cm		0.198	0.231	1.96	102.2	0.93041	102.2	0.93041			
OV-02	OV-02	Veazie	7/11/2007	OV2 -7-8 cm		0.231	0.264	1.46	91.2	1.373	91.2	1.373			
OV-02	OV-02	Veazie	7/11/2007	OV2 -8-9 cm		0.264	0.297	0.64	67.3	0.28996	67.3	0.28996			
OV-02	OV-02	Veazie	7/11/2007	OV2 -9-10 cm		0.297	0.33	0.22	37.4	0.30875	37.4	0.30875			
OV-02	OV-02	Veazie	7/11/2007	OV2 -0-10 cm_ave				1.502	71.05	1.160712	71.05	1.160712			
OV-02	OV-02	Veazie	8/20/2012	OV2-Intertidal-A-0-3	x	0	0.099	0.7	33.1	0.21	33.1	0.21			
OV-02	OV-02	Veazie	8/20/2012	OV2-Intertidal-B-0-3	x	0	0.099	0.43	25.7	0.3	25.7	0.3			
OV-02	OV-02	Veazie	8/20/2012	OV2-Intertidal-C-0-3	x	0	0.099	0.77	24.6	0.18	24.6	0.18			
OV-02	OV-02	Veazie	8/20/2012	OV2-Intertidal-D-0-3	x	0	0.099	1.19	28.3		28.3				
OV-02	OV-02	Veazie	8/20/2012	OV2-Intertidal-E-0-3	x	0	0.099	1.37	28.2		28.2				
OV-04	OV-04	Veazie	8/1/2006	OV-4 0-1 cm		0	0.033	14.5923	10.54	0.898	10.54	0.898			
OV-04	OV-04	Veazie	8/1/2006	OV-4 1-2 cm		0.033	0.066	16.9307	116.4	0.63	116.4	0.63			
OV-04	OV-04	Veazie	8/1/2006	OV-4 2-3 cm		0.066	0.099	19.3904	29.22	0.569	29.22	0.569			
OV-04	OV-04	Veazie	8/1/2006	OV-4 0-3 cm_ave	x			16.971	52.053	0.699	52.053	0.699			
OV-04	OV-04	Veazie	8/1/2006	OV-4 3-4 cm		0.099	0.132	19.8121	298.7	0.72	298.7	0.72			
OV-04	OV-04	Veazie	8/1/2006	OV-4 4-5 cm		0.132	0.165	33.8414	161.6	0.516	161.6	0.516			
OV-04	OV-04	Veazie	8/1/2006	OV-4 5-6 cm		0.165	0.198	33.5282	228.2	0.609	228.2	0.609			
OV-04	OV-04	Veazie	8/1/2006	OV-4 6-7 cm		0.198	0.231	28.9454	144.4	0.644	144.4	0.644			
OV-04	OV-04	Veazie	8/1/2006	OV-4 7-8 cm		0.231	0.264	27.2527	165	0.706	165	0.706			
OV-04	OV-04	Veazie	8/1/2006	OV-4 8-9 cm		0.264	0.297	22.1382	185.2	0.626	185.2	0.626			
OV-04	OV-04	Veazie	8/1/2006	OV-4 9-10 cm		0.297	0.33	19.5963	130.4	0.766	130.4	0.766			
OV-04	OV-04	Veazie	8/1/2006	OV-4 0-10 cm_ave				23.60277	146.966	0.6684	146.966	0.6684			
OV-04	OV-04	Veazie	9/10/2006	OV-4 0-1 cm		0	0.033	8.2077	128.142	6.42627	128.142	6.42627			
OV-04	OV-04	Veazie	9/10/2006	OV-4 1-2 cm		0.033	0.066	9.3314	196.366	3.019	196.366	3.019			
OV-04	OV-04	Veazie	9/10/2006	OV-4 2-3 cm		0.066	0.099	9.7362	176.268	3.23908	176.268	3.23908			
OV-04	OV-04	Veazie	9/10/2006	OV-4 0-3 cm_ave	x			9.092	166.925	4.228	166.925	4.228			
OV-04	OV-04	Veazie	9/10/2006	OV-4 3-4 cm		0.099	0.132	11.0026	191.078	2.95145	191.078	2.95145			
OV-04	OV-04	Veazie	9/10/2006	OV-4 4-5 cm		0.132	0.165	11.7522	200.122	3.18098	200.122	3.18098			
OV-04	OV-04	Veazie	9/10/2006	OV-4 5-6 cm		0.165	0.198	12.1516	136.874	2.58626	136.874	2.58626			
OV-04	OV-04	Veazie	9/10/2006	OV-4 6-7 cm		0.198	0.231	10.7412	189.398	2.87392	189.398	2.87392			
OV-04	OV-04	Veazie	9/10/2006	OV-4 7-8 cm		0.231	0.264	10.5951	186.966	1.68877	186.966	1.68877			
OV-04	OV-04	Veazie	9/10/2006	OV-4 8-9 cm		0.264	0.297	12.0079	134.953	2.03097	134.953	2.03097			
OV-04	OV-04	Veazie	9/10/2006	OV-4 9-10 cm		0.297	0.33	12.749	137.419	1.90073	137.419	1.90073			
OV-04	OV-04	Veazie	9/10/2006	OV-4 0-10 cm_ave				10.82749	167.7586	2.989743	167.7586	2.989743			
OV-04	OV-04	Veazie	10/1/2006	OV 4-0-1		0	0.033	10.4526	258.093	4.50503	258.093	4.50503			
OV-04	OV-04	Veazie	10/1/2006	OV 4-1-2		0.033	0.066	10.052	259.547	2.45552	259.547	2.45552			
OV-04	OV-04	Veazie	10/1/2006	OV 4-2-3		0.066	0.099	8.534	410.431	1.90679	410.431	1.90679			
OV-04	OV-04	Veazie	10/1/2006	OV 4-0-3_ave	x			9.679533333	309.357	2.95578	309.357	2.95578			
OV-04	OV-04	Veazie	10/1/2006	OV 4-3-4		0.099	0.132	9.1411	469.524	1.38563	469.524	1.38563			
OV-04	OV-04	Veazie	10/1/2006	OV 4-4-5		0.132	0.165	8.9339	501.69	1.11367	501.69	1.11367			
OV-04	OV-04	Veazie	10/1/2006	OV 4-5-6		0.165	0.198	7.7752	481.861	1.32479	481.861	1.32479			
OV-04	OV-04	Veazie	10/1/2006	OV 4-6-7		0.198	0.231	10.649	450.667	1.3999	450.667	1.3999			
OV-04	OV-04	Veazie	10/1/2006	OV 4-7-8		0.231	0.264	12.5127	879.87	1.0719	879.87	1.0719			
OV-04	OV-04	Veazie	10/1/2006	OV 4-8-9		0.264	0.297	14.7982	514.653	1.36399	514.653	1.36399			
OV-04	OV-04	Veazie	10/1/2006	OV 4-9-10		0.297	0.33	15.6105	703.002	1.23128	703.002	1.23128			
OV-04	OV-04	Veazie	10/1/2006	OV 4-0-10_ave				10.84592	492.9338	1.77585	492.9338	1.77585			
OV-04	OV-04	Veazie	10/25/2006	OV-4-0-1		0	0.033	13.9092	237.466	1.05541	237.466	1.05541			
OV-04	OV-04	Veazie	10/25/2006	OV-4-1-2		0.033	0.066	11.471	180.752	0.57567	180.752	0.57567			
OV-04	OV-04	Veazie	10/25/2006	OV-4-2-3		0.066	0.099	11.3438	321.247	0.5736	321.247	0.5736			
OV-04	OV-04	Veazie	10/25/2006	OV-4-0-3_ave	x			12.2413	246.488	0.7349	246.488	0.7349			
OV-04	OV-04	Veazie	10/25/2006	OV-4-3-4		0.099	0.132	19.1331	281.734	0.47095	281.734	0.47095			
OV-04	OV-04	Veazie	10/25/2006	OV-4-4-5		0.132	0.165	11.3893	177.262	0.40669	177.262	0.40669			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
OV-04	OV-04	Veazie	10/25/2006	OV-4-5-6		0.165	0.198	18.7943	255.042	0.41518	255.042	0.41518			
OV-04	OV-04	Veazie	10/25/2006	OV-4-6-7		0.198	0.231	12.3733	205.16	0.35194	205.16	0.35194			
OV-04	OV-04	Veazie	10/25/2006	OV-4-7-8		0.231	0.264	12.3337	228.68	0.36585	228.68	0.36585			
OV-04	OV-04	Veazie	10/25/2006	OV-4-8-9		0.264	0.297	13.7741	250.615	0.25859	250.615	0.25859			
OV-04	OV-04	Veazie	10/25/2006	OV-4-9-10		0.297	0.33	12.0143	240.699	0.38252	240.699	0.38252			
OV-04	OV-04	Veazie	10/25/2006	OV-4-0-10_ave				13.65361	237.8657	0.48564	237.8657	0.48564			
OV-04	OV-04	Veazie	5/31/2007	OV4 -0-1 cm		0	0.033	12.1	283.24	4.1328	283.24	4.1328			
OV-04	OV-04	Veazie	5/31/2007	OV4 -1-2 cm		0.033	0.066	10.2	352.09	2.88254	352.09	2.88254			
OV-04	OV-04	Veazie	5/31/2007	OV4 -2-3 cm		0.066	0.099	9.81	283.291	2.36957	283.291	2.36957			
OV-04	OV-04	Veazie	5/31/2007	OV4 -0-3 cm_ave	x			10.7	306.21	3.128	306.21	3.128			
OV-04	OV-04	Veazie	5/31/2007	OV4 -3-4 cm		0.099	0.132	9.64	260.51	2.33616	260.51	2.33616			
OV-04	OV-04	Veazie	5/31/2007	OV4 -4-5 cm		0.132	0.165	9.49	246.039	1.98616	246.039	1.98616			
OV-04	OV-04	Veazie	5/31/2007	OV4 -5-6 cm		0.165	0.198	9.94	300.804	2.4494	300.804	2.4494			
OV-04	OV-04	Veazie	5/31/2007	OV4 -6-7 cm		0.198	0.231	10.8	264.914	1.63459	264.914	1.63459			
OV-04	OV-04	Veazie	5/31/2007	OV4 -7-8 cm		0.231	0.264	9.53	301.945	1.33807	301.945	1.33807			
OV-04	OV-04	Veazie	5/31/2007	OV4 -8-9 cm		0.264	0.297	11.1	267.822	1.98332	267.822	1.98332			
OV-04	OV-04	Veazie	5/31/2007	OV4 -9-10 cm		0.297	0.33	12.3	263.122	1.57552	263.122	1.57552			
OV-04	OV-04	Veazie	5/31/2007	OV4 -0-10 cm_ave				10.491	282.3777	2.268813	282.3777	2.268813			
OV-04	OV-04	Veazie	7/11/2007	OV4 -0-1 cm		0	0.033	12.15	347	9.01282	347	9.01282			
OV-04	OV-04	Veazie	7/11/2007	OV4 -1-2 cm		0.033	0.066	9.5	324	2.39641	324	2.39641			
OV-04	OV-04	Veazie	7/11/2007	OV4 -2-3 cm		0.066	0.099	9.95	286	1.59653	286	1.59653			
OV-04	OV-04	Veazie	7/11/2007	OV4 -0-3 cm_ave	x			10.533	319	4.335	319	4.335			
OV-04	OV-04	Veazie	7/11/2007	OV4 -3-4 cm		0.099	0.132	9.95	280	1.4083	280	1.4083			
OV-04	OV-04	Veazie	7/11/2007	OV4 -4-5 cm		0.132	0.165	9.21	346	1.55	346	1.55			
OV-04	OV-04	Veazie	7/11/2007	OV4 -5-6 cm		0.165	0.198	8.35	346	0.876	346	0.876			
OV-04	OV-04	Veazie	7/11/2007	OV4 -6-7 cm		0.198	0.231	8.66	277	0.80763	277	0.80763			
OV-04	OV-04	Veazie	7/11/2007	OV4 -7-8 cm		0.231	0.264	8.75	330	0.98392	330	0.98392			
OV-04	OV-04	Veazie	7/11/2007	OV4 -8-9 cm		0.264	0.297	8.52	244	0.78357	244	0.78357			
OV-04	OV-04	Veazie	7/11/2007	OV4 -9-10 cm		0.297	0.33	8.41	274	0.64353	274	0.64353			
OV-04	OV-04	Veazie	7/11/2007	OV4 -0-10 cm_ave				9.345	305.4	2.005871	305.4	2.005871			
OV-04	OV-04	Veazie	8/21/2012	OV4-Intertidal-A-0-3	x	0	0.099	8.88	161	3.9	161	3.9			
OV-04	OV-04	Veazie	8/21/2012	OV4-Intertidal-B-0-3	x	0	0.099	8.07	120	4.49	120	4.49			
OV-04	OV-04	Veazie	8/21/2012	OV4-Intertidal-C-0-3	x	0	0.099	7.29	113	2.77	113	2.77			
OV-04	OV-04	Veazie	8/21/2012	OV4-Intertidal-D-0-3	x	0	0.099	9.75	126		126				
OV-04	OV-04	Veazie	8/21/2012	OV4-Intertidal-E-0-3	x	0	0.099	8	102		102				
OV-04-Intertidal	OV-04	Veazie	8/26/2010	OV-04-Intertidal 0-3-0-3	x	0	0.099	5.734	146.6	3.504	146.6	3.504			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	8/18/2007	W17-Intertidal-0-3	x	0	0.099	12.24	1400	38.5	1400	38.5			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	7/22/2008	W17-Intertidal-0-3	x	0	0.099	18.33	507	10.8	507	10.8			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	8/4/2008	W17-INTERTIDAL-0-3	x	0	0.099	10.82	872	17.9	872	17.9			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	8/20/2008	W17-Intertidal-0-3	x	0	0.099	11.54	906	20.4	906	20.4			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	9/3/2008	W17-Intertidal-0-3	x	0	0.099	16.67	932	18.8	932	18.8			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	9/18/2008	W17-Intertidal-0-3	x	0	0.099	6.51	790	18.2	790	18.2			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	9/30/2008	W17 Intertidal	x	0	0.099	7.49	628	16	628	16			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	10/21/2008	W17-INTERTIDAL-0-3	x	0	0.099	7.67	882	13.2	882	13.2			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	5/12/2009	W17-INTERTIDAL-0-3	x	0	0.099	3.88	658	17	658	17			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	6/2/2009	W17-INTERTIDAL-0-3	x	0	0.099	4.98	708	27.4	708	27.4			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	6/24/2009	W17-Intertidal	x	0	0.099	4.84	1290	9.44	1290	9.44			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	7/15/2009	W17-Intertidal	x	0	0.099	3.13	752	13.9	752	13.9			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	8/4/2009	W17-Intertidal-0-3	x	0	0.099	5.24	1440	28.8	1440	28.8			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	8/11/2009	PB09-5480-0-3	x	0	0.099		566	18.4	566	18.4			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	8/11/2009	PB09-5481-3-6		0.099	0.198		805	16.9	805	16.9			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	8/11/2009	PB09-5482-6-9		0.198	0.297		877	31.4	877	31.4			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	8/11/2009	PB09-5483-9-12		0.297	0.396		859	25.7	859	25.7			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	8/11/2009	PB09-0-12_ave					776.75	23.1	776.75	23.1			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	9/2/2009	W17-Intertidal-0-3	x	0	0.099	4.43	2670	42.1	2670	42.1			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	8/24/2010	W-17-Intertidal 0-3-0-3	x	0	0.099	3.2575	774.25	16.7	774.25	16.7			
W-17-Intertidal-2012	W-17-Intertidal	Frankfort Flats	8/22/2012	W17-Intertidal-A-0-3	x	0	0.099	4.71	664	15.4	664	15.4			
W-17-Intertidal-2012	W-17-Intertidal	Frankfort Flats	8/22/2012	W17-Intertidal-B-0-3	x	0	0.099	4.37	524	15.5	524	15.5			
W-17-Intertidal-2012	W-17-Intertidal	Frankfort Flats	8/22/2012	W17-Intertidal-C-0-3	x	0	0.099	4.95	567		567				
W-17-Intertidal-2012	W-17-Intertidal	Frankfort Flats	8/22/2012	W17-Intertidal-D-0-3	x	0	0.099	4.73	609		609				
W-17-Low	W-17-Low	Frankfort Flats	8/18/2007	W17-Low-0-3	x	0	0.099	11.76	1230	67.9	1230	67.9			
W-17-Low	W-17-Low	Frankfort Flats	7/22/2008	W17-Low-0-3	x	0	0.099	6.79	413	6.81	413	6.81			
W-17-Low	W-17-Low	Frankfort Flats	8/4/2008	W17-LOW-0-3	x	0	0.099	13.75	1540	16.8	1540	16.8			
W-17-Low	W-17-Low	Frankfort Flats	8/20/2008	W17-Low-0-3	x	0	0.099	19.36	996	48.3	996	48.3			
W-17-Low	W-17-Low	Frankfort Flats	9/3/2008	W17-Low-0-3	x	0	0.099	17.12	908	69.9	908	69.9			
W-17-Low	W-17-Low	Frankfort Flats	9/18/2008	W17-Low-0-3	x	0	0.099	16.45	1220	29.1	1220	29.1			
W-17-Low	W-17-Low	Frankfort Flats	9/30/2008	W17 Low	x	0	0.099	16.09	1050	26.5	1050	26.5			
W-17-Low	W-17-Low	Frankfort Flats	10/21/2008	W17-LOW-0-3	x	0	0.099	19.18	1060	20.4	1060	20.4			
W-17-Low	W-17-Low	Frankfort Flats	5/12/2009	W17-LOW-0-3	x	0	0.099	7.89	305	12.9	305	12.9			
W-17-Low	W-17-Low	Frankfort Flats	6/2/2009	W17-LOW-0-3	x	0	0.099	4.86	785	12.4	785	12.4			
W-17-Low	W-17-Low	Frankfort Flats	6/24/2009	W17-Low	x	0	0.099	9.98	1410	40.7	1410	40.7			
W-17-Low	W-17-Low	Frankfort Flats	7/15/2009	W17 Low	x	0	0.099	7.22	565	17.6	565	17.6			
W-17-Low	W-17-Low	Frankfort Flats	8/4/2009	W17-Low-0-3	x	0	0.099	3.16	566	11.6	566	11.6			
W-17-Low	W-17-Low	Frankfort Flats	8/13/2009	PB09-5540-0-3	x	0	0.099		689	29	689	29			
W-17-Low	W-17-Low	Frankfort Flats	8/13/2009	PB09-5541-3-6		0.099	0.198		436	10.8	436	10.8			
W-17-Low	W-17-Low	Frankfort Flats	8/13/2009	PB09-5542-6-9		0.198	0.297		466	5.68	466	5.68			
W-17-Low	W-17-Low	Frankfort Flats	8/13/2009	PB09-5543-9-12		0.297	0.396		377	3.83	377	3.83			
W-17-Low	W-17-Low	Frankfort Flats	8/13/2009	PB09-0-12_ave					492	12.3275	492	12.3275			
W-17-Low	W-17-Low	Frankfort Flats	9/2/2009	W17-Low-0-3	x	0	0.099	10.5	2510	75.2	2510	75.2			
W-17-Low	W-17-Low	Frankfort Flats	6/3/2010	PB10-8145-0-3	x	0	0.099		849	17.6	849	17.6			
W-17-Low	W-17-Low	Frankfort Flats	6/3/2010	PB10-8146-3-6		0.099	0.198		324	3.18	324	3.18			
W-17-Low	W-17-Low	Frankfort Flats	6/3/2010	PB10-8147-6-9		0.198	0.297		213	0.38	213	0.38			
W-17-Low	W-17-Low	Frankfort Flats	6/3/2010	PB10-0-9_ave					462	7.053333333	462	7.053333333			
W-17-Low	W-17-Low	Frankfort Flats	8/24/2010	W-17-Low 0-3-0-3	x	0	0.099	6.3475	1405.25	26.15	1405.25	26.15			
W-17-Low-2012	W-17-Low	Frankfort Flats	8/22/2012	W17-Low-A-0-3	x	0	0.099	9.19	866	61.5	866	61.5			
W-17-Low-2012	W-17-Low	Frankfort Flats	8/22/2012	W17-Low-B-0-3	x	0	0.099	11.3	933	58.6	933	58.6			
W-17-Low-2012	W-17-Low	Frankfort Flats	8/22/2012	W17-Low-C-0-3	x	0	0.099	10.2	915		915				
W-17-Low-2012	W-17-Low	Frankfort Flats	8/22/2012	W17-Low-D-0-3	x	0	0.099	11.1	1000		1000				
W-21-High	W-21-High	Mendall Marsh	8/22/2007	W21-High-0-3	x	0	0.099	4.8	779	49.3	779	49.3			
W-21-High	W-21-High	Mendall Marsh	7/23/2008	W21-High-0-3	x	0	0.099	11.5	873	28.6	873	28.6			
W-21-High	W-21-High	Mendall Marsh	8/5/2008	W21-HIGH-0-3	x	0	0.099	19.2	595	47.2	595	47.2			
W-21-High	W-21-High	Mendall Marsh	8/20/2008	W21-High-0-3	x	0	0.099	12.9	755	35	755	35			
W-21-High	W-21-High	Mendall Marsh	9/3/2008	W21-High-0-3	x	0	0.099	10.7	654	21.1	654	21.1			
W-21-High	W-21-High	Mendall Marsh	9/18/2008	W21-High-0-3	x	0	0.099	13.6	608	30	608	30			
W-21-High	W-21-High	Mendall Marsh	9/30/2008	W21 High	x	0	0.099	15.8	600	46.4	600	46.4			
W-21-High	W-21-High	Mendall Marsh	10/21/2008	W21-HIGH-0-3	x	0	0.099	17.4	589	44.5	589	44.5			
W-21-High	W-21-High	Mendall Marsh	5/12/2009	W21-HIGH-0-3	x	0	0.099	8.48	908	46.5	908	46.5			
W-21-High	W-21-High	Mendall Marsh	6/3/2009	W21-HIGH-0-3	x	0	0.099	7.54	378	22	378	22			
W-21-High	W-21-High	Mendall Marsh	6/25/2009	W21-High	x	0	0.099	11	413	40.7	413	40.7			
W-21-High	W-21-High	Mendall Marsh	7/15/2009	W21-High	x	0	0.099	9.57	706	49.4	706	49.4			
W-21-High	W-21-High	Mendall Marsh	8/4/2009	W21-High-0-3	x	0	0.099	8.68	341	25.4	341	25.4			
W-21-High	W-21-High	Mendall Marsh	8/26/2009	PB09-6120-0-3	x	0	0.099		923	42.6	923	42.6			
W-21-High	W-21-High	Mendall Marsh	8/26/2009	PB09-6121-3-6		0.099	0.198		820	32.7	820	32.7			
W-21-High	W-21-High	Mendall Marsh	8/26/2009	PB09-6122-6-9		0.198	0.297		1221	17.3	1221	17.3			
W-21-High	W-21-High	Mendall Marsh	8/26/2009	PB09-6123-9-12		0.297	0.396		1321	32.2	1321	32.2			
W-21-High	W-21-High	Mendall Marsh	8/26/2009	PB09-0-12_ave					1071.25	31.2	1071.25	31.2			
W-21-High	W-21-High	Mendall Marsh	9/2/2009	W21-High-0-3	x	0	0.099	7.21	441	35.6	441	35.6			
W-21-High	W-21-High	Mendall Marsh	6/1/2010	PB10-8268-0-3	x	0	0.099		762	36.3	762	36.3			
W-21-High	W-21-High	Mendall Marsh	6/1/2010	PB10-8269-3-6		0.099	0.198		1259	32.4	1259	32.4			
W-21-High	W-21-High	Mendall Marsh	6/1/2010	PB10-8270-6-9		0.198	0.297		931	37.2	931	37.2			
W-21-High	W-21-High	Mendall Marsh	6/1/2010	PB10-0-9_ave					984	35.3	984	35.3			
W-21-High	W-21-High	Mendall Marsh	8/26/2010	W-21-High 0-3-0-3	x	0	0.099	8.315	588	31.35	588	31.35			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
W-21-High	W-21-High	Mendall Marsh	4/12/2011	PB11-5000-0-3	x	0	0.099		536	39	536	39			
W-21-High	W-21-High	Mendall Marsh	8/22/2012	W21-High-A				16	429	44.8	429	44.8			
W-21-High	W-21-High	Mendall Marsh	8/22/2012	W21-High-B				16.7	684	27.9	684	27.9			
W-21-High	W-21-High	Mendall Marsh	8/22/2012	W21-High-C				13.2	821		821				
W-21-High	W-21-High	Mendall Marsh	8/22/2012	W21-High-D				15.5	488		488				
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/22/2007	W21-Intertidal-0-3	x	0	0.099	3.2	1400	29.9	1400	29.9			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	7/23/2008	W21-Intertidal-0-3	x	0	0.099	6.9	959	29.5	959	29.5			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/5/2008	W21-INTERTIDAL-0-3	x	0	0.099	6.88	962	22.6	962	22.6			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/20/2008	W21-Intertidal-0-3	x	0	0.099	8.8	1100	38.1	1100	38.1			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	9/3/2008	W21-Intertidal-0-3	x	0	0.099	7.78	1340	29.6	1340	29.6			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	9/18/2008	W21-Intertidal-0-3	x	0	0.099	7.28	890	24.7	890	24.7			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	9/30/2008	W21 Intertidal	x	0	0.099	9.14	1090	22.2	1090	22.2			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	10/21/2008	W21-INTERTIDAL-0-3	x	0	0.099	5.75	789	17.1	789	17.1			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	5/12/2009	W21-INTERTIDAL-0-3	x	0	0.099	4.98	1120	33.2	1120	33.2			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	6/3/2009	W21-INTERTIDAL-0-3	x	0	0.099	5.76	866	19.2	866	19.2			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	6/25/2009	W21-Intertidal	x	0	0.099	4.72	1220	30.3	1220	30.3			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	7/15/2009	W21-Intertidal	x	0	0.099	5.85	1450	35.8	1450	35.8			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/4/2009	W21-Intertidal-0-3	x	0	0.099	6.5	863	23.5	863	23.5			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5820-0-3		0	0.099		1154	24.9	1154	24.9			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5821-3-6		0.099	0.198		1192	32.6	1192	32.6			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5822-6-9		0.198	0.297		1126	33	1126	33			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5823-9-12		0.297	0.396		1129	21	1129	21			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-0-12					1150.25	27.875	1150.25	27.875			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5824-0-3		0	0.099		1004	26.9	1004	26.9			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5825-3-6		0.099	0.198		1130	26.1	1130	26.1			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5826-6-9		0.198	0.297		1197	26	1197	26			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5827-9-12		0.297	0.396		1228	23.6	1228	23.6			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-0-12					1139.75	25.65	1139.75	25.65			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5828-0-3		0	0.099		1314	26.1	1314	26.1			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5829-3-6		0.099	0.198		1221	28.5	1221	28.5			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5830-6-9		0.198	0.297		1036	25.2	1036	25.2			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-5831-9-12		0.297	0.396		1130	24.6	1130	24.6			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-0-12					1175.25	26.1	1175.25	26.1			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-all-0-12_ave					1155.083333	26.54166667	1155.083333	26.54166667			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/10/2009	PB09-all-0-3_ave	x				1157.333	25.967	1157.333	25.967			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	9/2/2009	W21-Intertidal-0-3	x	0	0.099	5.71	1140	21.6	1140	21.6			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/26/2010	W-21-Intertidal 0-3-0-3	x	0	0.099	3.575	657.75	13.2075	657.75	13.2075			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/22/2012	W21-Intertidal-A				5.37	591	16.2	591	16.2			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/22/2012	W21-Intertidal-B				6.5	723	22.2	723	22.2			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/22/2012	W21-Intertidal-C				6.47	738		738				
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	8/22/2012	W21-Intertidal-D				6.85	759		759				
W-21-Low	W-21-Low	Mendall Marsh	8/22/2007	W21-Low-0-3	x	0	0.099	2.7	1030	36.7	1030	36.7			
W-21-Low	W-21-Low	Mendall Marsh	7/23/2008	W21-Low-0-3	x	0	0.099	7.39	1040	29.1	1040	29.1			
W-21-Low	W-21-Low	Mendall Marsh	8/5/2008	W21-LOW-0-3	x	0	0.099	8.03	944	28.4	944	28.4			
W-21-Low	W-21-Low	Mendall Marsh	8/20/2008	W21-Low-0-3	x	0	0.099	7.16	1040	39.4	1040	39.4			
W-21-Low	W-21-Low	Mendall Marsh	9/3/2008	W21-Low-0-3	x	0	0.099	5.38	1240	37.8	1240	37.8			
W-21-Low	W-21-Low	Mendall Marsh	9/18/2008	W21-Low-0-3	x	0	0.099	11.2	903	32.2	903	32.2			
W-21-Low	W-21-Low	Mendall Marsh	9/30/2008	W21 Low	x	0	0.099	8.48	1100	15.5	1100	15.5			
W-21-Low	W-21-Low	Mendall Marsh	10/21/2008	W21-LOW-0-3	x	0	0.099	8.53	1030	24.4	1030	24.4			
W-21-Low	W-21-Low	Mendall Marsh	5/12/2009	W21-LOW-0-3	x	0	0.099	4.76	892	30.2	892	30.2			
W-21-Low	W-21-Low	Mendall Marsh	6/3/2009	W21-LOW-0-3	x	0	0.099	4.49	848	15.9	848	15.9			
W-21-Low	W-21-Low	Mendall Marsh	6/25/2009	W21-Low	x	0	0.099	4.83	893	38	893	38			
W-21-Low	W-21-Low	Mendall Marsh	7/15/2009	W21-Low	x	0	0.099	4.76	1050	41.5	1050	41.5			
W-21-Low	W-21-Low	Mendall Marsh	8/4/2009	W21-Low-0-3	x	0	0.099	5.19	872	24.9	872	24.9			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5920-0-3		0	0.099		911	29.3	911	29.3			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5921-3-6		0.099	0.198		1156	20	1156	20			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5922-6-9		0.198	0.297		1177	17.3	1177	17.3			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5923-9-12		0.297	0.396		1279	8.91	1279	8.91			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-0-12					1130.75	18.8775	1130.75	18.8775			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5924-0-3		0	0.099		1066	33.7	1066	33.7			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5925-3-6		0.099	0.198		1063	27.4	1063	27.4			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5926-6-9		0.198	0.297		1192	9.89	1192	9.89			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5927-9-12		0.297	0.396		1292	6.46	1292	6.46			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-0-12					1153.25	19.3625	1153.25	19.3625			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5928-0-3		0	0.099		1076	29.1	1076	29.1			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5929-3-6		0.099	0.198		1075	28.6	1075	28.6			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5930-6-9		0.198	0.297		1201	25.5	1201	25.5			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-5931-9-12		0.297	0.396		1306	5.91	1306	5.91			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-0-12					1164.5	22.2775	1164.5	22.2775			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-all-0-12_ave					1149.5	20.1725	1149.5	20.1725			
W-21-Low	W-21-Low	Mendall Marsh	8/13/2009	PB09-all-0-3_ave	x				1017.67	30.7	1017.67	30.7			
W-21-Low	W-21-Low	Mendall Marsh	9/2/2009	W21-Low-0-3	x	0	0.099	4.51	823	25.5	823	25.5			
W-21-Low	W-21-Low	Mendall Marsh	6/2/2010	PB10-8227-0-3	x	0	0.099		1212	22.1	1212	22.1			
W-21-Low	W-21-Low	Mendall Marsh	6/2/2010	PB10-8228-3-6		0.099	0.198		1237	23.4	1237	23.4			
W-21-Low	W-21-Low	Mendall Marsh	6/2/2010	PB10-8229-6-9		0.198	0.297		1147	17.5	1147	17.5			
W-21-Low	W-21-Low	Mendall Marsh	6/2/2010	PB10-0-9_ave					1198.666667	21	1198.666667	21			
W-21-Low	W-21-Low	Mendall Marsh	8/26/2010	W-21-Low 0-3-0-3	x	0	0.099	5.1775	1029.25	20.25	1029.25	20.25			
W-21-Low	W-21-Low	Mendall Marsh	4/12/2011	PB11-5003-0-3	x	0	0.099		584	36.2	584	36.2			
W-21-Low	W-21-Low	Mendall Marsh	8/22/2012	W21-Low-A				7.88	770	32.5	770	32.5			
W-21-Low	W-21-Low	Mendall Marsh	8/22/2012	W21-Low-B				8.19	919	22.8	919	22.8			
W-21-Low	W-21-Low	Mendall Marsh	8/22/2012	W21-Low-C				8.44	890		890				
W-21-Low	W-21-Low	Mendall Marsh	8/22/2012	W21-Low-D				8.27	816		816				
W-21-Mid	W-21-Mid	Mendall Marsh	8/19/2007	W31-Medium-0-3	x	0	0.099	0.92	17.6	0.58	17.6	0.58			
W-21-Mid	W-21-Mid	Mendall Marsh	8/22/2007	W21-Medium-0-3	x	0	0.099	3	948	29.4	948	29.4			
W-21-Mid	W-21-Mid	Mendall Marsh	7/23/2008	W21-Medium-0-3	x	0	0.099	6.53	1110	37.4	1110	37.4			
W-21-Mid	W-21-Mid	Mendall Marsh	8/5/2008	W21-MEDIUM-0-3	x	0	0.099	10.3	666	17.6	666	17.6			
W-21-Mid	W-21-Mid	Mendall Marsh	8/20/2008	W21-Medium-0-3	x	0	0.099	9.1	1000	73.3	1000	73.3			
W-21-Mid	W-21-Mid	Mendall Marsh	9/3/2008	W21-Medium-0-3	x	0	0.099	11.5	885	57.1	885	57.1			
W-21-Mid	W-21-Mid	Mendall Marsh	9/18/2008	W21-Medium-0-3	x	0	0.099	18.9	786	37.8	786	37.8			
W-21-Mid	W-21-Mid	Mendall Marsh	9/30/2008	W21 Mid	x	0	0.099	12.5	785	27	785	27			
W-21-Mid	W-21-Mid	Mendall Marsh	10/21/2008	W21-MEDIUM-0-3	x	0	0.099	12.4	1020	30.5	1020	30.5			
W-21-Mid	W-21-Mid	Mendall Marsh	5/12/2009	W21-MID-0-3	x	0	0.099	6.78	775	49.2	775	49.2			
W-21-Mid	W-21-Mid	Mendall Marsh	6/3/2009	W21-MID-0-3	x	0	0.099	7.16	859	25.3	859	25.3			
W-21-Mid	W-21-Mid	Mendall Marsh	6/25/2009	W21-Mid	x	0	0.099	7.52	839	65	839	65			
W-21-Mid	W-21-Mid	Mendall Marsh	7/15/2009	W21-Mid	x	0	0.099	7.21	796	64.4	796	64.4			
W-21-Mid	W-21-Mid	Mendall Marsh	8/4/2009	W21-Mid-0-3	x	0	0.099	7.56	752	52.4	752	52.4			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6020-0-3		0	0.099		968	29.8	968	29.8			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6021-3-6		0.099	0.198		1086	18.3	1086	18.3			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6022-6-9		0.198	0.297		995	9.26	995	9.26			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6023-9-12		0.297	0.396		1222	6.98	1222	6.98			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-0-12					1067.75	16.085	1067.75	16.085			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6024-0-3		0	0.099		1068	31	1068	31			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6025-3-6		0.099	0.198		1061	24.4	1061	24.4			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6026-6-9		0.198	0.297		1032	14.1	1032	14.1			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6027-9-12		0.297	0.396		1064	6.54	1064	6.54			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-0-12					1056.25	19.01	1056.25	19.01			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6028-0-3		0	0.099		1082	25.6	1082	25.6			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6029-3-6		0.099	0.198		1081	22	1081	22			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6030-6-9		0.198	0.297		931	14.1	931	14.1			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-6031-9-12		0.297	0.396		1252	9.45	1252	9.45			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-0-12					1086.5	17.7875	1086.5	17.7875			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-all-0-12_ave					1070.166667	17.6275	1070.166667	17.6275			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2009	PB09-all-0-3_ave	x				1039.333	28.8	1039.333	28.8			
W-21-Mid	W-21-Mid	Mendall Marsh	9/2/2009	W21-Mid-0-3	x	0	0.099	4.92	702	37.3	702	37.3			
W-21-Mid	W-21-Mid	Mendall Marsh	8/26/2010	W-21-Mid 0-3-0-3	x	0	0.099	6.2475	834	18.625	834	18.625			
W-21-Mid	W-21-Mid	Mendall Marsh	8/22/2012	W21-Mid-A				11.9	626	38.5	626	38.5			
W-21-Mid	W-21-Mid	Mendall Marsh	8/22/2012	W21-Mid-B				11.8	796	46.3	796	46.3			
W-21-Mid	W-21-Mid	Mendall Marsh	8/22/2012	W21-Mid-C				12.3	622		622				
W-21-Mid	W-21-Mid	Mendall Marsh	8/22/2012	W21-Mid-D				11.4	714		714				
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	5/29/2010	PB10-8555-0-3	x	0	0.099		641	19.4	641	19.4			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	5/29/2010	PB10-8556-3-6		0.099	0.198		826	64.1	826	64.1			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	5/29/2010	PB10-8557-6-9		0.198	0.297		1121	43.5	1121	43.5			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	5/29/2010	PB10-0-9_ave					862.6666667	42.33333333	862.6666667	42.33333333			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	5/31/2010	PB10-8838-0-3	x	0	0.099		535	18.7	535	18.7			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	6/2/2010	PB10-8876-0-3	x	0	0.099		676	14.2	676	14.2			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	6/5/2010	PB10-8850-0-3	x	0	0.099		640	22.9	640	22.9			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	8/25/2010	W21-UM-CentralC-Upper-RepA-0-3	x	0	0.099	8.96	569	29.1	569	29.1			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	8/25/2010	W21-UM-CentralC-Upper-RepB-0-3	x	0	0.099	10.8	496	18	496	18			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	8/25/2010	W21-UM-CentralC-Upper-RepC-0-3	x	0	0.099	10.8	546	17.2	546	17.2			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	8/25/2010	W21-UM-CentralC-Upper-RepD-0-3	x	0	0.099	13	472	10.7	472	10.7			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	4/12/2011	PB11-5012-0-3	x	0	0.099		405	40	405	40			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	8/21/2012	W21-UM-Central C-Upper-A-0-3	x	0	0.099	26.2	189	13.7	189	13.7			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	8/21/2012	W21-UM-Central C-Upper-B-0-3	x	0	0.099	28.3	218	15.5	218	15.5			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	8/21/2012	W21-UM-Central C-Upper-C-0-3	x	0	0.099	29.7	197		197				
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	8/21/2012	W21-UM-Central C-Upper-D-0-3	x	0	0.099	23.8	200		200				
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	5/28/2010	PB10-8514-0-3	x	0	0.099		673	51.8	673	51.8			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	5/28/2010	PB10-8515-3-6		0.099	0.198		719	49.2	719	49.2			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	5/28/2010	PB10-8516-6-9		0.198	0.297		900	41.2	900	41.2			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	5/28/2010	PB10-0-9_ave					764	47.4	764	47.4			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	5/31/2010	PB10-8762-0-3	x	0	0.099		575	69.4	575	69.4			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	6/2/2010	PB10-8864-0-3	x	0	0.099		652	75.5	652	75.5			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	6/5/2010	PB10-8774-0-3	x	0	0.099		598	76.3	598	76.3			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	8/25/2010	W21-UM-EastC-Upper-RepA-0-3	x	0	0.099	8.6	682	80	682	80			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	8/25/2010	W21-UM-EastC-Upper-RepB-0-3	x	0	0.099	8.44	563	35.5	563	35.5			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	8/25/2010	W21-UM-EastC-Upper-RepC-0-3	x	0	0.099	9.25	444	36.4	444	36.4			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	8/25/2010	W21-UM-EastC-Upper-RepD-0-3	x	0	0.099	10	705	31.8	705	31.8			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	4/12/2011	PB11-5015-0-3	x	0	0.099		518	98.4	518	98.4			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	8/22/2012	W21-UM-East C-Upper-A-0-3	x	0	0.099	14.1	593	55.1	593	55.1			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	8/22/2012	W21-UM-East C-Upper-B-0-3	x	0	0.099	14.9	494	27.1	494	27.1			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	8/22/2012	W21-UM-East C-Upper-C-0-3	x	0	0.099	12.7	632		632				
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	8/22/2012	W21-UM-East C-Upper-D-0-3	x	0	0.099	14.3	559		559				
W-21-UM-South	W-21-UM-South	Mendall Marsh	6/1/2010	PB10-8596-0-3	x	0	0.099		484	39.7	484	39.7			
W-21-UM-South	W-21-UM-South	Mendall Marsh	6/1/2010	PB10-8597-3-6		0.099	0.198		514	18.4	514	18.4			
W-21-UM-South	W-21-UM-South	Mendall Marsh	6/1/2010	PB10-8598-6-9		0.198	0.297		1160	15.3	1160	15.3			
W-21-UM-South	W-21-UM-South	Mendall Marsh	6/1/2010	PB10-0-9_ave					719.3333333	24.46666667	719.3333333	24.46666667			
W-21-UM-South	W-21-UM-South	Mendall Marsh	8/24/2010	W21-South-Upper-RepA-0-3	x	0	0.099	4.72	952	22.6	952	22.6			
W-21-UM-South	W-21-UM-South	Mendall Marsh	8/24/2010	W21-South-Upper-RepB-0-3	x	0	0.099	5.12	938	22.2	938	22.2			
W-21-UM-South	W-21-UM-South	Mendall Marsh	8/24/2010	W21-South-Upper-RepC-0-3	x	0	0.099	5.69	882	19.5	882	19.5			
W-21-UM-South	W-21-UM-South	Mendall Marsh	8/24/2010	W21-South-Upper-RepD-0-3	x	0	0.099	5.29	1230	6.32	1230	6.32			
W-21-UM-South	W-21-UM-South	Mendall Marsh	4/12/2011	PB11-5006-0-3	x	0	0.099		284	61.1	284	61.1			
W-21-UM-South	W-21-UM-South	Mendall Marsh	8/21/2012	W21-UM-South-Upper-A-0-3	x	0	0.099	20.7	266	43	266	43			
W-21-UM-South	W-21-UM-South	Mendall Marsh	8/21/2012	W21-UM-South-Upper-B-0-3	x	0	0.099	23.7	216	32	216	32			
W-21-UM-South	W-21-UM-South	Mendall Marsh	8/21/2012	W21-UM-South-Upper-C-0-3	x	0	0.099	18.3	365		365				
W-21-UM-South	W-21-UM-South	Mendall Marsh	8/21/2012	W21-UM-South-Upper-D-0-3	x	0	0.099	18.5	348		348				
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/13/2009	W21-Upper-West-A-0-3	x	0	0.099		304	24.3	304	24.3			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/21/2009	W21-Upper-West-A-0-3	x	0	0.099		161	14.5	161	14.5			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/24/2009	W21-Upper-West-A-0-3	x	0	0.099		198	24.4	198	24.4			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/28/2009	PB09-6779-0-3	x	0	0.099		180	15.1	180	15.1			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/28/2009	PB09-6780-3-6		0.099	0.198		258	13.3	258	13.3			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/28/2009	PB09-6781-6-9		0.198	0.297		761	8	761	8			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/28/2009	PB09-6782-9-12		0.297	0.396		588	4.34	588	4.34			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/28/2009	PB09-0-12_ave					446.75	10.185	446.75	10.185			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	5/27/2010	PB10-8634-0-3	x	0	0.099		241	13.2	241	13.2			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	5/30/2010	PB10-8473-0-3	x	0	0.099		245	35.6	245	35.6			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	5/30/2010	PB10-8474-3-6		0.099	0.198		470	10.1	470	10.1			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	5/30/2010	PB10-8475-6-9		0.198	0.297		664	7.19	664	7.19			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	5/30/2010	PB10-0-9_ave					459.6666667	17.63	459.6666667	17.63			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/2/2010	PB10-8686-0-3	x	0	0.099		185	22.3	185	22.3			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/5/2010	PB10-8698-0-3	x	0	0.099		187	15.2	187	15.2			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/25/2010	W21-UM-WestA-Upper-RepA-0-3	x	0	0.099	14.3	237	4.1	237	4.1			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/25/2010	W21-UM-WestA-Upper-RepB-0-3	x	0	0.099	15.7	179	6.58	179	6.58			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/25/2010	W21-UM-WestA-Upper-RepC-0-3	x	0	0.099	13.7	377	10.5	377	10.5			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/25/2010	W21-UM-WestA-Upper-RepD-0-3	x	0	0.099	14.8	348	7.46	348	7.46			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/21/2010	PB10-9008-0-3		0	0.099		235	9.06	235	9.06			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/21/2010	PB10-9020-0-3		0	0.099		202	9.71	202	9.71			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/21/2010	PB10-9032-0-3		0	0.099		302	7.54	302	7.54			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/21/2010	PB10-9044-0-3		0	0.099		277	9.52	277	9.52			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/21/2010	PB10-9056-0-3		0	0.099		282	9.64	282	9.64			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/21/2010	PB10-0-3_ave	x				259.6	9.094	259.6	9.094			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9089-0-3		0	0.099		212	15.7	212	15.7			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9102-0-3		0	0.099		142	11.2	142	11.2			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9115-0-3		0	0.099		188	11.1	188	11.1			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9129-0-3		0	0.099		258	7.33	258	7.33			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9142-0-3		0	0.099		171	7.42	171	7.42			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9155-0-3		0	0.099		144	11.3	144	11.3			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9169-0-3		0	0.099		164	10	164	10			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9182-0-3		0	0.099		192	17.9	192	17.9			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9195-0-3		0	0.099		208	17.2	208	17.2			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9209-0-3		0	0.099		248	8.95	248	8.95			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9222-0-3		0	0.099		301	14.9	301	14.9			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9235-0-3		0	0.099		260	10.7	260	10.7			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9249-0-3		0	0.099		172	9.78	172	9.78			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9262-0-3		0	0.099		185	25.5	185	25.5			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-9275-0-3		0	0.099		210	38.2	210	38.2			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/19/2010	PB10-0-3_ave	x				203.6666667	14.47866667	203.6666667	14.47866667			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/20/2010	PB10-9489-0-3		0	0.099		29	1.45	29	1.45			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/20/2010	PB10-9502-0-3		0	0.099		10	1.12	10	1.12			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/20/2010	PB10-9515-0-3		0	0.099		203	6.8	203	6.8			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	10/20/2010	PB10-0-3_ave	x				80.66666667	3.123333333	80.66666667	3.123333333			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	4/12/2011	PB11-5018-0-3	x	0	0.099		193	19.5	193	19.5			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5029-0-3		0	0.099		233	13.9	233	13.9			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5041-0-3		0	0.099		309	24	309	24			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5053-0-3		0	0.099		237	24.5	237	24.5			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5065-0-3		0	0.099		295	27.1	295	27.1			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5077-0-3		0	0.099		166	16.1	166	16.1			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5089-0-3		0	0.099		226	13.1	226	13.1			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5101-0-3		0	0.099		302	13.2	302	13.2			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5113-0-3		0	0.099		208	9.6	208	9.6			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5125-0-3		0	0.099		298	15.6	298	15.6			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5137-0-3		0	0.099		202	10	202	10			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5149-0-3		0	0.099		337	38.2	337	38.2			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5161-0-3		0	0.099		306	39.9	306	39.9			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5173-0-3		0	0.099		268	31	268	31			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5185-0-3		0	0.099		282	13.9	282	13.9			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-5197-0-3		0	0.099		280	34.4	280	34.4			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	6/7/2011	PB11-0-3_ave	x				263.2666667	21.63333333	263.2666667	21.63333333			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5868-0-3		0	0.099		189	28.8	189	28.8			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5879-0-3		0	0.099		183	37	183	37			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5890-0-3		0	0.099		140	17.1	140	17.1			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5901-0-3		0	0.099		222	22.5	222	22.5			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5912-0-3		0	0.099		194	17.7	194	17.7			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5923-0-3		0	0.099		182	16.9	182	16.9			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5934-0-3		0	0.099		188	31	188	31			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5945-0-3		0	0.099		184	12.7	184	12.7			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5956-0-3		0	0.099		206	28.4	206	28.4			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5967-0-3		0	0.099		247	13.3	247	13.3			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5978-0-3		0	0.099		243	28.7	243	28.7			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-5989-0-3		0	0.099		260	32.5	260	32.5			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-6000-0-3		0	0.099		218	37.5	218	37.5			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-6011-0-3		0	0.099		196	17.8	196	17.8			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-6022-0-3		0	0.099		238	23.1	238	23.1			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/29/2011	PB11-0-3_ave	x				206	24.33333333	206	24.33333333			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/21/2012	W21-UM-West A-Upper-A-0-3	x	0	0.099	31	134	5.83	134	5.83			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/21/2012	W21-UM-West A-Upper-B-0-3	x	0	0.099	32	131	6.93	131	6.93			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/21/2012	W21-UM-West A-Upper-C-0-3	x	0	0.099	28.9	214		214				
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	8/21/2012	W21-UM-West A-Upper-D-0-3	x	0	0.099	29.8	142		142				
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/25/2012	PB12-6229-0-3		0	0.099		179	23.4	179	23.4			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/25/2012	PB12-6241-0-3		0	0.099		150	11.3	150	11.3			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/25/2012	PB12-6253-0-3		0	0.099		128	7.75	128	7.75			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/25/2012	PB12-6265-0-3		0	0.099		136	12.1	136	12.1			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/25/2012	PB12-6277-0-3		0	0.099		176	17.3	176	17.3			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/25/2012	PB12-6289-0-3		0	0.099		161	19.9	161	19.9			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/25/2012	PB12-6301-0-3		0	0.099		246	16.6	246	16.6			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/25/2012	PB12-6313-0-3		0	0.099		201	31	201	31			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/25/2012	PB12-6325-0-3		0	0.099		175	8.67	175	8.67			
W-21-UM-West-A	W-21-UM-West-A	Mendall Marsh	9/25/2012	PB12-0-3_ave	x				172.4	16.45	172.4	16.45			
W-61-High	W-61-High	Verona East	8/19/2007	W61-High-0-3	x	0	0.099	6.2	259	3.5	259	3.5			
W-61-High	W-61-High	Verona East	8/23/2012	W61-High-A-0-3	x	0	0.099	11.4	147	4.93	147	4.93			
W-61-High	W-61-High	Verona East	8/23/2012	W61-High-B-0-3	x	0	0.099	29.1	640	18.9	640	18.9			
W-61-High	W-61-High	Verona East	8/23/2012	W61-High-C-0-3	x	0	0.099	26.4	529		529				
W-61-High	W-61-High	Verona East	8/23/2012	W61-High-D-0-3	x	0	0.099	7.16	76.2		76.2				
W-61-Intertidal	W-61-Intertidal	Verona East	8/19/2007	W61-Intertidal-0-3	x	0	0.099	2.9	651	18	651	18			
W-61-Intertidal	W-61-Intertidal	Verona East	8/23/2012	W61-Intertidal-A-0-3	x	0	0.099	2.5	362	12	362	12			
W-61-Intertidal	W-61-Intertidal	Verona East	8/23/2012	W61-Intertidal-B-0-3	x	0	0.099	2.12	276	10.9	276	10.9			
W-61-Intertidal	W-61-Intertidal	Verona East	8/23/2012	W61-Intertidal-C-0-3	x	0	0.099	2.16	309		309				
W-61-Intertidal	W-61-Intertidal	Verona East	8/23/2012	W61-Intertidal-D-0-3	x	0	0.099		467		467				
W-61-Low	W-61-Low	Verona East	8/19/2007	W61-Low-0-3	x	0	0.099	4.5	880	25.8	880	25.8			
W-61-Low	W-61-Low	Verona East	8/23/2012	W61-Low-A-0-3	x	0	0.099	10.4	502	13.3	502	13.3			
W-61-Low	W-61-Low	Verona East	8/23/2012	W61-Low-B-0-3	x	0	0.099	11.3	483	11.5	483	11.5			
W-61-Low	W-61-Low	Verona East	8/23/2012	W61-Low-C-0-3	x	0	0.099	10.5	498		498				
W-61-Low	W-61-Low	Verona East	8/23/2012	W61-Low-D-0-3	x	0	0.099	10.1	576		576				
W-61-Mid	W-61-Mid	Verona East	8/19/2007	W61-Medium-0-3	x	0	0.099	4.5	742	25.7	742	25.7			
W-61-Mid	W-61-Mid	Verona East	8/23/2012	W61-Mid-A-0-3	x	0	0.099	9.27	274	9.07	274	9.07			
W-61-Mid	W-61-Mid	Verona East	8/23/2012	W61-Mid-B-0-3	x	0	0.099	15.5	382	12.5	382	12.5			
W-61-Mid	W-61-Mid	Verona East	8/23/2012	W61-Mid-C-0-3	x	0	0.099	10.2	236		236				
W-61-Mid	W-61-Mid	Verona East	8/23/2012	W61-Mid-D-0-3	x	0	0.099	12.8	530		530				
W-63-High	W-63-High	Orrington	7/22/2008	W63-High-0-3	x	0	0.099	4.87	727	12.4	727	12.4			
W-63-High	W-63-High	Orrington	8/4/2008	W63-HIGH-0-3	x	0	0.099	6.94	1030	25.2	1030	25.2			
W-63-High	W-63-High	Orrington	8/20/2008	W63-High-0-3	x	0	0.099	5.64	371	6.45	371	6.45			
W-63-High	W-63-High	Orrington	9/3/2008	W63-High-0-3	x	0	0.099	5.92	603	21.1	603	21.1			
W-63-High	W-63-High	Orrington	9/16/2008	W63-High-0-3	x	0	0.099	5.81	420	9.15	420	9.15			
W-63-High	W-63-High	Orrington	9/30/2008	W63-High-0-3	x	0	0.099	5.53	752	8.29	752	8.29			
W-63-High	W-63-High	Orrington	10/21/2008	W63-HIGH-0-3	x	0	0.099	8.89	242	4.91	242	4.91			
W-63-High	W-63-High	Orrington	5/12/2009	W63-HIGH-0-3	x	0	0.099	2.39	320	4.2	320	4.2			
W-63-High	W-63-High	Orrington	6/2/2009	W63-HIGH-0-3	x	0	0.099	2.95	319	19.2	319	19.2			
W-63-High	W-63-High	Orrington	6/24/2009	W63-High	x	0	0.099	2.02	214	3.57	214	3.57			
W-63-High	W-63-High	Orrington	7/16/2009	W63-High	x	0	0.099	2.44	299	7.1	299	7.1			
W-63-High	W-63-High	Orrington	8/4/2009	W63-High-0-3	x	0	0.099	2.41	221	9.73	221	9.73			
W-63-High	W-63-High	Orrington	9/1/2009	W63-High-0-3	x	0	0.099	2.63	405	19.9	405	19.9			
W-63-High	W-63-High	Orrington	8/25/2010	W-63-High 0-3-0-3	x	0	0.099	2.4525	300.25	6.055	300.25	6.055			
W-65-High	W-65-High	Mendall Marsh	8/25/2010	W-65-High 0-3-0-3	x	0	0.099	11.7225	186.5	15.2925	186.5	15.2925			
W-65-High	W-65-High	Mendall Marsh	8/22/2012	W65-High-A				30.4	279	48.3	279	48.3			
W-65-High	W-65-High	Mendall Marsh	8/22/2012	W65-High-B				32.2	239	14.9	239	14.9			
W-65-High	W-65-High	Mendall Marsh	8/22/2012	W65-High-C				32.9	126		126				
W-65-High	W-65-High	Mendall Marsh	8/22/2012	W65-High-D				30.2	125		125				
W-65-Intertidal	W-65-Intertidal	Mendall Marsh	8/26/2010	W-65-Intertidal 0-3-0-3	x	0	0.099	3.84	655.25	12.745	655.25	12.745			
W-65-Intertidal	W-65-Intertidal	Mendall Marsh	8/22/2012	W65-Intertidal-A				4.01	308	8.55	308	8.55			
W-65-Intertidal	W-65-Intertidal	Mendall Marsh	8/22/2012	W65-Intertidal-B				3.44	320	9.6	320	9.6			
W-65-Intertidal	W-65-Intertidal	Mendall Marsh	8/22/2012	W65-Intertidal-C				5.93	552		552				
W-65-Intertidal	W-65-Intertidal	Mendall Marsh	8/22/2012	W65-Intertidal-D				6.28	635		635				
W-65-Mid	W-65-Mid	Mendall Marsh	8/26/2010	W-65-Mid 0-3-0-3	x	0	0.099	10.025	238.5	13.2267	238.5	13.2267			
W-65-Mid	W-65-Mid	Mendall Marsh	8/22/2012	W65-Mid-A				28.4	385	27.9	385	27.9			
W-65-Mid	W-65-Mid	Mendall Marsh	8/22/2012	W65-Mid-B				28.1	233	10.6	233	10.6			
W-65-Mid	W-65-Mid	Mendall Marsh	8/22/2012	W65-Mid-C				29.6	295		295				
W-65-Mid	W-65-Mid	Mendall Marsh	8/22/2012	W65-Mid-D				26.2	427		427				
W-65-UM-High	W-65-High	Mendall Marsh	8/26/2010	W-65-UM-High 0-3-0-3	x	0	0.099	11.395	395.75	17.925	395.75	17.925			
OB-05	OB-05	Orrington	8/8/2006	OB-5 0-1 cm		0	0.033	7.192	792.3	20.3	792.3	20.3			
OB-05	OB-05	Orrington	8/8/2006	OB-5 1-2 cm		0.033	0.066	6.851	1180	29.1	1180	29.1			
OB-05	OB-05	Orrington	8/8/2006	OB-5 2-3 cm		0.066	0.099	7.986	1303	12.5	1303	12.5			
OB-05	OB-05	Orrington	8/8/2006	OB-5 0-3 cm_ave	x			7.343	1091.77	20.63	1091.77	20.63			
OB-05	OB-05	Orrington	8/8/2006	OB-5 3-4 cm		0.099	0.132	8.888	1332	9.24	1332	9.24			
OB-05	OB-05	Orrington	8/8/2006	OB-5 4-5 cm		0.132	0.165	9.367							
OB-05	OB-05	Orrington	8/8/2006	OB-5 4-5 cm		0.132	0.165		1456	5.46	1456	5.46			
OB-05	OB-05	Orrington	8/8/2006	OB-5 5-6 cm		0.165	0.198	9.34	1420	5.74	1420	5.74			
OB-05	OB-05	Orrington	8/8/2006	OB-5 6-7 cm		0.198	0.231	7.8987	1412	4.7	1412	4.7			
OB-05	OB-05	Orrington	8/8/2006	OB-5 7-8 cm		0.231	0.264	7.8672	1406	4.46	1406	4.46			
OB-05	OB-05	Orrington	8/8/2006	OB-5 8-9 cm		0.264	0.297	8.6044	567.2	5.33	567.2	5.33			
OB-05	OB-05	Orrington	8/8/2006	OB-5 9-10 cm		0.297	0.33	9.1547	1530	4.47	1530	4.47			
OB-05	OB-05	Orrington	8/8/2006	OB-5 0-10 cm_ave				8.3149	1239.85	10.13	1239.85	10.13			
OB-05	OB-05	Orrington	9/7/2006	OB-5 0-1 cm		0	0.033	7.5557	951.4	20.637	951.4	20.637			
OB-05	OB-05	Orrington	9/7/2006	OB-5 1-2 cm		0.033	0.066	10.6036	1183	13.6613	1183	13.6613			
OB-05	OB-05	Orrington	9/7/2006	OB-5 8-9 cm		0.264	0.297	6.3881							
OB-05	OB-05	Orrington	9/7/2006	OB5 2-3 cm		0.066	0.099	9.332	1351	6.37649	1351	6.37649			
OB-05	OB-05	Orrington	9/7/2006	OB5 0-3 cm_ave	x			9.164	1161.8	13.56	1161.8	13.558			
OB-05	OB-05	Orrington	9/7/2006	OB5 3-4 cm		0.099	0.132	8.9579	1334	5.47754	1334	5.47754			
OB-05	OB-05	Orrington	9/7/2006	OB5 4-5 cm		0.132	0.165	8.9659	1315	5.96428	1315	5.96428			
OB-05	OB-05	Orrington	9/7/2006	OB5 5-6 cm		0.165	0.198	8.936	1093	4.22031	1093	4.22031			
OB-05	OB-05	Orrington	9/7/2006	OB5 6-7 cm		0.198	0.231	8.8394	1311	3.70674	1311	3.70674			
OB-05	OB-05	Orrington	9/7/2006	OB5 7-8 cm		0.231	0.264	7.5277	1105	1.63359	1105	1.63359			
OB-05	OB-05	Orrington	9/7/2006	OB5 8-9 cm		0.264	0.297		457.1	0.71726	457.1	0.71726			
OB-05	OB-05	Orrington	9/7/2006	OB5 9-10 cm		0.297	0.33	5.621	281.8	0.36079	281.8	0.36079			
OB-05	OB-05	Orrington	9/7/2006	OB5 0-10 cm_ave				8.27273	1038.23	6.27553	1038.23	6.27553			
OB-05	OB-05	Orrington	9/26/2006	OB 5-0-1		0	0.033	6.7703	958.729	14.1	958.729	14.1			
OB-05	OB-05	Orrington	9/26/2006	OB 5-2-3		0.066	0.099	9.6	986.468	17.2	986.468	17.2			
OB-05	OB-05	Orrington	9/26/2006	OB5-0-3_ave	x			8.0862	961	15.37	961	15.37			
OB-05	OB-05	Orrington	9/26/2006	OB 5-3-4		0.099	0.132	8.0905	1161.74	20.5	1161.74	20.5			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
OB-05	OB-05	Orrington	9/26/2006	OB 5-4-5		0.132	0.165		1153.2	12.5	1153.2	12.5			
OB-05	OB-05	Orrington	9/26/2006	OB 5-5-6		0.165	0.198	8.5723	1404.59	7.62	1404.59	7.62			
OB-05	OB-05	Orrington	9/26/2006	OB 5-6-7		0.198	0.231	9.2617	1140.6	3.33352	1140.6	3.33352			
OB-05	OB-05	Orrington	9/26/2006	OB 5-8-9		0.264	0.297		1662.13	4.86501	1662.13	4.86501			
OB-05	OB-05	Orrington	9/26/2006	OB-05-4-5		0.132	0.165	6.8295							
OB-05	OB-05	Orrington	9/26/2006	OB-05-8-9		0.264	0.297	7.9487							
OB-05	OB-05	Orrington	9/26/2006	OB5-1-2		0.033	0.066	7.8883	937.842	14.8	937.842	14.8			
OB-05	OB-05	Orrington	9/26/2006	OB5-7-8		0.231	0.264	6.7674	1410.46	5.08887	1410.46	5.08887			
OB-05	OB-05	Orrington	9/26/2006	OB5-9-10		0.297	0.33	7.4363	1587.34	4.78369	1587.34	4.78369			
OB-05	OB-05	Orrington	9/26/2006	OB5-0-10_ave				7.9165	1240.3099	10.479109	1240.3099	10.479109			
OB-05	OB-05	Orrington	10/24/2006	OB5-0-1		0	0.033	8.7085	1168.56	17.6637	1168.56	17.6637			
OB-05	OB-05	Orrington	10/24/2006	OB5-1-2		0.033	0.066	8.7848	1120.98	36.1446	1120.98	36.1446			
OB-05	OB-05	Orrington	10/24/2006	OB5-2-3		0.066	0.099	9.9746	1753.5	37.3466	1753.5	37.3466			
OB-05	OB-05	Orrington	10/24/2006	OB5-0-3_ave	x			9.156	1348	30.385	1348	30.385			
OB-05	OB-05	Orrington	10/24/2006	OB5-3-4		0.099	0.132	9.6647	1439.85	21.0903	1439.85	21.0903			
OB-05	OB-05	Orrington	10/24/2006	OB5-4-5		0.132	0.165	9.2839	1391.38	12.1695	1391.38	12.1695			
OB-05	OB-05	Orrington	10/24/2006	OB5-5-6		0.165	0.198	9.3889	1610.03	5.47465	1610.03	5.47465			
OB-05	OB-05	Orrington	10/24/2006	OB5-6-7		0.198	0.231	9.5508	1525.24	5.10387	1525.24	5.10387			
OB-05	OB-05	Orrington	10/24/2006	OB5-7-8		0.231	0.264	10.5902	1805.51	5.56929	1805.51	5.56929			
OB-05	OB-05	Orrington	10/24/2006	OB5-8-9		0.264	0.297	12.0968	2048.13	5.84364	2048.13	5.84364			
OB-05	OB-05	Orrington	10/24/2006	OB5-9-10		0.297	0.33	10.2295	2071.58	7.33758	2071.58	7.33758			
OB-05	OB-05	Orrington	10/24/2006	OB5-0-10_ave				9.82727	1593.476	15.374373	1593.476	15.374373			
OB-05	OB-05	Orrington	5/30/2007	OB5 -1-2 cm		0.033	0.066	8.42	1218.47	48.8846	1218.47	48.8846			
OB-05	OB-05	Orrington	5/30/2007	OB5 -5-6 cm		0.165	0.198	6.09	983.987	33.163	983.987	33.163			
OB-05	OB-05	Orrington	5/30/2007	OB5 -7-8 cm		0.231	0.264	2.41	255.263	7.14904	255.263	7.14904			
OB-05	OB-05	Orrington	5/30/2007	OB5 -9-10 cm		0.297	0.33	1.58	218.539	2.65	218.539	2.65			
OB-05	OB-05	Orrington	5/30/2007	OB5-0-1		0	0.033	7.59	1107.81	44.8956	1107.81	44.8956			
OB-05	OB-05	Orrington	5/30/2007	OB5-2-3		0.066	0.099	8.57	1130.86	49.2118	1130.86	49.2118			
OB-05	OB-05	Orrington	5/30/2007	OB5-0-3_ave	x			8.193	1152.38	47.664	1152.38	47.664			
OB-05	OB-05	Orrington	5/30/2007	OB5-3-4		0.099	0.132	8.09	1113.28	40.7434	1113.28	40.7434			
OB-05	OB-05	Orrington	5/30/2007	OB5-4-5		0.132	0.165	7.07	1035.15	29.7668	1035.15	29.7668			
OB-05	OB-05	Orrington	5/30/2007	OB5-6-7		0.198	0.231	7.02	856.098	31.8475	856.098	31.8475			
OB-05	OB-05	Orrington	5/30/2007	OB5-8-9		0.264	0.297	0.88	63.2895	1.49914	63.2895	1.49914			
OB-05	OB-05	Orrington	5/30/2007	OB5-0-10_ave				5.772	798.27465	28.981088	798.27465	28.981088			
OB-05	OB-05	Orrington	7/9/2007	OB5 -0-1 cm		0	0.033	6.17	1120	36.8256	1120	36.8256			
OB-05	OB-05	Orrington	7/9/2007	OB5 -1-2 cm		0.033	0.066	6.15	1190	21.7769	1190	21.7769			
OB-05	OB-05	Orrington	7/9/2007	OB5 -2-3 cm		0.066	0.099	6.49	1290	18.095	1290	18.095			
OB-05	OB-05	Orrington	7/9/2007	OB5 -0-3 cm_ave	x			6.27	1200	25.57	1200	25.57			
OB-05	OB-05	Orrington	7/9/2007	OB5 -3-4 cm		0.099	0.132	7.69	1570	12.737	1570	12.737			
OB-05	OB-05	Orrington	7/9/2007	OB5 -4-5 cm		0.132	0.165	7.86	1520	12.502	1520	12.502			
OB-05	OB-05	Orrington	7/9/2007	OB5 -5-6 cm		0.165	0.198	7.89	1660	10.7306	1660	10.7306			
OB-05	OB-05	Orrington	7/9/2007	OB5 -6-7 cm		0.198	0.231	7.96	1640	11.0544	1640	11.0544			
OB-05	OB-05	Orrington	7/9/2007	OB5 -7-8 cm		0.231	0.264	8.39	1630	12.7981	1630	12.7981			
OB-05	OB-05	Orrington	7/9/2007	OB5 -8-9 cm		0.264	0.297	8.22	1860	12.2318	1860	12.2318			
OB-05	OB-05	Orrington	7/9/2007	OB5 -9-10 cm		0.297	0.33	7.1	1510	11.6738	1510	11.6738			
OB-05	OB-05	Orrington	7/9/2007	OB5 -0-10 cm_ave				7.392	1499	16.04252	1499	16.04252			
OB-05-Intertidal	OB-05	Orrington	8/25/2010	OB-05-Intertidal 0-3-0-3	x	0	0.099	4.21	1004.8	13.84	1004.8	13.84			
OB-05	OB-05	Orrington	8/21/2012	OB5-Intertidal-A-0-3	x	0	0.099	6.97	948	12.6	948	12.6			
OB-05	OB-05	Orrington	8/21/2012	OB5-Intertidal-B-0-3	x	0	0.099	6.63	1150	9.28	1150	9.28			
OB-05	OB-05	Orrington	8/21/2012	OB5-Intertidal-C-0-3	x	0	0.099	7.55	1550	14	1550	14			
OB-05	OB-05	Orrington	8/21/2012	OB5-Intertidal-D-0-3	x	0	0.099	5.72	1040		1040				
OB-05	OB-05	Orrington	8/21/2012	OB5-Intertidal-E-0-3	x	0	0.099	4.79	663		663				
ADD-02	ADD-02	Out	7/24/2017	ADD-02_072417_SED_00-01	x	0	0.1	2.81	35.1	4	35.1	4			U
ADD-02	ADD-02	Out	7/24/2017	ADD-02_072417_SED_01-03		0.1	0.3	3.055	35.8	4.3	35.8	4.3			U
ADD-02	ADD-02	Out	7/24/2017	ADD-02_072417_SED_IPWCavg				2.973333333	35.56666667	4.2	35.56666667	4.2			U
BO-05	BO-05	Bangor	7/25/2017	BO-05_072517_SED_00-01	x	0	0.1	4.605	191	4.5	191	4.5		J	J
BO-05	BO-05	Bangor	7/25/2017	BO-05_072517_SED_01-03		0.1	0.3	2.73	70.9	1.5	70.9	1.5			J
BO-05	BO-05	Bangor	7/25/2017	BO-05_072517_SED_IPWCavg				3.355	110.9333333	2.5	110.9333333	2.5			J
E-01-01	E-01-01	Fort Point Cove	7/21/2017	E-01-01_072117_SED_00-03		0	0.3	4.94	612.3	9.13	612.3	9.13			
E-01-03	E-01-03	Upper Penobscot Bay	7/21/2017	E-01-03_072117_SED_00-03		0	0.3	3.295	475	4.1	475	4.1			
E-01-04	E-01-04	Upper Penobscot Bay	7/21/2017	E-01-04_072117_SED_00-03		0	0.3	2.47	293.3	2.3	293.3	2.3			J
ES-13	ES-13	Verona East	8/15/2017	ES-13_081517_SED_00-01	x	0	0.1	3.895	702	6.9	702	6.9			
ES-13	ES-13	Verona East	8/15/2017	ES-13_081517_SED_01-03		0.1	0.3	4.32	637	7.7	637	7.7			
ES-13	ES-13	Verona East	8/15/2017	ES-13_081517_SED_IPWCavg				4.178333333	658.6666667	7.433333333	658.6666667	7.433333333			
OV-01	OV-01	Veazie	7/26/2017	OV-01_072617_SED_00-03		0	0.3	0.147	16.1	2.1	16.1	2.1			U
OV-02	OV-02	Veazie	7/26/2017	OV-02_072617_SED_00-03		0	0.3	0.1545	11.4	2	11.4	2			U
W-17-High	W-17-High	Frankfort Flats	7/24/2017	W-17-High_072417_SED_00-01	x	0	0.1	18.65	513	33.7	513	33.7			
W-17-High	W-17-High	Frankfort Flats	7/24/2017	W-17-High_072417_SED_01-03		0.1	0.3	21.45	595	7.6	595	7.6			
W-17-High	W-17-High	Frankfort Flats	7/24/2017	W-17-High_072417_SED_IPWCavg				20.51666667	567.6666667	16.3	567.6666667	16.3			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	7/25/2017	W-17-Intertidal_072517_SED_00-01	x	0	0.1	2.645	510	4.1	510	4.1			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	7/25/2017	W-17-Intertidal_072517_SED_01-03		0.1	0.3	4.81	583	5.7	583	5.7			
W-17-Intertidal	W-17-Intertidal	Frankfort Flats	7/25/2017	W-17-Intertidal_072517_SED_IPWCavg				4.088333333	558.6666667	5.166666667	558.6666667	5.166666667			
W-17-Low	W-17-Low	Frankfort Flats	7/18/2017	W-17-Low_071817_SED_00-01	x	0	0.1	9.915	620	17.1	620	17.1			
W-17-Low	W-17-Low	Frankfort Flats	7/18/2017	W-17-Low_071817_SED_01-03		0.1	0.3	11.8	745	5.1	745	5.1			J
W-17-Low	W-17-Low	Frankfort Flats	7/18/2017	W-17-Low_071817_SED_IPWCavg				11.17166667	703.3333333	9.1	703.3333333	9.1			
W-17-Mid	W-17-Mid	Frankfort Flats	7/18/2017	W-17-Mid_071817_SED_00-01	x	0	0.1	18	592	18.7	592	18.7	J		
W-17-Mid	W-17-Mid	Frankfort Flats	7/18/2017	W-17-Mid_071817_SED_01-03		0.1	0.3	14.75	946	8.3	946	8.3			
W-17-Mid	W-17-Mid	Frankfort Flats	7/18/2017	W-17-Mid_071817_SED_IPWCavg				15.83333333	828	11.76666667	828	11.76666667			
W-21-High	W-21-High	Mendall Marsh	7/25/2017	W-21-High_072517_SED_00-01	x	0	0.1	14.55	206	7.2	206	7.2			
W-21-High	W-21-High	Mendall Marsh	7/25/2017	W-21-High_072517_SED_01-03		0.1	0.3	20.35	511	1.3	511	1.3			J
W-21-High	W-21-High	Mendall Marsh	7/25/2017	W-21-High_072517_SED_IPWCavg				18.41666667	409.3333333	3.266666667	409.3333333	3.266666667			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	7/25/2017	W-21-Intertidal_072517_SED_00-01	x	0	0.1	6.93	827	3.4	827	3.4			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	7/25/2017	W-21-Intertidal_072517_SED_01-03		0.1	0.3	6.47	730	3.1	730	3.1			
W-21-Intertidal	W-21-Intertidal	Mendall Marsh	7/25/2017	W-21-Intertidal_072517_SED_IPWCavg				6.623333333	762.3333333	3.2	762.3333333	3.2			
W-21-Low	W-21-Low	Mendall Marsh	7/25/2017	W-21-Low_072517_SED_00-01	x	0	0.1	8.885	804	7.2	804	7.2			
W-21-Low	W-21-Low	Mendall Marsh	7/25/2017	W-21-Low_072517_SED_01-03		0.1	0.3	8.995	771	2.9	771	2.9			
W-21-Low	W-21-Low	Mendall Marsh	7/25/2017	W-21-Low_072517_SED_IPWCavg				8.958333333	782	4.333333333	782	4.333333333			
W-21-Mid	W-21-Mid	Mendall Marsh	7/25/2017	W-21-Mid_072517_SED_00-01	x	0	0.1	11.65	515	3.3	515	3.3			
W-21-Mid	W-21-Mid	Mendall Marsh	7/25/2017	W-21-Mid_072517_SED_01-03		0.1	0.3	12.3	670	4.2	670	4.2			
W-21-Mid	W-21-Mid	Mendall Marsh	7/25/2017	W-21-Mid_072517_SED_IPWCavg				12.08333333	618.3333333	3.9	618.3333333	3.9			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	7/18/2017	W-21-UM-Central-C_071817_SED_00-01	x	0	0.1	20.8	155	19.3	155	19.3			
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	7/18/2017	W-21-UM-Central-C_071817_SED_01-03		0.1	0.3	22.3	306	11.6	306	11.6	J		
W-21-UM-Central-C	W-21-UM-Central-C	Mendall Marsh	7/18/2017	W-21-UM-Central-C_071817_SED_IPWCavg				21.8	255.6666667	14.16666667	255.6666667	14.16666667			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	7/25/2017	W-21-UM-East-C_072517_SED_00-01	x	0	0.1	12.25	525	15.2	525	15.2			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	7/25/2017	W-21-UM-East-C_072517_SED_01-03		0.1	0.3	13.35	848	20.8	848	20.8			
W-21-UM-East-C	W-21-UM-East-C	Mendall Marsh	7/25/2017	W-21-UM-East-C_072517_SED_IPWCavg				12.98333333	740.3333333	18.93333333	740.3333333	18.93333333			
W-21-UM-South	W-21-UM-South	Mendall Marsh	8/1/2017	W-21-UM-South_080117_SED_00-01	x	0	0.1	14.85	312	3.8	312	3.8			
W-21-UM-South	W-21-UM-South	Mendall Marsh	8/1/2017	W-21-UM-South_080117_SED_01-03		0.1	0.3	16	605	6.2	605	6.2			
W-21-UM-South	W-21-UM-South	Mendall Marsh	8/1/2017	W-21-UM-South_080117_SED_IPWCavg				15.61666667	507.3333333	5.4	507.3333333	5.4			
W-61-High	W-61-High	Verona East	7/24/2017	W-61-High_072417_SED_00-01	x	0	0.1	20.4	209	10.1	209	10.1			
W-61-High	W-61-High	Verona East	7/24/2017	W-61-High_072417_SED_01-03		0.1	0.3	3.6	212	4.7	212	4.7			
W-61-High	W-61-High	Verona East	7/24/2017	W-61-High_072417_SED_IPWCavg				9.2	211	6.5	211	6.5			
W-61-Intertidal	W-61-Intertidal	Verona East	7/24/2017	W-61-Intertidal_072417_SED_00-01	x	0	0.1	2.44	343	5.3	343	5.3			
W-61-Intertidal	W-61-Intertidal	Verona East	7/24/2017	W-61-Intertidal_072417_SED_01-03		0.1	0.3	3.35	512	7.6	512	7.6			
W-61-Intertidal	W-61-Intertidal	Verona East	7/24/2017	W-61-Intertidal_072417_SED_IPWCavg				3.046666667	455.6666667	6.833333333	455.6666667	6.833333333			
W-61-Low	W-61-Low	Verona East	7/24/2017	W-61-Low_072417_SED_00-01	x	0	0.1	16.4	417	9.3	417	9.3			
W-61-Low	W-61-Low	Verona East	7/24/2017	W-61-Low_072417_SED_01-03		0.1	0.3	14.4	752	21	752	21			
W-61-Low	W-61-Low	Verona East	7/24/2017	W-61-Low_072417_SED_IPWCavg				15.06666667	640.3333333	17.1	640.3333333	17.1			
W-61-Mid	W-61-Mid	Verona East	7/24/2017	W-61-Mid_072417_SED_00-01	x	0	0.1	25.6	835	39.5	835	39.5			
W-61-Mid	W-61-Mid	Verona East	7/24/2017	W-61-Mid_072417_SED_01-03		0.1	0.3	13.45	684	11	684	11			
W-61-Mid	W-61-Mid	Verona East	7/24/2017	W-61-Mid_072417_SED_IPWCavg				17.5	734.3333333	20.5	734.3333333	20.5			
W-63-High	W-63-High	Orrington	7/18/2017	W-63-High_071817_SED_00-01	x	0	0.1	3.85	209	5.4	209	5.4			

Loc	alt_loc	Reach	Sample.date	sample.id	use	top.depth.ft	bottom.depth.ft	Total.Organic.Carbon.PERCENT.Result	Mercury.NG.G.Result	Methyl.mercury.NG.G.Result	Adj.Mercury.NG.G.Result	Adj.Methyl.mercury.NG.G.Result	Total.Organics.Per.Final.Qualifier	Mercury.NG.G.Final.Qualifier	Methyl.mercury.NG.G.Final.Qualifier
W-63-High	W-63-High	Orrington	7/18/2017	W-63-High_071817_SED_01-03		0.1	0.3	2.72	168	1.7	168	1.7			J
W-63-High	W-63-High	Orrington	7/18/2017	W-63-High_071817_SED_IPWCavg				3.096666667	181.6666667	2.933333333	181.6666667	2.933333333			
W-63-Low	W-63-Low	Orrington	8/1/2017	W-63-Low_080117_SED_00-01	x	0	0.1	8.885	906	7.6	906	7.6			J
W-63-Low	W-63-Low	Orrington	8/1/2017	W-63-Low_080117_SED_01-03		0.1	0.3	9.075	824	8.2	824	8.2			
W-63-Low	W-63-Low	Orrington	8/1/2017	W-63-Low_080117_SED_IPWCavg				9.011666667	851.3333333	8	851.3333333	8			
W-63-Mid	W-63-Mid	Orrington	7/18/2017	W-63-Mid_071817_SED_00-01	x	0	0.1	7.145	839	19.9	839	19.9			
W-63-Mid	W-63-Mid	Orrington	7/18/2017	W-63-Mid_071817_SED_01-03		0.1	0.3	8.63	786	11.5	786	11.5			
W-63-Mid	W-63-Mid	Orrington	7/18/2017	W-63-Mid_071817_SED_IPWCavg				8.135	803.6666667	14.3	803.6666667	14.3			
W-65-High	W-65-High	Mendall Marsh	7/18/2017	W-65-High_071817_SED_00-01	x	0	0.1	21.8	259	22.2	259	22.2			
W-65-High	W-65-High	Mendall Marsh	7/18/2017	W-65-High_071817_SED_01-03		0.1	0.3	23.15	251	15.7	251	15.7			
W-65-High	W-65-High	Mendall Marsh	7/18/2017	W-65-High_071817_SED_IWPCavg				22.7	253.6666667	17.86666667	253.6666667	17.86666667			
W-65-Intertidal	W-65-Intertidal	Mendall Marsh	7/25/2017	W-65-Intertidal_072517_SED_00-01	x	0	0.1	4.645	571	5.3	571	5.3			
W-65-Intertidal	W-65-Intertidal	Mendall Marsh	7/25/2017	W-65-Intertidal_072517_SED_01-03		0.1	0.3	3.13	174	1.5	174	1.5			J
W-65-Intertidal	W-65-Intertidal	Mendall Marsh	7/25/2017	W-65-Intertidal_072517_SED_IPWCavg				3.635	306.3333333	2.766666667	306.3333333	2.766666667			
W-65-Low	W-65-Low	Mendall Marsh	7/18/2017	W-65-Low_071817_SED_00-01	x	0	0.1	10.66	623	7.8	623	7.8			
W-65-Low	W-65-Low	Mendall Marsh	7/18/2017	W-65-Low_071817_SED_01-03		0.1	0.3	8.065	1340	4.6	1340	4.6			J
W-65-Low	W-65-Low	Mendall Marsh	7/18/2017	W-65-Low_071817_SED_IPWCavg				8.93	1101	5.666666667	1101	5.666666667			
W-65-Mid	W-65-Mid	Mendall Marsh	7/18/2017	W-65-Mid_071817_SED_00-01	x	0	0.1	20.25	350	32.6	350	32.6			
W-65-Mid	W-65-Mid	Mendall Marsh	7/18/2017	W-65-Mid_071817_SED_01-03		0.1	0.3	24.15	205	5.1	205	5.1			J
W-65-Mid	W-65-Mid	Mendall Marsh	7/18/2017	W-65-Mid_071817_SED_IPWCavg				22.85	253.3333333	14.26666667	253.3333333	14.26666667			

APPENDIX F-4
R CODE FOR SEDIMENT STATISTICAL ANALYSES
(0 TO 0.1 FOOT INTERVAL SEDIMENT SAMPLES)

```
### File created for analysis of SED data for SW/SED Report (2017)
### Updated Appendix F code from 2017 SW and Sed Report for 0.to 0.3 feet below surface samples.
### Code revised for evaluation of sediment samples representing 0 to 0.1 feet below surface.
### Code prepared by JPM 02/13/2018
### Code checked by LO 03/01/2018


library(reshape) #for melt()
library(lattice) #for xyplot()
library(stringr) #for str_sub()
library(PMCMR) #for post-hoc Nemenyi test
library(Kendall) # for Kendall's Tau check on log linear regression


p.sed = read.csv("F-3.p.sed_Data_Depth0_01.csv", header=TRUE) # file brought back in once averages on samples are calculated
p.sed = p.sed[p.sed$use == "x",] # samples with only one depth or average of a set of samples was marked in excel with an x in the "use" column

## next line will filter out Reaches "Out" and "Bangor"
p.sed = p.sed[p.sed$Reach != "Out" & p.sed$Reach != "Bangor",]

p.sed$Date = as.Date(p.sed$Sample.date, format = "%m/%d/%Y")
p.sed$year = as.numeric(substring(p.sed$Date, 1, 4))
p.sed$month = as.numeric(substring(p.sed$Date, 6, 7))
p.sed$day = as.numeric(substring(p.sed$Date, 9, 10))

p.sed$Adj.Methyl.mercury.NG.G.Result[p.sed$year == 2006] = p.sed$Methyl.mercury.NG.G.Result[p.sed$year == 2006] * 2 #adjust 2006 methyl mercury
 data (as methylene chloride) in dataset to KOH/distillation equivalent concentrations

#next two lines copy adusted data cells into working data cells for THg and MeHg
p.sed$Mercury.NG.G.Result = p.sed$Adj.Mercury.NG.G.Result
p.sed$Methyl.mercury.NG.G.Result <- p.sed$Adj.Methyl.mercury.NG.G.Result


p.sed$Reach = factor(p.sed$Reach)

p.sed$u.d = "down"
p.sed$u.d[p.sed$Reach == "Veazie"] = "up"
p.sed$u.d = factor(p.sed$u.d)

## next line will replace instances of "W-17_High" with "W-17-High"
p.sed$alt_loc = str_replace(p.sed$alt_loc, "W-17_High", "W-17-High")
p.sed$Loc = str_replace(p.sed$Loc, "W-65-UM-High", "W-65-High")
p.sed$Loc = factor(p.sed$Loc)

p.sed$alt_loc = factor(p.sed$alt_loc)

p.sed$reach.facd = factor(p.sed$Reach, levels(p.sed$Reach)[c(6,4,2,3,8,7,5,1)]) #putting reaches in order of N to S
p.sed$alt.facd = factor(p.sed$alt_loc, levels(p.sed$alt_loc)[c(9,7,8,26,6,10,13,12,11,28,27,29,32, 31, 30,
 14,17,18,19,20,21,16,15,4,22,25,24,23,5,1,2,3)])


cat("========================\n")
cat("Summary of p.sed Dataset\n")
cat("========================\n")
summary(p.sed)


#Normalization of Hg and MeHg by MEDIAN TOC#
in.tid = p.sed[!substring(p.sed$Loc, 1,1) == "W" &! substring(p.sed$Loc, 1,3) == "E-0",]
in.tid$norm.Hg = in.tid$Mercury.NG.G.Result / in.tid$Total.Organic.Carbon.PERCENT.Result * median(in.tid$Total.Organic.Carbon.PERCENT.Result,
 na.rm = T)
in.tid$norm.MeHg = in.tid$Methyl.mercury.NG.G.Result / in.tid$Total.Organic.Carbon.PERCENT.Result * median(in.tid
 $Total.Organic.Carbon.PERCENT.Result, na.rm = T)

sub.ti = p.sed[substring(p.sed$Loc, 1,3) == "E-0",]
sub.ti$norm.Hg = sub.ti$Mercury.NG.G.Result / sub.ti$Total.Organic.Carbon.PERCENT.Result * median(sub.ti$Total.Organic.Carbon.PERCENT.Result,
 na.rm = T)
sub.ti$norm.MeHg = sub.ti$Methyl.mercury.NG.G.Result / sub.ti$Total.Organic.Carbon.PERCENT.Result * median(sub.ti
 $Total.Organic.Carbon.PERCENT.Result, na.rm = T)

wetlnd = p.sed[substring(p.sed$Loc, 1,1) == "W",]
wetlnd$Reach = factor(wetlnd$Reach)
wetlnd$reach.facd = factor(wetlnd$reach.facd)
wetlnd$alt_loc = factor(wetlnd$alt_loc)
wetlnd$alt.facd = substring(wetlnd$alt.facd, 1, 4)
wetlnd$alt.facd = factor(wetlnd$alt.facd)
wetlnd$alt.facd = factor(wetlnd$alt.facd, levels(wetlnd$alt.facd)[c(4,1,5,2,3)])
wetlnd$norm.Hg = wetlnd$Mercury.NG.G.Result / wetlnd$Total.Organic.Carbon.PERCENT.Result * median(wetlnd$Total.Organic.Carbon.PERCENT.Result,
 na.rm = T)
wetlnd$norm.MeHg = wetlnd$Methyl.mercury.NG.G.Result / wetlnd$Total.Organic.Carbon.PERCENT.Result * median(wetlnd
 $Total.Organic.Carbon.PERCENT.Result, na.rm = T)


w.hi = wetlnd[str_sub(wetlnd$alt_loc,-4) == "High",]
w.md = wetlnd[str_sub(wetlnd$alt_loc,-3) == "Mid",]
```

```
w.lo = wetlnd[str_sub(wetlnd$alt_loc,-3) == "Low",]
w.it = wetlnd[str_sub(wetlnd$alt_loc,-5) == "tidal",]



################
### SUBTIDAL ###
################

sub.ti.med.sum = data.frame(Hg = tapply(sub.ti$Mercury.NG.G.Result, factor(sub.ti$Reach), mean, na.rm = TRUE))
sub.ti.med.sum$Hg.se = tapply(sub.ti$Mercury.NG.G.Result, factor(sub.ti$Reach), sd, na.rm = TRUE)/sqrt(tapply(sub.ti$Mercury.NG.G.Result,
 factor(sub.ti$Reach), length))
sub.ti.med.sum$MeHg = tapply(sub.ti$Methyl.mercury.NG.G.Result, factor(sub.ti$Reach), mean, na.rm = TRUE)
sub.ti.med.sum$MeHg.se = tapply(sub.ti$Methyl.mercury.NG.G.Result, factor(sub.ti$Reach), sd, na.rm = TRUE)/sqrt(tapply(sub.ti
 $Methyl.mercury.NG.G.Result, factor(sub.ti$Reach), length))
sub.ti.med.sum$TOC.perc = tapply(sub.ti$Total.Organic.Carbon.PERCENT.Result, factor(sub.ti$Reach), mean, na.rm = TRUE)
sub.ti.med.sum$TOCperc.se = tapply(sub.ti$Total.Organic.Carbon.PERCENT.Result, factor(sub.ti$Reach), sd, na.rm = TRUE)/sqrt(tapply(sub.ti
 $Total.Organic.Carbon.PERCENT.Result, factor(sub.ti$Reach), length))
sub.ti.med.sum

write.csv(sub.ti.med.sum,"TableE_1.csv")

cat("===================================================\n")
cat("SUBTIDAL SEDIMENT ANCOVA - Hg~TOC:REACH INTERACTION\n")
cat("===================================================\n")
anova(lm(Mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * factor(Reach), data = sub.ti))

cat("=======================================================\n")
cat("SUBTIDAL SEDIMENT ANCOVA - Hg~TOC+REACH; NO INTERACTION\n")
cat("=======================================================\n")
anova(lm(Mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result + factor(Reach), data = sub.ti))

cat("=====================================================\n")
cat("SUBTIDAL SEDIMENT ANCOVA - MeHg~TOC:REACH INTERACTION\n")
cat("=====================================================\n")
anova(lm(Methyl.mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * factor(Reach), data = sub.ti))


### SUBTIDAL BOXPLOTS ###
pdf("2017.sub.ti.Hg_MeHg_plots.pdf", paper = "USr")
boxplot(Mercury.NG.G.Result ~ factor(reach.facd), data = sub.ti, xaxt = "n", las = 1, main = "Figure E-1\nSubtidal Sediment Mercury by River
 Reach", ylab = "Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(sub.ti$reach.facd))), levels(factor(sub.ti$reach.facd)), cex.axis = 0.65)

boxplot(Mercury.NG.G.Result ~ factor(alt_loc), data = sub.ti, xaxt = "n", las = 1, main = "Figure E-2\nSubtidal Sediment Mercury by Sample
 Location", ylab = "Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(sub.ti$alt.facd))), levels(factor(sub.ti$alt.facd)), cex.axis = 0.5)


boxplot(Methyl.mercury.NG.G.Result ~ factor(reach.facd), data = sub.ti, xaxt = "n", las = 1, main = "Figure E-3\nSubtidal Sediment Methyl Mercury
 by River Reach", ylab = "Methyl Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(sub.ti$reach.facd))), levels(factor(sub.ti$reach.facd)), cex.axis = 0.65)

boxplot(Methyl.mercury.NG.G.Result ~ factor(alt_loc), data = sub.ti, xaxt = "n", las = 1, main = "Figure E-4\nSubtidal Sediment Methyl Mercury by
 Sample Location", ylab = "Methyl Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(sub.ti$alt.facd))), levels(factor(sub.ti$alt.facd)), cex.axis = 0.5)


boxplot(Total.Organic.Carbon.PERCENT.Result ~ factor(reach.facd), data = sub.ti, xaxt = "n", las = 1, main = "Figure E-5\nSubtidal Sediment Total
 Organic Carbon by River Reach", ylab = "TOC (%)")
axis(1, at = 1:length(levels(factor(sub.ti$reach.facd))), levels(factor(sub.ti$reach.facd)), cex.axis = 0.65)

boxplot(Total.Organic.Carbon.PERCENT.Result ~ factor(alt_loc), data = sub.ti, xaxt = "n", las = 1, main = "Figure E-6\nSubtidal Sediment Total
 Organic Carbon by Sample Location", ylab = "TOC (%)")
axis(1, at = 1:length(levels(factor(sub.ti$alt.facd))), levels(factor(sub.ti$alt.facd)), cex.axis = 0.5)

dev.off()


##################
### INTERTIDAL ###
##################

in.tid.med.sum = data.frame(Hg = tapply(in.tid$Mercury.NG.G.Result, factor(in.tid$Reach), mean, na.rm = TRUE))
in.tid.med.sum$Hg.se = tapply(in.tid$Mercury.NG.G.Result, factor(in.tid$Reach), sd, na.rm = TRUE)/sqrt(tapply(in.tid$Mercury.NG.G.Result,
 factor(in.tid$Reach), length))
in.tid.med.sum$MeHg = tapply(in.tid$Methyl.mercury.NG.G.Result, factor(in.tid$Reach), mean, na.rm = TRUE)
in.tid.med.sum$MeHg.se = tapply(in.tid$Methyl.mercury.NG.G.Result, factor(in.tid$Reach), sd, na.rm = TRUE)/sqrt(tapply(in.tid
 $Methyl.mercury.NG.G.Result, factor(in.tid$Reach), length))
in.tid.med.sum$TOC.perc = tapply(in.tid$Total.Organic.Carbon.PERCENT.Result, factor(in.tid$Reach), mean, na.rm = TRUE)
in.tid.med.sum$TOC.se = tapply(in.tid$Total.Organic.Carbon.PERCENT.Result, factor(in.tid$Reach), sd, na.rm = TRUE)/sqrt(tapply(in.tid
 $Total.Organic.Carbon.PERCENT.Result, factor(in.tid$Reach), length))
in.tid.med.sum

write.csv(in.tid.med.sum,"TableE_4.csv")
```

```
cat("=============================================================\n")
cat("INTERTIDAL SEDIMENT ANCOVA - Hg~TOC:Up/DownStream INTERACTION\n")
cat("=============================================================\n")
anova(lm(Mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * u.d, data = in.tid))

cat("===============================================================\n")
cat("INTERTIDAL SEDIMENT ANCOVA - MeHg~TOC:Up/DownStream INTERACTION\n")
cat("===============================================================\n")
anova(lm(Methyl.mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * u.d, data = in.tid))

cat("=====================================================\n")
cat("INTERTIDAL SEDIMENT ANCOVA - Hg~TOC:Reach INTERACTION\n")
cat("=====================================================\n")
anova(lm(Mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * Reach, data = in.tid))

cat("=======================================================\n")
cat("INTERTIDAL SEDIMENT ANCOVA - MeHg~TOC:Reach INTERACTION\n")
cat("=======================================================\n")
anova(lm(Methyl.mercury.NG.G.Result ~ Total.Organic.Carbon.PERCENT.Result * Reach, data = in.tid))


### INTERTIDAL BOXPLOTS ###
pdf("2017.in.tid.Hg_MeHg_plots.pdf", paper = "USr")
boxplot(Mercury.NG.G.Result ~ factor(reach.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure E-11\nIntertidal Sediment Mercury by River
 Reach", ylab = "Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(in.tid$reach.facd))), levels(factor(in.tid$reach.facd)), cex.axis = 0.65)

boxplot(Mercury.NG.G.Result ~ factor(alt.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure E-12\nIntertidal Sediment Mercury by Sample
 Location", ylab = "Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(in.tid$alt.facd))), levels(factor(in.tid$alt.facd)), cex.axis = 0.7)


boxplot(Methyl.mercury.NG.G.Result ~ factor(reach.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure E-13\nIntertidal Sediment Methyl
 Mercury by River Reach", ylab = "Methyl Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(in.tid$reach.facd))), levels(factor(in.tid$reach.facd)), cex.axis = 0.65)

boxplot(Methyl.mercury.NG.G.Result ~ factor(alt.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure E-14\nIntertidal Sediment Methyl Mercury
 by Sample Location", ylab = "Methyl Mercury (ng/g)")
axis(1, at = 1:length(levels(factor(in.tid$alt.facd))), levels(factor(in.tid$alt.facd)), cex.axis = 0.7)


boxplot(Total.Organic.Carbon.PERCENT.Result ~ factor(reach.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure E-15\nIntertidal Sediment
 Total Organic Carbon by River Reach", ylab = "TOC (%)")
axis(1, at = 1:length(levels(factor(in.tid$reach.facd))), levels(factor(in.tid$reach.facd)), cex.axis = 0.65)

boxplot(Total.Organic.Carbon.PERCENT.Result ~ factor(alt.facd), data = in.tid, xaxt = "n", las = 1, main = "Figure E-16\nIntertidal Sediment Total
 Organic Carbon by Sample Location", ylab = "TOC (%)")
axis(1, at = 1:length(levels(factor(in.tid$alt.facd))), levels(factor(in.tid$alt.facd)), cex.axis = 0.7)

dev.off()



################
### WETLANDS ###
################

# Summary Tables for wetland sediment
wetlnd.mdn.sum = data.frame(hi.Hg = tapply(w.hi$Mercury.NG.G.Result, w.hi$Reach, median, na.rm = T))
wetlnd.mdn.sum$hi.Hg.x = tapply(w.hi$Mercury.NG.G.Result, w.hi$Reach, mean, na.rm = T)
wetlnd.mdn.sum$hi.Hg.se = tapply(w.hi$Mercury.NG.G.Result, factor(w.hi$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.hi$Mercury.NG.G.Result, factor(w.hi
 $Reach), length))
wetlnd.mdn.sum$hi.MeHg = tapply(w.hi$Methyl.mercury.NG.G.Result, w.hi$Reach, median, na.rm = T)
wetlnd.mdn.sum$hi.MeHg.x = tapply(w.hi$Methyl.mercury.NG.G.Result, w.hi$Reach, mean, na.rm = T)
wetlnd.mdn.sum$hi.MeHg.se = tapply(w.hi$Methyl.mercury.NG.G.Result, factor(w.hi$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.hi
 $Methyl.mercury.NG.G.Result, factor(w.hi$Reach), length))
wetlnd.mdn.sum$hi.TOC.perc = tapply(w.hi$Total.Organic.Carbon.PERCENT.Result, w.hi$Reach, median, na.rm = T)
wetlnd.mdn.sum$hi.TOC.perc.x = tapply(w.hi$Total.Organic.Carbon.PERCENT.Result, w.hi$Reach, mean, na.rm = T)
wetlnd.mdn.sum$hi.TOC.se = tapply(w.hi$Total.Organic.Carbon.PERCENT.Result, factor(w.hi$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.hi
 $Total.Organic.Carbon.PERCENT.Result, factor(w.hi$Reach), length))


wetlnd.mdn.sum$md.Hg = tapply(w.md$Mercury.NG.G.Result, w.md$Reach, median, na.rm = T)
wetlnd.mdn.sum$md.Hg.x = tapply(w.md$Mercury.NG.G.Result, w.md$Reach, mean, na.rm = T)
wetlnd.mdn.sum$md.Hg.se = tapply(w.md$Mercury.NG.G.Result, factor(w.md$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.md$Mercury.NG.G.Result, factor(w.md
 $Reach), length))
wetlnd.mdn.sum$md.MeHg = tapply(w.md$Methyl.mercury.NG.G.Result, w.md$Reach, median, na.rm = T)
wetlnd.mdn.sum$md.MeHg.x = tapply(w.md$Methyl.mercury.NG.G.Result, w.md$Reach, mean, na.rm = T)
wetlnd.mdn.sum$md.MeHg.se = tapply(w.md$Methyl.mercury.NG.G.Result, factor(w.md$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.md
 $Methyl.mercury.NG.G.Result, factor(w.md$Reach), length))
wetlnd.mdn.sum$md.TOC.perc = tapply(w.md$Total.Organic.Carbon.PERCENT.Result, w.md$Reach, median, na.rm = T)
wetlnd.mdn.sum$md.TOC.perc.x = tapply(w.md$Total.Organic.Carbon.PERCENT.Result, w.md$Reach, mean, na.rm = T)
wetlnd.mdn.sum$md.TOC.se = tapply(w.md$Total.Organic.Carbon.PERCENT.Result, factor(w.md$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.md
```

```
 $Total.Organic.Carbon.PERCENT.Result, factor(w.md$Reach), length))


wetlnd.mdn.sum$lo.Hg = tapply(w.lo$Mercury.NG.G.Result, w.lo$Reach, median, na.rm = T)
wetlnd.mdn.sum$lo.Hg.x = tapply(w.lo$Mercury.NG.G.Result, w.lo$Reach, mean, na.rm = T)
wetlnd.mdn.sum$lo.Hg.se = tapply(w.lo$Mercury.NG.G.Result, factor(w.lo$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.lo$Mercury.NG.G.Result, factor(w.lo
 $Reach), length))
wetlnd.mdn.sum$lo.MeHg = tapply(w.lo$Methyl.mercury.NG.G.Result, w.lo$Reach, median, na.rm = T)
wetlnd.mdn.sum$lo.MeHg.x = tapply(w.lo$Methyl.mercury.NG.G.Result, w.lo$Reach, mean, na.rm = T)
wetlnd.mdn.sum$lo.MeHg.se = tapply(w.lo$Methyl.mercury.NG.G.Result, factor(w.lo$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.lo
 $Methyl.mercury.NG.G.Result, factor(w.lo$Reach), length))
wetlnd.mdn.sum$lo.TOC.perc = tapply(w.lo$Total.Organic.Carbon.PERCENT.Result, w.lo$Reach, median, na.rm = T)
wetlnd.mdn.sum$lo.TOC.perc.x = tapply(w.lo$Total.Organic.Carbon.PERCENT.Result, w.lo$Reach, mean, na.rm = T)
wetlnd.mdn.sum$lo.TOC.se = tapply(w.lo$Total.Organic.Carbon.PERCENT.Result, factor(w.lo$Reach), sd, na.rm = TRUE)/sqrt(tapply(w.lo
 $Total.Organic.Carbon.PERCENT.Result, factor(w.lo$Reach), length))


wetlnd.mdn.sum$it.Hg = tapply(w.it$Mercury.NG.G.Result, w.it$Reach, median, na.rm = T)
wetlnd.mdn.sum$it.Hg.x = tapply(w.it$Mercury.NG.G.Result, w.it$Reach, mean, na.rm = T)
wetlnd.mdn.sum$it.Hg.se = tapply(w.it$Mercury.NG.G.Result, w.it$Reach, sd)/sqrt(tapply(w.it$Mercury.NG.G.Result, w.it$Reach, length))
wetlnd.mdn.sum$it.MeHg = tapply(w.it$Methyl.mercury.NG.G.Result, w.it$Reach, median, na.rm = T)
wetlnd.mdn.sum$it.MeHg.x = tapply(w.it$Methyl.mercury.NG.G.Result, w.it$Reach, mean, na.rm = T)
wetlnd.mdn.sum$it.MeHg.se = tapply(w.it$Methyl.mercury.NG.G.Result, w.it$Reach, sd, na.rm = TRUE)/sqrt(tapply(w.it$Methyl.mercury.NG.G.Result,
 w.it$Reach, length))
wetlnd.mdn.sum$it.TOC.perc = tapply(w.it$Total.Organic.Carbon.PERCENT.Result, w.it$Reach, median, na.rm = T)
wetlnd.mdn.sum$it.TOC.perc.x = tapply(w.it$Total.Organic.Carbon.PERCENT.Result, w.it$Reach, mean, na.rm = T)
wetlnd.mdn.sum$it.TOC.se = tapply(w.it$Total.Organic.Carbon.PERCENT.Result, w.it$Reach, sd, na.rm = TRUE)/sqrt(tapply(w.it
 $Total.Organic.Carbon.PERCENT.Result, w.it$Reach, length))

write.csv(wetlnd.mdn.sum,"TableE_7.csv")



### WETLAND BOXPLOTS ####

pdf("2017 wetlnd.Hg_MeHg_plots.pdf", paper = "USr")
par(mfrow = c(2,2), oma=c(0.2,0.1,3,0.2))

  boxplot(Mercury.NG.G.Result ~ reach.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.48)

  boxplot(Mercury.NG.G.Result ~ reach.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.48)

  boxplot(Mercury.NG.G.Result ~ reach.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.48)

  boxplot(Mercury.NG.G.Result ~ reach.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Mercury", ylab = "Mercury
 (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.48)

title("Figure E-21\nWetland Sediment Mercury by River Reach", outer = TRUE)


par(mfrow = c(2,2), oma=c(0.2,0.1,3,0.2))
  boxplot(Mercury.NG.G.Result ~ alt.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Mercury.NG.G.Result ~ alt.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Mercury.NG.G.Result ~ alt.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Mercury", ylab = "Mercury (ng/g)",
 yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Mercury.NG.G.Result ~ alt.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Mercury", ylab = "Mercury (ng/
 g)", yaxs = "i", ylim = c(0,max(wetlnd$Mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)
title("Figure E-22\nWetland Sediment Mercury by Sample Location", outer = TRUE)


par(mfrow = c(2,2), oma=c(0.2,0.1,3,0.2))
  boxplot(Methyl.mercury.NG.G.Result ~ reach.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Methyl Mercury", ylab =
 "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)

  boxplot(Methyl.mercury.NG.G.Result ~ reach.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Methyl Mercury", ylab =
 "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)
```

```r
  boxplot(Methyl.mercury.NG.G.Result ~ reach.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Methyl Mercury", ylab =
 "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)

  boxplot(Methyl.mercury.NG.G.Result ~ reach.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Methyl Mercury", ylab
 = "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)
title("Figure E-23\nWetland Sediment Methyl Mercury by River Reach", outer = TRUE)


par(mfrow = c(2,2), oma=c(0.2,0.1,3,0.2))
  boxplot(Methyl.mercury.NG.G.Result ~ alt.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Methyl Mercury", ylab =
 "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Methyl.mercury.NG.G.Result ~ alt.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Methyl Mercury", ylab = "Methyl
 Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Methyl.mercury.NG.G.Result ~ alt.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Methyl Mercury", ylab = "Methyl
 Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Methyl.mercury.NG.G.Result ~ alt.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Methyl Mercury", ylab =
 "Methyl Mercury (ng/g)", yaxs = "i", ylim = c(0,max(wetlnd$Methyl.mercury.NG.G.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)
title("Figure E-24\nWetland Sediment Methyl Mercury by Sample Location", outer = TRUE)


par(mfrow = c(2,2), oma=c(0.2, 0.2, 3, 0.2))
  boxplot(Total.Organic.Carbon.PERCENT.Result ~ reach.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ reach.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ reach.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ reach.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:4, levels(factor(w.hi$reach.facd)), cex.axis = 0.5)
title("Figure E-25\nWetland Sediment TOC by River Reach", outer = TRUE)


par(mfrow = c(2,2), oma=c(0.2, 0.2, 3, 0.2))
  boxplot(Total.Organic.Carbon.PERCENT.Result ~ alt.facd, data = w.hi, xaxt = "n", las = 1, main = "Wetland (High)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ alt.facd, data = w.md, xaxt = "n", las = 1, main = "Wetland (Mid)\nSediment Total Organic Carbon",
 ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ alt.facd, data = w.lo, xaxt = "n", las = 1, main = "Wetland (Low)\nSediment Total Organic Carbon",
 ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)

  boxplot(Total.Organic.Carbon.PERCENT.Result ~ alt.facd, data = w.it, xaxt = "n", las = 1, main = "Wetland (Intertidal)\nSediment Total Organic
 Carbon", ylab = "TOC (%)", yaxs = "i", ylim = c(0,max(wetlnd$Total.Organic.Carbon.PERCENT.Result, na.rm = T) * 1.02))
  axis(1, at = 1:5, levels(factor(w.hi$alt.facd)), cex.axis = 0.6)
title("Figure E-26\nWetland Sediment TOC by Sample Location", outer = TRUE)


dev.off()




########################
### LOGLINEAR trends ###
########################
# SUBTIDAL TEMPORAL TREND TEST
Table4_1_5 <- list(lmsum = summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]))
```

```r
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]))


# INTERTIDAL TEMPORAL PLOTS TREND TEST
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-61-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-61-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-61-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-61-Intertidal",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-65-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-65-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-65-Intertidal",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-65-Intertidal",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]))


# WETLAND TEMPORAL PLOTS TREND TEST
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]))
```

```r
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-61-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-61-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-61-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-61-High",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-65-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.hi[w.hi$Loc == "W-65-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-65-High",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-65-High",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-61-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-61-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-61-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-61-Mid",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-65-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.md[w.md$Loc == "W-65-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-65-Mid",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-65-Mid",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]))

Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-61-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.lo[w.lo$Loc == "W-61-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-61-Low",]))
Table4_1_5[[length(Table4_1_5)+1]] <- summary(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-61-Low",]))


# Check same stats via Kendall's tau

Table4_1_5a <- list(ktaum = Kendall(sub.ti[sub.ti$Loc == "E-01-01",]$year, log(sub.ti[sub.ti$Loc == "E-01-01",]$Mercury.NG.G.Result)))
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-01",]$year, sub.ti[sub.ti$Loc == "E-01-01",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-01",]$year, sub.ti[sub.ti$Loc == "E-01-01",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-01",]$year, sub.ti[sub.ti$Loc == "E-01-01",]$norm.MeHg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-03",]$year, sub.ti[sub.ti$Loc == "E-01-03",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-03",]$year, sub.ti[sub.ti$Loc == "E-01-03",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-03",]$year, sub.ti[sub.ti$Loc == "E-01-03",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-03",]$year, sub.ti[sub.ti$Loc == "E-01-03",]$norm.MeHg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-04",]$year, sub.ti[sub.ti$Loc == "E-01-04",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-04",]$year, sub.ti[sub.ti$Loc == "E-01-04",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-04",]$year, sub.ti[sub.ti$Loc == "E-01-04",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( sub.ti[sub.ti$Loc == "E-01-04",]$year, sub.ti[sub.ti$Loc == "E-01-04",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-04",]$year, in.tid[in.tid$Loc == "OV-04",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-04",]$year, in.tid[in.tid$Loc == "OV-04",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-04",]$year, in.tid[in.tid$Loc == "OV-04",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-04",]$year, in.tid[in.tid$Loc == "OV-04",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-01",]$year, in.tid[in.tid$Loc == "OV-01",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-01",]$year, in.tid[in.tid$Loc == "OV-01",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-01",]$year, in.tid[in.tid$Loc == "OV-01",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-01",]$year, in.tid[in.tid$Loc == "OV-01",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-02",]$year, in.tid[in.tid$Loc == "OV-02",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-02",]$year, in.tid[in.tid$Loc == "OV-02",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-02",]$year, in.tid[in.tid$Loc == "OV-02",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OV-02",]$year, in.tid[in.tid$Loc == "OV-02",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OB-05",]$year, in.tid[in.tid$Loc == "OB-05",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OB-05",]$year, in.tid[in.tid$Loc == "OB-05",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OB-05",]$year, in.tid[in.tid$Loc == "OB-05",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "OB-05",]$year, in.tid[in.tid$Loc == "OB-05",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-17-Intertidal",]$year, w.it[w.it$Loc == "W-17-Intertidal",]
```

```
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-17-Intertidal",]$year, w.it[w.it$Loc == "W-17-Intertidal",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-17-Intertidal",]$year, w.it[w.it$Loc == "W-17-Intertidal",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-17-Intertidal",]$year, w.it[w.it$Loc == "W-17-Intertidal",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-21-Intertidal",]$year, w.it[w.it$Loc == "W-21-Intertidal",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-21-Intertidal",]$year, w.it[w.it$Loc == "W-21-Intertidal",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-21-Intertidal",]$year, w.it[w.it$Loc == "W-21-Intertidal",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-21-Intertidal",]$year, w.it[w.it$Loc == "W-21-Intertidal",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-61-Intertidal",]$year, w.it[w.it$Loc == "W-61-Intertidal",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-61-Intertidal",]$year, w.it[w.it$Loc == "W-61-Intertidal",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-61-Intertidal",]$year, w.it[w.it$Loc == "W-61-Intertidal",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.it[w.it$Loc == "W-61-Intertidal",]$year, w.it[w.it$Loc == "W-61-Intertidal",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-02",]$year, in.tid[in.tid$Loc == "ES-02",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-02",]$year, in.tid[in.tid$Loc == "ES-02",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-02",]$year, in.tid[in.tid$Loc == "ES-02",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-02",]$year, in.tid[in.tid$Loc == "ES-02",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- rep("n<3", 5)  # Kendall( w.it[w.it$Loc == "W-65-Intertidal",]$year, w.it[w.it$Loc == "W-65-Intertidal",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- rep("n<3", 5)  # Kendall( w.it[w.it$Loc == "W-65-Intertidal",]$year, w.it[w.it$Loc == "W-65-Intertidal",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- rep("n<3", 5)  #Kendall( w.it[w.it$Loc == "W-65-Intertidal",]$year, w.it[w.it$Loc == "W-65-Intertidal",]
 $norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- rep("n<3", 5)  #Kendall( w.it[w.it$Loc == "W-65-Intertidal",]$year, w.it[w.it$Loc == "W-65-Intertidal",]
 $norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-13",]$year, in.tid[in.tid$Loc == "ES-13",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-13",]$year, in.tid[in.tid$Loc == "ES-13",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-13",]$year, in.tid[in.tid$Loc == "ES-13",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( in.tid[in.tid$Loc == "ES-13",]$year, in.tid[in.tid$Loc == "ES-13",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]
 $norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]
 $norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-East-C",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-East-C",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$year, wetlnd[wetlnd$Loc == "W-21-UM-East-C",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-South",]$year, wetlnd[wetlnd$Loc == "W-21-UM-South",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-South",]$year, wetlnd[wetlnd$Loc == "W-21-UM-South",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-South",]$year, wetlnd[wetlnd$Loc == "W-21-UM-South",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-South",]$year, wetlnd[wetlnd$Loc == "W-21-UM-South",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$year, wetlnd[wetlnd$Loc == "W-21-UM-West-A",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$year, wetlnd[wetlnd$Loc == "W-21-UM-West-A",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$year, wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$year, wetlnd[wetlnd$Loc == "W-21-UM-West-A",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-21-High",]$year, w.hi[w.hi$Loc == "W-21-High",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-21-High",]$year, w.hi[w.hi$Loc == "W-21-High",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-21-High",]$year, w.hi[w.hi$Loc == "W-21-High",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-21-High",]$year, w.hi[w.hi$Loc == "W-21-High",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-61-High",]$year, w.hi[w.hi$Loc == "W-61-High",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-61-High",]$year, w.hi[w.hi$Loc == "W-61-High",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-61-High",]$year, w.hi[w.hi$Loc == "W-61-High",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-61-High",]$year, w.hi[w.hi$Loc == "W-61-High",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-63-High",]$year, w.hi[w.hi$Loc == "W-63-High",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-63-High",]$year, w.hi[w.hi$Loc == "W-63-High",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-63-High",]$year, w.hi[w.hi$Loc == "W-63-High",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-63-High",]$year, w.hi[w.hi$Loc == "W-63-High",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-65-High",]$year, w.hi[w.hi$Loc == "W-65-High",]$Mercury.NG.G.Result)
```

```
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-65-High",]$year, w.hi[w.hi$Loc == "W-65-High",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-65-High",]$year, w.hi[w.hi$Loc == "W-65-High",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.hi[w.hi$Loc == "W-65-High",]$year, w.hi[w.hi$Loc == "W-65-High",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-21-Mid",]$year, w.md[w.md$Loc == "W-21-Mid",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-21-Mid",]$year, w.md[w.md$Loc == "W-21-Mid",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-21-Mid",]$year, w.md[w.md$Loc == "W-21-Mid",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-21-Mid",]$year, w.md[w.md$Loc == "W-21-Mid",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-61-Mid",]$year, w.md[w.md$Loc == "W-61-Mid",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-61-Mid",]$year, w.md[w.md$Loc == "W-61-Mid",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-61-Mid",]$year, w.md[w.md$Loc == "W-61-Mid",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.md[w.md$Loc == "W-61-Mid",]$year, w.md[w.md$Loc == "W-61-Mid",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- rep("n<3", 5)  # Kendall( w.md[w.md$Loc == "W-65-Mid",]$year, w.md[w.md$Loc == "W-65-Mid",]
 $Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- rep("n<3", 5)  #Kendall( w.md[w.md$Loc == "W-65-Mid",]$year, w.md[w.md$Loc == "W-65-Mid",]
 $Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- rep("n<3", 5)  #Kendall( w.md[w.md$Loc == "W-65-Mid",]$year, w.md[w.md$Loc == "W-65-Mid",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- rep("n<3", 5)  #Kendall( w.md[w.md$Loc == "W-65-Mid",]$year, w.md[w.md$Loc == "W-65-Mid",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-21-Low",]$year, w.lo[w.lo$Loc == "W-21-Low",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-21-Low",]$year, w.lo[w.lo$Loc == "W-21-Low",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-21-Low",]$year, w.lo[w.lo$Loc == "W-21-Low",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-21-Low",]$year, w.lo[w.lo$Loc == "W-21-Low",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-17-Low",]$year, w.lo[w.lo$Loc == "W-17-Low",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-17-Low",]$year, w.lo[w.lo$Loc == "W-17-Low",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-17-Low",]$year, w.lo[w.lo$Loc == "W-17-Low",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-17-Low",]$year, w.lo[w.lo$Loc == "W-17-Low",]$norm.MeHg)

Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-61-Low",]$year, w.lo[w.lo$Loc == "W-61-Low",]$Mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-61-Low",]$year, w.lo[w.lo$Loc == "W-61-Low",]$Methyl.mercury.NG.G.Result)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-61-Low",]$year, w.lo[w.lo$Loc == "W-61-Low",]$norm.Hg)
Table4_1_5a[[length(Table4_1_5a)+1]] <- Kendall( w.lo[w.lo$Loc == "W-61-Low",]$year, w.lo[w.lo$Loc == "W-61-Low",]$norm.MeHg)


Table4_1_5.out <- data.frame(
Station = toString(Table4_1_5[[1]]$call[3]),
Param =  toString(Table4_1_5[[1]]$call[2]),
Intercept = coef(Table4_1_5[[1]])["(Intercept)","Estimate"],
year = coef(Table4_1_5[[1]])["year","Pr(>|t|)"],
r.squared = as.numeric(Table4_1_5[[1]]$r.squared),
p =coef(Table4_1_5[[1]])["year","Pr(>|t|)"],
seintercept = coef(Table4_1_5[[1]])["(Intercept)","Std. Error"],
seyear = coef(Table4_1_5[[1]])["year","Std. Error"],
ktau = as.numeric(Table4_1_5a[[1]][1]),
ktaup = as.numeric(Table4_1_5a[[1]][2]),
stringsAsFactors=FALSE
   )

for (i in 2:length(Table4_1_5)) {

Table4_1_5.out[i,1] <- toString(Table4_1_5[[i]]$call[3])
Table4_1_5.out[i,2] <- toString(Table4_1_5[[i]]$call[2])
Table4_1_5.out[i,3] <- coef(Table4_1_5[[i]])["(Intercept)","Estimate"]
Table4_1_5.out[i,4] <- coef(Table4_1_5[[i]])["year","Estimate"]
Table4_1_5.out[i,5] <- as.numeric(Table4_1_5[[i]]$r.squared)
Table4_1_5.out[i,6] <- coef(Table4_1_5[[i]])["year","Pr(>|t|)"]
Table4_1_5.out[i,7] <- coef(Table4_1_5[[i]])["(Intercept)","Std. Error"]
Table4_1_5.out[i,8] <- coef(Table4_1_5[[i]])["year","Std. Error"]
Table4_1_5.out[i,9] <- as.numeric(Table4_1_5a[[i]][1])
Table4_1_5.out[i,10] <- as.numeric(Table4_1_5a[[i]][2])
   }


write.csv(Table4_1_5.out, "TableE_3.csv")




###########################
### TEMPORAL STATISTICS ###
###########################

# Function to put lines on figures when the slope is significantly different than zero


LR_equation_label <- function (LR_summary)  {

# LR_summary - a summary from linear regression model

#returns

#.Line1 - regression equation in y = mx + b form
```

```r
#.Line2 - r^2 and p description
#.line_type - "solid" or "blank" if p<=0.05, > 0.05, respectively

# stash regression summary info

  new_rez <- LR_summary

  # pick out pertinent numbers to report

  new_intercept <- NA
  new_slope <- NA
  new_Intercept_p <- NA
  new_slope_p <- NA
  new_rsquared <- NA


  new_intercept <- new_rez$coefficients[1]
  new_slope <- new_rez$coefficients[2]
  new_Intercept_p <- new_rez$coefficients[7]
  new_slope_p <- new_rez$coefficients[8]
  new_rsquared <- new_rez$adj.r.squared



results <- list()


#### fix up funky returned values

  if(new_slope_p == "NaN") new_slope_p <- 1.0  # fix returned NaN
  if(new_slope_p < 0) new_slope_p <- 0.0  # fix returned p < 0 - not sure how this can happen? check later
  if(new_rsquared == "NaN") new_rsquared <- 1.0  # fix returned NaN

  if(is.na(new_slope_p)) new_slope_p <- 0.0  # fix returned Na - generally a zero slope?
  if(is.na(new_slope)) new_slope <- 1E32  # fix returned Na - generally an infinite slope?

#  new_rsquared <- new_rez$adj.r.squared
  if(new_rsquared < 0) new_rsquared <- 0  # fix returned negative adjusted r^2


#prepare default line type
  line_type <- "blank"


#line_type
   if(new_slope_p <= 0.05) line_type <- "solid"


# prepare returned lines of text
  Line1 <- ""
  Line2 <- ""


#Pretty up  p <0.05
    tpval <- round(new_slope_p,3)
    if(new_slope_p < 0.05) {
        tpval <- "<0.05"
      }

    Line1 <- paste(" y = ",round(new_slope,4),"* x + ",round(new_intercept,4))
    Line2 <- paste(" adj. r^2 = ",round(new_rsquared,3), "p (slope) = ", tpval)


# package up to return

results$Line1 <- Line1
results$Line2 <- Line2
results$line_type <- line_type

results

}



### Figure Generation
pdf("LN_temporal_Hg_MeHg_plots.pdf", paper = "USr")

# SUBTIDAL TEMPORAL PLOTS
par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', pch = 16, oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",], ylim = c(0, max((sub.ti$Mercury.NG.G.Result), na.rm = T) * 1.02), xlab
 = "", ylab = "Mercury (ng/g)", main = "E-01-01")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
```

```r
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",], ylim = c(0, max((sub.ti$Mercury.NG.G.Result), na.rm = T) * 1.02), xlab
 = "", ylab = "Mercury (ng/g)", main = "E-01-03")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",], ylim = c(0, max((sub.ti$Mercury.NG.G.Result), na.rm = T) * 1.02), xlab
 = "", ylab = "Mercury (ng/g)", main = "E-01-04")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)
title("Figure E-7\nTemporal Subtidal Sediment Mercury", outer = TRUE)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",], ylim = c(0, max((sub.ti$Methyl.mercury.NG.G.Result), na.rm = T)
 * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "E-01-01")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",], ylim = c(0, max((sub.ti$Methyl.mercury.NG.G.Result), na.rm = T)
 * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "E-01-03")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",], ylim = c(0, max((sub.ti$Methyl.mercury.NG.G.Result), na.rm = T)
 * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "E-01-04")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)
title("Figure E-8\nTemporal Subtidal Sediment Methyl Mercury", outer = TRUE)


# NORMALIZED SUBTIDAL TEMPORAL PLOTS
par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', pch = 16, oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",], ylim = c(0, max((sub.ti$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "E-01-01")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)
```

```
plot((norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",], ylim = c(0, max((sub.ti$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "E-01-03")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",], ylim = c(0, max((sub.ti$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "E-01-04")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

title("Figure E-9\nTemporal Subtidal Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', pch = 16, oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",], ylim = c(0, max((sub.ti$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "E-01-01")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-01",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",], ylim = c(0, max((sub.ti$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "E-01-03")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-03",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",], ylim = c(0, max((sub.ti$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "E-01-04")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = sub.ti[sub.ti$Loc == "E-01-04",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

title("Figure E-10\nTemporal Subtidal Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)



# INTERTIDAL TEMPORAL PLOTS
in.tid.max.hg.ln = max((in.tid$Mercury.NG.G.Result[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" |
 in.tid$Loc == "ES-02" | in.tid$Loc == "ES-13"]),w.it$Mercury.NG.G.Result[w.it$Loc=="W-17-Intertidal" | w.it$Loc=="W-21-Intertidal"] ,na.rm = T)
in.tid.min.hg.ln = min((in.tid$Mercury.NG.G.Result[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" |
 in.tid$Loc == "ES-02" | in.tid$Loc == "ES-13"]),w.it$Mercury.NG.G.Result[w.it$Loc=="W-17-Intertidal" | w.it$Loc=="W-21-Intertidal"] ,na.rm = T)

par(mfrow = c(2,3), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlim = c(2006,2017), xlab = "",
 ylab = "Mercury (ng/g)", main = "OV-04")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)
```

```
plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlab = "", ylab = "Mercury (ng/
 g)", main = "OV-01")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlab = "", ylab = "Mercury (ng/
 g)", main = "OV-02")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlab = "", ylab = "Mercury (ng/
 g)", main = "OB-05", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlim = c(2006, 2017), xlab = "",
 ylab = "Mercury (ng/g)", main = "ES-02")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",], ylim = c(0, in.tid.max.hg.ln * 1.02), xlim = c(2006, 2017), xlab = "",
 ylab = "Mercury (ng/g)", main = "ES-13")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-17\nTemporal Intertidal Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


in.tid.max.me.ln = max((in.tid$Methyl.mercury.NG.G.Result[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc ==
 "OB-05" | in.tid$Loc == "ES-02" | in.tid$Loc == "ES-13"]),w.it$Methyl.mercury.NG.G.Result[w.it$Loc=="W-17-Intertidal" | w.it$Loc=="W-21-
 Intertidal"] ,na.rm = T)
in.tid.min.me.ln = min((in.tid$Methyl.mercury.NG.G.Result[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc ==
 "OB-05" | in.tid$Loc == "ES-02" | in.tid$Loc == "ES-13"]),w.it$Methyl.mercury.NG.G.Result[w.it$Loc=="W-17-Intertidal" | w.it$Loc=="W-21-
 Intertidal"] ,na.rm = T)

par(mfrow = c(2,3), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "OV-04", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "OV-01")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
```

```
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "OV-02")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "OB-05", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)


plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "ES-02", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",], ylim = c(0, in.tid.max.me.ln * 1.02), xlab = "", ylab = "Methyl
 Mercury (ng/g)", main = "ES-13")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-18\nTemporal Intertidal Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)



# NORMALIZED INTERTIDAL TEMPORAL PLOTS
in.tid.max.nhg.ln = max((in.tid$norm.Hg[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" | in.tid$Loc
 == "ES-02" | in.tid$Loc == "ES-13"]),w.it$norm.Hg[w.it$Loc == "W-17-Intertidal" | w.it$Loc == "W-21-Intertidal"], na.rm = T)
in.tid.min.nhg.ln = min((in.tid$norm.Hg[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" | in.tid$Loc
 == "ES-02" | in.tid$Loc == "ES-13"]),w.it$norm.Hg[w.it$Loc == "W-17-Intertidal" | w.it$Loc == "W-21-Intertidal"], na.rm = T)

par(mfrow = c(2,3), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "OV-04", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "OV-01")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)
```

```r
plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "OV-02")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "OB-05", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "ES-02", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",], ylim = c(0, in.tid.max.nhg.ln * 1.02), xlab = "", ylab = "Normalized Mercury (ng/
 g)", main = "ES-13")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

title("Figure E-19\nTemporal Intertidal Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)



# in.tid.max.nme.ln = max((in.tid$norm.MeHg[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" | in.tid
 $Loc == "ES-02" | in.tid$Loc == "ES-13"]), w.it$norm.MeHg[w.it$Loc == "W-17-Intertidal" | w.it$Loc == "W-21-Intertidal"], na.rm = T)
in.tid.max.nme.ln = max(wetlnd$norm.MeHg, na.rm = T)  # revised to match temporal wetland sediment normalized methyl mercury plots
in.tid.min.nme.ln = min((in.tid$norm.MeHg[in.tid$Loc == "OV-01" | in.tid$Loc == "OV-02" | in.tid$Loc == "OV-04" | in.tid$Loc == "OB-05" | in.tid
 $Loc == "ES-02" | in.tid$Loc == "ES-13"]), w.it$norm.MeHg[w.it$Loc == "W-17-Intertidal" | w.it$Loc == "W-21-Intertidal"], na.rm = T)


par(mfrow = c(2,3), las = 1, tck = 0.015, yaxs = 'i', pch = 16, oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "OV-04", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-04",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "OV-01")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-01",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "OV-02")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
```

```
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OV-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "OB-05", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "OB-05",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "ES-02", xlim = range(in.tid$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-02",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",], ylim = c(0, in.tid.max.nme.ln * 1.02), xlab = "", ylab = "Normalized Methyl
 Mercury (ng/g)", main = "ES-13")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = in.tid[in.tid$Loc == "ES-13",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

title("Figure E-20\nTemporal Intertidal Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)



# WETLAND TEMPORAL PLOTS
par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-21-High")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-21-Mid")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-21-Low")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Intertidal",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-21-Intertidal")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
```

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 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-27\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.", cex = 0.7), outer = T, line =
 -1)


par(mfrow = c(1,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-17-Low", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Intertidal",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-17-Intertidal", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-27 (cont.)\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-61-High")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-61-Mid")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-61-Low")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-61-Intertidal")
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)
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title("Figure E-27 (cont.)\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,1), las = 1, tck = 0.015, yaxs = 'i')
plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-63-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",])))
lines(2007:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2007:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2007:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-27 (cont.)\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-65-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) * 1.02),
 xlab = "", ylab = "Mercury (ng/g)", main = "W-65-Mid", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-65-Intertidal", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-27 (cont.)\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-21-UM-Central-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-21-UM-East-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)
```

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plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-21-UM-South", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",], ylim = c(0, max((wetlnd$Mercury.NG.G.Result), na.rm = T) *
 1.02), xlab = "", ylab = "Mercury (ng/g)", main = "W-21-UM-West-A", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",])))
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-27 (cont.)\nTemporal Wetland Sediment Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.", cex = 0.7), outer = T, line =
 -1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-High")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-Mid")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-Low")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd $Loc == "W-21-Intertidal",], ylim = c(0, max((wetlnd $Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-Intertidal")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd $Loc == "W-21-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd $Loc == "W-21-Intertidal",]), data.frame(year=
 2006:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd $Loc == "W-21-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd $Loc == "W-21-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-29\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.", cex = 0.7), outer = T, line =
 -1)


par(mfrow = c(1,2), las = 1, tck = 0.015, yaxs = 'i', pch = 16, oma=c(0.2, 0.2, 3, 0.2))

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-17-Low")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",])))
```

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lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm
 = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-17-Intertidal")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-29 (cont.)\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.", cex = 0.7), outer = T, line =
 -1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-61-High")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-61-Mid")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-61-Low")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-61-Intertidal")
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-29 (cont.)\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,1), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-63-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",])))
lines(2007:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2007:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2007:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2007:2017),
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 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-29 (cont.)\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)



par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-65-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result), na.rm =
 T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-65-Mid", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-65-Intertidal", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year=
 2006:2017), interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-29 (cont.)\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-UM-Central-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",])))
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year=
 2008:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year=
 2008:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year=
 2008:2017), interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-UM-East-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",])))
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year=
 2008:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year=
 2008:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year=
 2008:2017), interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-UM-South", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",])))
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2008:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2008:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2008:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",], ylim = c(0, max((wetlnd$Methyl.mercury.NG.G.Result),
 na.rm = T) * 1.02), xlab = "", ylab = "Methyl Mercury (ng/g)", main = "W-21-UM-West-A", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",])))
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```
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year=
 2008:2017), interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year=
 2008:2017), interval="confidence")[,2]), lty=temp$line_type)
lines(2008:2017,exp(predict(lm(log(Methyl.mercury.NG.G.Result) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year=
 2008:2017), interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-29 (cont.)\nTemporal Wetland Sediment Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


# NORMALIZED WETLAND TEMPORAL PLOTS
par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab = "Normalized
 Mercury (ng/g)", main = "W-21-High")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab = "Normalized
 Mercury (ng/g)", main = "W-21-Mid")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab = "Normalized
 Mercury (ng/g)", main = "W-21-Low")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-21-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data =w.it[w.it$Loc == "W-21-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data =w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-28\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))

plot((norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab = "Normalized
 Mercury (ng/g)", main = "W-17-Low")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.lo[w.lo$Loc == "W-17-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-17-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
```

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lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-28 (cont.)\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-61-High")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-61-Mid")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-61-Low")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-61-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-28 (cont.)\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,1), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab = "Normalized
 Mercury (ng/g)", main = "W-63-High", xlim = range(w.hi$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",])))
lines(2007:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]),data.frame(year= 2007:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2007:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]),data.frame(year= 2007:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2007:2017,exp(predict(lm(log(norm.Hg) ~ year, data = w.hi[w.hi$Loc == "W-63-High",]),data.frame(year= 2007:2017), interval="confidence")[,
 3]), lty=temp$line_type)

title("Figure E-28 (cont.)\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-65-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017), interval="confidence")
```

```
 [,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-65-Mid", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017), interval="confidence")
 [,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-65-Intertidal", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-28 (cont.)\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-21-UM-Central-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-21-UM-East-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-21-UM-South", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",], ylim = c(0, max((wetlnd$norm.Hg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Mercury (ng/g)", main = "W-21-UM-West-A", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",])))
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.Hg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-28 (cont.)\nTemporal Wetland Sediment Normalized Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-High")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
```

```
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.hi[w.hi$Loc == "W-21-High",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-Mid")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.md[w.md$Loc == "W-21-Mid",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-Low")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.lo[w.lo$Loc == "W-21-Low",]),data.frame(year= 2006:2017), interval="confidence")[,
 3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-21-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-30\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-17-Low")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-17-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-17-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = w.it[w.it$Loc == "W-17-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-30 (cont.)\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-61-High")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
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 "Normalized Methyl Mercury (ng/g)", main = "W-61-Mid")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-61-Low")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Low",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab
 = "Normalized Methyl Mercury (ng/g)", main = "W-61-Intertidal")
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-61-Intertidal",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-30 (cont.)\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(1,1), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-63-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-63-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-30 (cont.)\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-65-High", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-High",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-65-Mid", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Mid",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab
 = "Normalized Methyl Mercury (ng/g)", main = "W-65-Intertidal", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",])))
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2009:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2009:2017),
 interval="confidence")[,2]), lty=temp$line_type)
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lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-65-Intertidal",]),data.frame(year= 2009:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-30 (cont.)\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)


par(mfrow = c(2,2), las = 1, tck = 0.015, yaxs = 'i', oma=c(0.2, 0.2, 3, 0.2))
plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "",
 ylab = "Normalized Methyl Mercury (ng/g)", main = "W-21-UM-Central-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",])))
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2006:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-Central-C",]),data.frame(year= 2006:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-UM-East-C", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",])))
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2009:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2009:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-East-C",]),data.frame(year= 2009:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-UM-South", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",])))
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2009:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2009:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-South",]),data.frame(year= 2009:2017),
 interval="confidence")[,3]), lty=temp$line_type)

plot((norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",], ylim = c(0, max((wetlnd$norm.MeHg), na.rm = T) * 1.02), xlab = "", ylab =
 "Normalized Methyl Mercury (ng/g)", main = "W-21-UM-West-A", xlim = range(wetlnd$year))
temp <- LR_equation_label(summary(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",])))
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2009:2017),
 interval="confidence")[,1]),lty=temp$line_type)
if(temp$line_type =="solid")temp$line_type <- "dashed"
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2009:2017),
 interval="confidence")[,2]), lty=temp$line_type)
lines(2009:2017,exp(predict(lm(log(norm.MeHg) ~ year, data = wetlnd[wetlnd$Loc == "W-21-UM-West-A",]),data.frame(year= 2009:2017),
 interval="confidence")[,3]), lty=temp$line_type)

title("Figure E-30 (cont.)\nTemporal Wetland Sediment Normalized Methyl Mercury", outer = TRUE)
title(sub=list("Line indicates regression slope is significantly different than 0 (p<0.05). Dashed lines indicate 95% confidence interval of
 regression. \n Regressions performed on log-transformed data, but data are presented un-transformed for clarity.",cex=0.7),outer=T,line=-1)

dev.off()
```