

October 25, 2016

Special Master Susan Calkins  
2112 Promontory Point Lane  
Gold River, CA 95670



**Subject: Monthly Status Report 09 for September 2016  
Penobscot River Estuary Phase III - Engineering Study**

Dear Ms. Calkins:

Amec Foster Wheeler Environment and Infrastructure, Inc. (Amec Foster Wheeler) is pleased to submit this Monthly Status Report for the Penobscot River Estuary Phase III - Engineering Study. This report covers the period from September 1, 2016 through September 30, 2016. The monthly report has been re-formatted to include more detailed descriptions of activities performed by Task during the reporting period, as well as proposed activities by Task for the following period. A cash flow projection for the following 6-month period is also attached.

**ACTIVITIES AND EVENTS DURING THE REPORTING PERIOD**

Task 1 - Understanding the Problem and Existing Background Information

- Plotting and review of the data inherited from the Woodard and Curran database revealed several hundred samples without coordinates, as well as the same set of coordinates for multiple samples collected in specific wetlands. In addition, there were a number of samples with null values for sample depths. Resolution of these issues required significant review of project files, as well as communication with and work by Dianne Kopec. There still remain some biota and sediment samples without coordinates, as Dianne Kopec was unable to obtain them. The majority of sediment sample records that were previously lacking depth information now have that data entered.
- Amec Foster Wheeler prepared an MS-Access relational database of the project data stored on the Portland Office's SQL server, as well as an ArcMap 10 map package with current site topography and bathymetry, for transmittal to Anchor QEA.
- September 8, 2016 – Amec Foster Wheeler submitted the MS-Access relational database of the project data and ArcMap 10 map package containing current topography and bathymetry data to Anchor QEA.

Task 2 - Technologies and Remedial Approaches for Consideration

- Amec Foster Wheeler initiated review of the NRDC and Mallinckrodt comments (multiple sets of comments in August 2016) on the Technology Screening Report. The original December 2015 Amec Foster Wheeler proposal to the Court did not include effort for response to comments or creation of a final version of the Report, and due to the significant number (>80 pages) of comments/ responses from the Litigants, Amec Foster Wheeler has initiated preparation of Work Order 008 to cover the cost associated with developing responses to these comments.
- Planning/scoping of *Work Order 010 and 010A* for Treatability Study work plans and related permitting was conducted, including:

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- September 16, 2016 – Conference call with Cindy Gilmour of the PRMS Study Panel was held to discuss her Mendall Marsh amendment plot studies and her thoughts on follow-up and/or separate amendment studies
  - Identify locations of field study plots for amendments, research and reconnaissance regarding these potential areas
  - Identify permitting requirements and evaluation of the process to obtain permits for potential field scale amendment plots
  - Identify the proposed bench scale treatability studies and lab analyses to be performed under WO 10, which are currently proposed to include toxicity, sorption, flocculation, and SPLP. Establish volume of sediment material that would be needed to run these tests
- Continued review of sediment remediation alternatives

#### Task 3 - Risk Reduction Evaluation

- Created pairing maps of sediment and tissue for different biota
- Initiated BSAF calculations for terrestrial insects, spiders, polychaetes, and blue mussels based on historical data in preparation to add 2016 data when available
- Initiated review of comments from litigants
- Initiate historical data trending for the system in preparation to add 2016 data when available
- September 14, 2016 - Conference call with Carl Wilson of ME DMR to discuss prey, habitat, and migration of lobsters in an effort to discern the potential pathways of mercury to the lobsters

#### Task 4 - Potential Data Needs and Additional Field Work

- Conducted planning/scoping of *Work Order 003A* for continued evaluation of the mobile sediment/wood chip pool;
- September 9, 2016 - Conference call with Rocky Geyer regarding Phase II mobile sediment pool investigations, as well as ongoing Phase II observations and findings:
  - Review of Phase II mobile sediment pool observations/findings to-date
  - Extensive discussion of how Phase II investigation evaluated wood chips: sample processing and analyses, availability of records for abandoned/unsuitable samples which contained wood chips, rationale for designating unsuitable sample, removal of wood/bark from Phase II samples prior to analyses
- Email communication with Drew Bodaly about sample collection, processing and analysis of samples containing wood chips.
- Monitored laboratory progress on analysis of May/June 2016 sediment samples from *Work Order 003* investigations
- September 9, 2016 - Turbidity meter installed above former Veazie Dam location on east bank of Penobscot River in Eddington, ME, and remote connection established. Access agreement for installation of equipment was obtained from Town of Eddington prior to installation.
- September 26-27, 2016 – Amec Foster Wheeler conducted monthly water quality monitoring: collection of eight surface water samples in the river.
- Data validation for June-August 2016 monthly surface water sampling events ongoing.

- Analyses of bird blood, insects, spiders, and polychaetes samples collected in late July and early August continued at Eurofins laboratory in Bothell, WA.
- September 20 through October 1, 2016 – Fish/shellfish monitoring conducted for tomcod, rainbow smelt, Mummichog, blue mussels, and lobsters. Sample counts were as follows:

Location	Tomcod	Rainbow Smelt	Mummichog	Blue Mussel
<b>OV-04</b>				
<b>BO-04</b>	4	0	20	0
<b>OB-05</b>	18	1	20	0
<b>OB-01</b>	19	20	1	0
<b>Mendall Marsh</b>			5	
<b>ES-15/Odom Ledge</b>				20
<b>ES-13</b>	11	1		20
<b>ES-03</b>				20
<b>ES-FP</b>	2	20		20
<b>FRB-01</b>	1	20	20	
<b>Totals</b>	<b>55</b>	<b>62</b>	<b>66</b>	<b>80</b>
				= Sample count objective was met
				= Sample not required at this location

Lobster samples collected:

Location	Lobster
<b>Odom Ledge</b>	20
<b>South Verona</b>	20
<b>Cape Jellison</b>	20
<b>Turner Point</b>	20
<b>Harborside</b>	20
<b>Totals</b>	<b>100</b>

= Sample count objective was met

- 2015 ME DMR lobster and crab analyses:
  - September 16, 2016 - final analytical laboratory EDDs for 2015 lobster and crab results received from analytical laboratory
  - Data validation on 2015 lobster and crab data initiated late September
- September 14, 2016 - Conference call with Rocky Geyer regarding flux/transport/flow of Hg in sediment in the Penobscot River and Estuary (system) and data Dr. Geyer collected as part of the Phase II Study:
  - Assessing lateral variability of Hg in system
  - Measuring Hg in system as a function of time
  - Collecting additional profiling data, and information it would provide
  - Inputs for hydrodynamic modeling
  - Estimating recovery times
- Scope and develop *Work Order 009*, including calls with Dr. Geyer and USGS regarding ADCP data capture. *WO 009* includes the following tasks:
  - Spatial Variability of Water Column Characteristics Downstream of Fort Point
  - Sediment and Hg Outflux Downstream of Fort Point
  - Sediment and Hg Influx and Fate Upstream of KM 35

- Vertical Distribution of Mobile Pool Mud and Woodchip Transport – Mendall Marsh and Orland River
- Measure Surface Sediment Stability
- Refine Surface Sediment Hg Characterization Upstream of KM 41.7
- Characterize Total Tidal Currents In Estuary
- Refine Dissolved Versus Suspended Hg Equilibrium Characterization
- Refine Interpolation of Velocity and Bed Shear Stress
- Refine Mass Estimates of Hg in Mobile Pool
- Planning/scoping of *Work Order 012*:
  - Develop protocol for sample processing that takes into account the wood material separation from sediment;
  - Analytical methods development for determining total mercury in woody debris;
  - Trends analysis – compare current mobile pool sediment sample results to mobile pool sediments from the same locations as previously sampled in the Phase II Study;
  - Organic carbon study - through carbon-14 dating, determine whether organic carbon present in mobile pool sediments comes from degraded wood debris or vascular plants; will aid in determining whether wood chip material should be a focus of remedial alternatives;
  - Review of PRMS Phase I and Phase II Study QA / QC Procedures and Recommendations for Data Use and Qualification;
  - Evaluate trends in sediment Hg concentrations - conduct a comprehensive, systematic assessment of the data to evaluate whether mercury concentrations have changed over the past twenty years; and
  - Documentation of Conceptual Site Model refinements: The initial work done by Amec Foster Wheeler has already led to substantial refinements of the conceptual model; these and future refinements need to be documented in clear, conceptual language with user friendly illustration so that the Court/Litigants can readily understand how the refinements affect decision-making.

#### Task 5 - Phase III Engineering Study Report

- Activities during the reporting period consisted of detailed schedule development for the Phase III Report and project tasks leading up to the Report.

#### Task 6 – Meetings/Communications

- September 17, 2016 – Amec Foster Wheeler submits Invoice # J02205570 and Monthly Report for the month of August 2016 to the Special Master.
- September 27-29, 2016 – Amec Foster Wheeler held a project technical summit in Portland and Winterport, ME with thirteen project team members to present and discuss the following topics:
  - Summary of progress to-date
  - The top ten most important technical questions remaining to answer
  - Our current Conceptual Site Model
  - Review of Phase I & II mercury sediment data
  - Review of methylation – habitats, mechanisms, physical and chemical influences
  - Hydrodynamics overview – Phase II conclusions and discussion of additional data needs
  - Recovery time estimates – discussion of alternatives to intensive numerical modeling

- Mobile Sediment Pool – findings to-date, importance of wood material component, proposed Work Order 003A activities for further evaluation of the wood material component
- Risk Reduction – BSAF and PRG development
- Brief review of Litigants' comments on the Technology Screening Report
- Remedial Alternatives data needs
- Treatability studies – data needs, types and number of tests, materials needed for testing
- Data Visualization – demonstration/discussion of most valuable usage for the project
- Community Involvement – review of draft website format and content, path forward
- Review of Conceptual Site Model
- Agenda for October 27, 2016 Quarterly Status Meeting with Special Master/Litigants
- Tour of Penobscot River for technical team members who had not previously visited the Site
- Initiated preparation for October 27, 2016 Quarterly Status Meeting in Boston, MA with Special Master/Litigants
- Initiated development of *Work Order 013* for 2016 meetings outside of scope presented in Work Orders 001 and 002.

#### Task 7 – Community Involvement

- Confirm website platform, initiate graphic design on page templates
- Secure website URL
- Gather background materials, including reports, photos and website links
- Developed draft website content
- Developed preliminary list of potential stakeholders to meet

### **PROPOSED ACTIVITIES FOR THE FOLLOWING PERIOD**

#### Task 1 - Understanding the Problem and Existing Background Information

- Prepare and submit updated MS-Access relational database of the project data to Mallinckrodt (Anchor QEA) and NRDC that reflects the additional location information obtained in September.
- Prepare *Work Order 014 Data Gathering*: Wetland & biota coordinates. Sample depths, Geyer wood chip data

#### Task 2 - Technologies and Remedial Approaches for Consideration

- Prepare preliminary response to NRDC and Mallinckrodt comments on the Technology Screening Report for discussion at the October 27, 2016 Quarterly Status Meeting.
- Submit *Work Order 008 Technology Screening Report - RTC and Report Revisions* to Special Master/Litigants
- Continue planning/scoping of *Work Order 010 and 010A* for Treatability Study scope and work plans, and related permitting
- Continue review of sediment remediation alternatives

Task 3 - Risk Reduction Evaluation

- Continue BSAF calculations for biota
- Support response to biota/risk related comments from Litigants on Technology Screening Report
- Continue historical biota data trending for the system in preparation to add 2016 biota monitoring data when available

Task 4 - Potential Data Needs and Additional Field Work

- Initiate sample collection associated with *Work Order 003A* for continued evaluation of the mobile sediment/wood chip pool;
- Conduct monthly water quality monitoring (*WO 004*) in late October: collection of eight surface water samples in the river;
- Data validation for August-September 2016 monthly surface water sampling events;
- Analyses of bird blood, insects, spiders, polychaetes, fish, and shellfish samples (*WO 005*) to continue at Eurofins laboratory in Bothell, WA.
- 2015 ME DMR lobster and crab analyses: Continue data validation on 2015 lobster and crab data
- Prepare *Work Order 009 - Recovery Times and Sediment/Hg transport*
- Initiate tasks under *Work Order 012 - Analytical Methods Evaluation and OC Study* (pending approval of the Work Order by the Special Master/Litigants)

Task 5 - Phase III Engineering Study Report

- Activities during the reporting period consisted of preliminary document outline and schedule development for the Phase II Engineering Report

Task 6 – Meetings/Communications

- Prepare and submit invoice and monthly report for October 2016 to the Special Master/Litigants
- Prepare for and attend October 27, 2016 Quarterly Status Meeting in Boston, MA with Special Master/Litigants
- Submit *Work Order 013* for 2016 meetings outside of scope presented in Work Orders 001 and 002.

Task 7 – Community Involvement

- Present draft Website and content to Special Master/Litigants at October 27, 2016 Quarterly Status Meeting

**SCHEDULE UPDATE AND FUTURE MEETINGS AND CONFERENCE CALLS**

- October 27, 2016 - Quarterly Meeting with Special Master, Litigants, and Amec Foster Wheeler, Boston, MA
- Discuss potential for monthly 4-hour calls (following issuance of Monthly Report) with Special Master and Litigants at the October 27, 2016 meeting to improve information transfer.

**ISSUES AND PROBLEMS IDENTIFIED DURING THE REPORTING PERIOD**

- Due to scheduling constraints, some work proceeded ahead of authorization. This is being addressed through discussions with the Special Master and parties.

**CASH FLOW PROJECTION**

Please refer to Attachment A for the Amec Foster Wheeler financial status summary and cash flow projection for the next six months.

If you have any questions regarding the information contained in this report, please call me at 207-651-0315.

Sincerely,



Nelson Walter, PE, LSP, LEP, PMP  
Principal Project Manager

**Attachments**

Attachment A – Cash Flow Projection

cc: Mitchell Bernard (NRDC)      Patricia Duft (Mallinckrodt)  
Jared Thompson (NRDC)      Jeffrey Talbert (Preti Flaherty)  
Project File (3616166052)