Appendix E

Sediment Sampling Report
Sediment Collection Report
Captain Alek Modjeski  
American Littoral Society  
18 Hartshorne Drive  
Highlands, NJ 07732

Captain Al:

On September 20, 21, and 22, 2016 the Stockton University Coastal Research Center (CRC) undertook the collection of sediment information as prescribed in the Sediment Sampling and Analysis Plan; dated June 12, 2016 by the New Jersey Department of Environmental Protection (NJDEP) Office of Sediment and Dredging Technology (OST). This work was part of the effort required to perform maintenance dredging of approximately 22,100 cubic yards (CY) of sediment from the “Eastern” and “Western” creeks adjacent to and behind Thompson’s Beach (Maurice River Township, NJ), and the beneficial use of the dredged material for marsh restoration at two proposed placement areas (the “Eastern Area” and the “Southern Area”). The objective was to collect 11 sediment cores from the two creeks to a project depth of -5.5 feet (NAVD 88), using 2.0 inch diameter, 10 foot-length lexan tubes to have sufficient sediment from the creek bottom to conduct physical and chemical sediment analyses as required by NJDEP (OST). In addition, 15 surface grab samples were obtained from the Eastern and Southern placement areas for required testing.

The CRC field crew collected core samples BZ-1 through BZ-11, and PA-11 through PA15 using the 12-foot flat bottom outboard skiff RV Willet. The remaining sediment samples PA-1 through PA-10 were obtained by foot with access directly from the adjacent gravel road. The sampling conditions were ideal from a weather standpoint, clear, wind (calm) and creek conditions (no waves/high tide) for late-September. The sampling schedule for this project was as follows:

September 20, 2016 – Thompsons Creeks (Western/Eastern) Core Sites BZ-4, BZ-5, BZ-6, BZ-7, BZ-8, BZ-9, BZ-10, BZ-11

- (16/32oz. Clear Glass Jars) 2 per site for Grain Size Analysis  
- (8/4oz. Clear Glass Jars) 1 per site for TOC’s, TS

September 21, 2016 – Thompsons Creek/Placement Area (Eastern) Core Sites BZ-1, BZ-2, BZ-3, PA-11, PA-12, PA-13, PA-14, PA-15

- (16/32oz. Clear Glass Jars) 2 per site for Grain Size Analysis  
- (8/4oz. Clear Glass Jars) 1 per site for TOC’s, TS
September 22, 2016 – Thompsons Creek/Placement Area (Southern) Core Sites PA-1, PA-2, PA-3, PA-4, PA-5, PA-6, PA-7, PA-8, PA-9, PA-10

- (20/32oz. Clear Glass Jars) 2 per site for Grain Size Analysis
- (10/4oz. Clear Glass Jars) 1 per site for TOC’s, TS

The compositing of the designated individual core samples is to be conducted by ALS Environmental Laboratories post-collection according to the pre-determined schedule. RTK-GPS data points were recorded on the top of each 10-foot core tube to get the position and elevation/penetration depth reached by the coring effort. Core penetration depths ranged from -5.3 feet to -6.2 feet (NAVD 88). The cores were then extracted and the contents measured for recovery and any distinctive sedimentary layers present. Following completion of the sampling effort, the sediment containers and custody documentation were relinquished on site to Mr. Paul Collier from ALS, for delivery to the laboratory.

The material recovered at every core location with the exception of one (PA-2), contained a gray to black organic silt consistent with lower energy creek environments, marsh areas, and mud flats. Sample PA-2 contained an existing salt marsh component at the surface with a fine tan sand present 0.2 feet below the marsh surface. Attached to this report are the maps depicting the proposed vs. actual core locations, an excel data table displaying the sample coordinates and depths of penetrations obtained, and stratigraphic core logs, detailing the stratigraphy found at each core site.

We at the Coastal Research Center appreciate the opportunity to conduct this kind of research for the American Littoral Society and look forward to aiding your sampling and analysis needs in the future. If you have any questions regarding the information contained in this report please contact the Coastal Center at (609) 652-4245.

Sincerely,

Crist Robine, MA, CFM
Chief Sedimentologist
Coastal Research Center
This map shows the Eastern Creek tidal channel way. The dredge cut design shown, and the estimated volume calculations are based on an approximate 50ft wide cut with 4:1 sloped sides. Each side has a beginning elevation of -0.5ft and an ending elevation at approximately -5.5ft NAVD88. A 10ft wide middle section at elevation -5.5ft completes the 50ft wide hopper cut. The dark shaded areas show the location of available material that are within the cut design.

The Eastern Creek has an estimated 7,429 cubic yards, of a total of 22,103 cubic yards of material available for dredging. The length of the Eastern Creek to be dredged is approximately 3,000 feet. The total volume needed to meet the placement estimates are 20,295 cubic yards.

Elevation survey conducted by the Coastal Research Center.

Legend
- Actual Core Locations
- Proposed Core Locations
- GPS Elevation Points
- Available Material

Eastern Creek Tidal Channel
Western Creek Tidal Channel

THOMPSONS BEACH MARSH RESTORATION PROJECT

This map shows the Western Creek tidal channel way. The dredge cut design shown, and the estimated volume calculations are based on an approximate 50ft wide cut with 4:1 sloped sides. Each side has a beginning elevation of -0.5ft and an ending elevation at approximately -5.5ft NAVD88. A 10ft wide middle section at elevation -5.5ft completes the 50ft wide hopper cut. The dark shaded areas show the location of available material that are within the cut design.

The Western Creek has an estimated 14,674 cubic yards, of a total of 22,103 cubic yards of material available for dredging. The total volume needed to meet the placement estimates are 20,295 cubic yards.

Elevation survey conducted by the Coastal Research Center.

Legend
- Actual Core Locations
- Proposed Core Locations
- GPS Elevation Points
- Available Material

Cores samples were collected September 20, 21 and 22, 2016. Core samples were collected using a piston core.

<table>
<thead>
<tr>
<th>Core ID</th>
<th>Easting</th>
<th>Northing</th>
</tr>
</thead>
<tbody>
<tr>
<td>B16</td>
<td>351753.942</td>
<td>134915.366</td>
</tr>
<tr>
<td>B17</td>
<td>351369.555</td>
<td>134458.902</td>
</tr>
<tr>
<td>B18</td>
<td>351326.401</td>
<td>133585.028</td>
</tr>
<tr>
<td>B19</td>
<td>351127.624</td>
<td>132928.706</td>
</tr>
<tr>
<td>B20</td>
<td>350321.879</td>
<td>132365.799</td>
</tr>
<tr>
<td>B21</td>
<td>349742.022</td>
<td>132032.761</td>
</tr>
</tbody>
</table>

Channel Length = ~5,200 feet
Spring 2015 survey lines and elevation points provided by the Coastal Research Center. Volume calculations were determined by using a Geographic Information System to compare Digital Elevation Models of the Spring 2015 survey by the CRC and of the proposed fill elevations.

Parcel delineations were provided by the New Jersey Geographic Information Network.

Conversion from NAVD88 to MLW and MHW were determined using V Datum, created by the NOAA.

Cores samples were collected September 20, 21 and 22, 2016. Core samples were collected using a piston core.

An estimated 11,135 cubic yards of material are need to reach 2.5 feet in elevation.

Coir Logs will be located along the perimeter of the placement area. (Barrier features on map are not to scale.)

**Legend**
- Actual Core Locations
- Proposed Core Locations
- Placement Area
- Coir Logs

**Eastern Area**

**THOMPSONS BEACH MARSH RESTORATION PROJECT**
Cores samples were collected using a piston core. Samples were collected September 20, 21 and 22, 2016. Core samples were collected created by the NOAA. MHW were determined using V Datum, Conversion from NAVD88 to MLW and Network. Parcel delineations were provided by the New Jersey Geographic Information Network. Conversion from NAVD88 to MLW and MHW were determined using V Datum, created by the NOAA.

Core samples were collected September 20, 21 and 22, 2016. Core samples were collected using a piston core.

<table>
<thead>
<tr>
<th>Core ID</th>
<th>Easting</th>
<th>Northing</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA1</td>
<td>351801.492</td>
<td>132513.492</td>
</tr>
<tr>
<td>PA2</td>
<td>351829.968</td>
<td>132224.523</td>
</tr>
<tr>
<td>PA3</td>
<td>351742.129</td>
<td>132348.498</td>
</tr>
<tr>
<td>PA4</td>
<td>351548.810</td>
<td>132419.304</td>
</tr>
<tr>
<td>PA5</td>
<td>351522.674</td>
<td>132227.658</td>
</tr>
<tr>
<td>PA6</td>
<td>351375.515</td>
<td>132322.479</td>
</tr>
<tr>
<td>PA7</td>
<td>351359.984</td>
<td>132133.559</td>
</tr>
<tr>
<td>PA8</td>
<td>351135.984</td>
<td>132307.404</td>
</tr>
<tr>
<td>PA9</td>
<td>351167.271</td>
<td>132025.547</td>
</tr>
<tr>
<td>PA10</td>
<td>351000.434</td>
<td>132139.785</td>
</tr>
</tbody>
</table>

This map shows the Southern Area. This area shall receive a thin layer application of a maximum thickness of 8” of dredge material, not to exceed 3.4 feet in elevation. Placement will be in the shaded areas, which are determined to be the most deficient.

An estimated 9,160 cubic yards of material are need to apply the 8” thin layer, not exceeding 3.4 feet, in the placement area.

A slit fence will be located along the perimeter of the placement area. Based on slope analysis, Hay bales will be placed in designated areas as a silt barrier. Coir logs will also be added to areas where streams are running out of the placement area. (Barrier features on map are not to scale.)

Legend
- Proposed Core Locations
- Actual Core Locations
- Coir Logs
- Hay Bales
- Minor Streams
- Placement Area/Silt Fence
### Thompsons Marsh Restoration Project: Core Sample Positions/Elevations

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Easting</th>
<th>Northing</th>
<th>Penetration El. (ft) NAVD 88</th>
<th>Sediment El. (ft) NAVD 88</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ1</td>
<td>352599.9</td>
<td>134779.802</td>
<td>-5.3</td>
<td></td>
</tr>
<tr>
<td>BZ10</td>
<td>350321.9</td>
<td>132365.799</td>
<td>-5.7</td>
<td></td>
</tr>
<tr>
<td>BZ11</td>
<td>349742</td>
<td>132032.761</td>
<td>-5.9</td>
<td></td>
</tr>
<tr>
<td>BZ2</td>
<td>352724.4</td>
<td>134495.502</td>
<td>-5.4</td>
<td></td>
</tr>
<tr>
<td>BZ3</td>
<td>353187.7</td>
<td>134228.948</td>
<td>-5.5</td>
<td></td>
</tr>
<tr>
<td>BZ4</td>
<td>353739</td>
<td>134027.335</td>
<td>-5.7</td>
<td></td>
</tr>
<tr>
<td>BZ5</td>
<td>354533.7</td>
<td>133773.486</td>
<td>-6.2</td>
<td></td>
</tr>
<tr>
<td>BZ6</td>
<td>351753.9</td>
<td>134915.366</td>
<td>-6.1</td>
<td></td>
</tr>
<tr>
<td>BZ7</td>
<td>351369.6</td>
<td>134458.902</td>
<td>-5.7</td>
<td></td>
</tr>
<tr>
<td>BZ8</td>
<td>351336.5</td>
<td>133585.028</td>
<td>-5.5</td>
<td></td>
</tr>
<tr>
<td>BZ9</td>
<td>351127.6</td>
<td>132928.706</td>
<td>-5.9</td>
<td></td>
</tr>
<tr>
<td>PA1</td>
<td>351891.9</td>
<td>132513.492</td>
<td>2.4 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA10</td>
<td>351000.4</td>
<td>132139.785</td>
<td>2.6 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA2</td>
<td>351830</td>
<td>132224.523</td>
<td>2.3 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA3</td>
<td>351742.1</td>
<td>132348.498</td>
<td>2.3 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA4</td>
<td>351548.8</td>
<td>132419.304</td>
<td>2.2 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA5</td>
<td>351522.7</td>
<td>132227.658</td>
<td>2.6 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA6</td>
<td>351375.5</td>
<td>132322.479</td>
<td>2.2 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA7</td>
<td>351360</td>
<td>132133.559</td>
<td>2.6 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA8</td>
<td>351136</td>
<td>132307.404</td>
<td>2.6 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA9</td>
<td>351167.3</td>
<td>132025.547</td>
<td>2.6 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA11</td>
<td>352426.2</td>
<td>134538.96</td>
<td>0.5 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA12</td>
<td>352401.3</td>
<td>134345.323</td>
<td>0.1 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA13</td>
<td>352563.1</td>
<td>134402.965</td>
<td>0.9 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA14</td>
<td>352522.3</td>
<td>134199.884</td>
<td>0.6 sediment surface</td>
<td></td>
</tr>
<tr>
<td>PA15</td>
<td>352717.2</td>
<td>134245.91</td>
<td>0.7 sediment surface</td>
<td></td>
</tr>
</tbody>
</table>
THOMPSONS MARSH RESTORATION

CORE# = BZ1

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/21/16
TIME = 11:40
PENETRATING DEPTH = -5.3ft NAVD 88
CORE (RECOVERY) = 4.2ft

STRATIGRAPHY NOTES:

Top

4.2ft
Black/Gray
Organic Silt

Bottom

NOTE: NOT TO SCALE
THOMPSONS MARSH RESTORATION

CORE# = BZ2

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/21/16
TIME = 11:15
PENETRATING DEPTH = -5.4ft NAVD 88
CORE (RECOVERY) = 4.3ft

STRATIGRAPHY NOTES:

NOTE: NOT TO SCALE

4.3ft
Black/Gray
Organic Silt
THOMPSONS MARSH RESTORATION

CORE# = BZ3

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/21/16
TIME = 11:00
PENETRATING DEPTH = -5.5ft NAVD 88
CORE (RECOVERY) = 3.8ft

STRATIGRAPHY NOTES:
THOMPSONS MARSH RESTORATION
CORE# = BZ4
NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/20/15
TIME = 14:25
PENETRATING DEPTH = -5.7ft NAVD 88
CORE (RECOVERY) = 4.8ft

STRATIGRAPHY NOTES:

NOTE: NOT TO SCALE

Top

4.8ft
Black Organic Silt

Bottom
THOMPSONS MARSH RESTORATION

CORE# = BZ5

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/20/15
TIME = 14:10
PENETRATING DEPTH = -6.2ft NAVD 88
CORE (RECOVERY) = 3.4ft

STRATIGRAPHY NOTES:

3.4ft
Black Organic Silt

NOTE: NOT TO SCALE
DATE = 9/20/15
TIME = 11:15
PENETRATING DEPTH =
-6.1ft NAVD 88
CORE (RECOVERY) = 5.2ft

NOTE: NOT TO SCALE
THOMPSONS MARSH RESTORATION

CORE# = BZ7

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/20/15
TIME = 12:00
PENETRATING DEPTH = -5.7ft NAVD 88
CORE (RECOVERY) = 4.5ft

STRATIGRAPHY NOTES:

NOTE: NOT TO SCALE
THOMPSONS MARSH RESTORATION
CORE# = BZ8
NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/20/15
TIME = 12:15
PENETRATING DEPTH = -5.5ft NAVD 88
CORE (RECOVERY) = 4.2ft

STRATIGRAPHY NOTES:

3.3ft
Black Organic Silt

0.9ft
Black/Gray Organic Silt

NOTE: NOT TO SCALE
THOMPSONS MARSH RESTORATION

CORE# = BZ9

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/20/15
TIME = 12:45
PENETRATING DEPTH = -5.9ft NAVD 88
CORE (RECOVERY) = 3.0ft

NOTE: NOT TO SCALE

STRATIGRAPHY NOTES:

1.9ft Black Organic Silt

1.1ft Black/Gray Organic Silt

Bottom
THOMPSONS MARSH RESTORATION

CORE# = BZ10

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/20/15
TIME = 13:15
PENETRATING DEPTH = -5.7ft NAVD 88
CORE (RECOVERY) = 1.1ft

1.1ft Black Organic Silt

NOTE: NOT TO SCALE
THOMPSONS MARSH RESTORATION

CORE# = BZ11

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/20/15
TIME = 13:45
PENETRATING DEPTH = -5.9ft NAVD 88
CORE (RECOVERY) = 1.5ft

STRATIGRAPHY NOTES:

0.9ft Black/Gray Organic Silt

0.1ft Fine Gray Sand

0.5ft Black Organic Silt

Top

Bottom

NOTE: NOT TO SCALE
THOMPSONS MARSH RESTORATION
CORE# = PA1
NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/22/16
TIME = 10:00
SEDIMENT ELEVATION = 2.4ft NAVD 88
CORE (RECOVERY) = 0.5ft

STRATIGRAPHY NOTES:

NOTE: NOT TO SCALE
**THOMPSONS MARSH RESTORATION**

CORE# = PA2

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/22/16
TIME = 10:30
SEDIMENT ELEVATION = 2.3ft NAVD 88
CORE (RECOVERY) = 0.5ft

**STRATIGRAPHY NOTES:**

Fine sand underlying newly grown salt marsh.
THOMPSONS MARSH RESTORATION
CORE# = PA3
NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/22/16
TIME = 11:00
SEDIMENT ELEVATION = 2.3ft NAVD 88
CORE (RECOVERY) = 0.6ft

STRATIGRAPHY NOTES:

Note: Not to scale

Top

0.6ft
Salt Marsh w/Roots

Bottom
THOMPSONS MARSH RESTORATION
CORE# = PA4
NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/22/16
TIME = 11:15
SEDIMENT ELEVATION = 2.2ft NAVD 88
CORE (RECOVERY) = 0.6ft

STRATIGRAPHY NOTES:

NOTE: NOT TO SCALE
THOMPSONS MARSH RESTORATION

CORE# = PA5

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/22/16
TIME = 11:35
SEDIMENT ELEVATION = 2.6ft NAVD 88
CORE (RECOVERY) = 0.6ft

STRATIGRAPHY NOTES:

Top

0.6ft
Salt Marsh w/Roots

Bottom

NOTE: NOT TO SCALE
THOMPSONS MARSH RESTORATION

CORE# = PA6

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/22/16
TIME = 11:45
SEDIMENT ELEVATION = 2.6ft NAVD 88
CORE (RECOVERY) = 0.6ft

NOTE: NOT TO SCALE
THOMPSONS MARSH RESTORATION

CORE# = PA7

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/22/16
TIME = 11:50
SEDIMENT ELEVATION = 2.6ft NAVD 88
CORE (RECOVERY) = 0.6ft

NOTE: NOT TO SCALE

STRATIGRAPHY NOTES:

Top

0.6ft
Salt Marsh w/Roots

Bottom
THOMPSONS MARSH RESTORATION

CORE# = PA8

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/22/16
TIME = 12:25
SEDIMENT ELEVATION = 2.6ft NAVD 88
CORE (RECOVERY) = 0.6ft

STRATIGRAPHY NOTES:

NOTE: NOT TO SCALE
DATE = 9/22/16
TIME = 12:05
SEDIMENT ELEVATION = 2.6ft NAVD 88
CORE (RECOVERY) = 0.6ft
THOMPSONS MARSH RESTORATION

CORE# = PA10

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/22/16
TIME = 12:15
SEDIMENT ELEVATION = 2.6ft NAVD 88
CORE (RECOVERY) = 0.6ft

STRATIGRAPHY NOTES:
THOMPSONS MARSH RESTORATION

CORE# = PA11

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/21/16
TIME = 13:30
SEDIMENT ELEVATION =
0.5ft NAVD 88
CORE (RECOVERY) = 0.5ft

NOTE: NOT TO SCALE

0.5ft
Black
Organic Silt
THOMPSONS MARSH RESTORATION

CORE# = PA12

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/21/16
TIME = 13:15
SEDIMENT ELEVATION = 0.1ft NAVD 88
CORE (RECOVERY) = 0.6ft

NOTE: NOT TO SCALE

0.6ft
Black
Organic Silt
THOMPSONS MARSH RESTORATION

CORE# = PA13

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/21/16
TIME = 12:30
SEDIMENT ELEVATION = 0.9ft NAVD 88
CORE (RECOVERY) = 0.5ft

0.5ft
Black
Organic Silt

NOTE: NOT TO SCALE
THOMPSONS MARSH RESTORATION

CORE# = PA14

NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/21/16
TIME = 13:00
SEDIMENT ELEVATION = 0.6ft NAVD 88
CORE (RECOVERY) = 0.5ft

STRATIGRAPHY NOTES:

NOTE: NOT TO SCALE
THOMPSONS MARSH RESTORATION
CORE# = PA15
NOTE: MEASUREMENTS GIVEN IN FEET

DATE = 9/21/16
TIME = 12:45
SEDIMENT ELEVATION = 0.7ft NAVD 88
CORE (RECOVERY) = 0.5ft

NOTE: NOT TO SCALE