

**Monthly Report: February 2017**

**BARUCH  
INSTITUTE OF  
COASTAL  
ECOLOGY AND  
FOREST  
SCIENCE**

Highway 17 North  
PO Box 596  
Georgetown, SC  
29442-0596

**P (843) 546-1013  
F (843) 546-6296**

**To:**

William Bailey, Mary Richards, and Nathan Dayan  
US Army Corps of Engineers - Savannah District  
100 W. Oglethorpe Ave.  
Savannah, GA 31401

06 March 2017

**By:**

Jamie Duberstein

USACE Savannah District:

Please see the bulleted list below for the major actions and accomplishments associated with Cooperative Agreement Number W912HZ-14-2-0002 (Modification Number P00002) for the month of February 2017.

Please let me know if you would like me to elaborate on the details of any items I've listed below, or if there are any status updates you'd like on unlisted topics.

Thank you,

Jamie

## Marsh Vegetation

- There are no updates.

## Water Data

- Data from all water sensors were downloaded during the days of 15 – 16 February.
- An updated salinity table is provided (Table 1).
- See Table 2 for a complete list of salinity data losses thus far for FY17.
- A “spot check” of belowground salinity conditions were measured using a YSI Pro30 handheld salinity meter during the February sensor download. Salinity values were compared to those measured via Aquatrolls (Table 3).
- Last month we reported the discovery of potential errors with the data coming from the belowground sensor at Back 3. The sensor manufacturer tested the unit and verified there was some fouling occurring. The manufacturer cleaned and calibrated the sensor, tested it against standards, and returned it ready for deployment (once programmed).
  - Recall the “bad” salinity data associated with fouling events (Table 2) were already deleted prior to calculating the summaries (Table 1) in the January 2017 monthly report, and now going forward. However, the Nov 2016 and Dec 2016 monthly reports and the FY17 1<sup>st</sup> quarter report may have slightly different values than those presented in Table 1 because the measurement errors (sensor fouling) were not identified at the time.

## Forest monitoring

- Monthly measurements of baldcypress tree growth were last taken on 16 February at the swamp monitoring areas.
- Average basal area increase since last measurement:
  - Swamp 1: -0.1 cm<sup>2</sup> (20 January – 16 February)
  - Swamp 2: -0.1 cm<sup>2</sup> (20 January – 16 February)
  - Swamp 3: -0.1 cm<sup>2</sup> (20 January – 16 February)

Table 1. Fiscal Year 2017 average, minimum, and maximum salinity (psu: practical salinity units) measured via sensors at above- and below-ground locations at (12) marsh monitoring areas and (3) tidal forest areas. Summaries are based on hourly measurements starting 01 October 2016 through 16 February 2017 for all monitoring areas unless noted by superscript; details of data losses are provided in Table 2. Measurements taken during dry well conditions were removed from calculations of summary statistics.

| Area   | Month          | <u>Aboveground Salinity (psu)</u> |                   |                   | <u>Belowground Salinity (psu)</u> |             |      |
|--------|----------------|-----------------------------------|-------------------|-------------------|-----------------------------------|-------------|------|
|        |                | Avg. (std. err.)                  | Min               | Max               | Avg. (std. err.)                  | Min         | Max  |
| Back 1 | October 2016   | 0.03 (0.01)                       | 0.00              | 0.24              | 0.22 (0.00)                       | 0.12        | 0.30 |
|        | November 2016  | 0.07 (0.01)                       | 0.00              | 0.55              | 0.32 (0.00)                       | 0.26        | 0.39 |
|        | December 2016  | 0.04 (0.01)                       | 0.00              | 0.12              | 0.23 (0.00)                       | 0.16        | 0.33 |
|        | January 2017   | 0.05 (0.00)                       | 0.05              | 0.06              | 0.13 (0.00)                       | 0.09        | 0.18 |
|        | February 2017  | 0.05 <sup>c</sup>                 | 0.05 <sup>c</sup> | 0.05 <sup>c</sup> | 0.09 (0.00)                       | 0.07        | 0.11 |
|        | March 2017     |                                   |                   |                   |                                   |             |      |
|        | April 2017     |                                   |                   |                   |                                   |             |      |
|        | May 2017       |                                   |                   |                   |                                   |             |      |
|        | June 2017      |                                   |                   |                   |                                   |             |      |
|        | July 2017      |                                   |                   |                   |                                   |             |      |
|        | August 2017    |                                   |                   |                   |                                   |             |      |
|        | September 2017 |                                   |                   |                   |                                   |             |      |
|        |                | <b>FY17</b>                       | 0.05 (0.01)       | 0.00              | 0.55                              | 0.21 (0.00) | 0.07 |
| Back 2 | October 2016   | 0.16 (0.01)                       | 0.00              | 1.58              | 0.31 (0.00)                       | 0.19        | 0.53 |
|        | November 2016  | 0.35 (0.03)                       | 0.00              | 2.61              | 0.63 (0.01)                       | 0.28        | 1.30 |
|        | December 2016  | 0.06 (0.01)                       | 0.00              | 0.85              | 0.28 (0.00)                       | 0.15        | 0.72 |
|        | January 2017   | 0.04 (0.01)                       | 0.00              | 0.34              | 0.15 (0.00)                       | 0.07        | 0.33 |
|        | February 2017  | 0.06 (0.01)                       | 0.00              | 0.18              | 0.11 (0.00)                       | 0.08        | 0.14 |
|        | March 2017     |                                   |                   |                   |                                   |             |      |
|        | April 2017     |                                   |                   |                   |                                   |             |      |
|        | May 2017       |                                   |                   |                   |                                   |             |      |
|        | June 2017      |                                   |                   |                   |                                   |             |      |
|        | July 2017      |                                   |                   |                   |                                   |             |      |
|        | August 2017    |                                   |                   |                   |                                   |             |      |
|        | September 2017 |                                   |                   |                   |                                   |             |      |
|        |                | <b>FY17</b>                       | 0.16 (0.01)       | 0.00              | 2.61                              | 0.31 (0.00) | 0.07 |

<sup>c</sup>single flood event

Table 1 (cont'd). Fiscal Year 2017 average, minimum, and maximum salinity at above- and below-ground locations in marsh and tidal freshwater forest monitoring areas.

| Area     | Month          | Aboveground Salinity (psu) |                          |                   | Belowground Salinity (psu) |                          |                   |
|----------|----------------|----------------------------|--------------------------|-------------------|----------------------------|--------------------------|-------------------|
|          |                | Avg. (std. err.)           | Min                      | Max               | Avg. (std. err.)           | Min                      | Max               |
| Back 3   | October 2016   | 0.24 (0.03)                | 0.00                     | 2.63              | 1.19 (0.02)                | 0.41                     | 1.96              |
|          | November 2016  | 0.52 (0.06)                | 0.00                     | 4.05              | 1.36 (0.02) <sup>a</sup>   | 0.63 <sup>a</sup>        | 3.50 <sup>a</sup> |
|          | December 2016  | 0.10 (0.02)                | 0.00                     | 2.39              | 0.81 (0.01) <sup>a</sup>   | 0.40 <sup>a</sup>        | 1.50 <sup>a</sup> |
|          | January 2017   | 0.08 (0.01) <sup>a</sup>   | 0.00 <sup>a</sup>        | 0.17 <sup>a</sup> | 0.65 (0.00) <sup>a</sup>   | 0.27 <sup>a</sup>        | 1.84 <sup>a</sup> |
|          | February 2017  | 0.07 (0.03)                | 0.00                     | 0.27              | 0.58 (0.01)                | 0.19                     | 0.81              |
|          | March 2017     |                            |                          |                   |                            |                          |                   |
|          | April 2017     |                            |                          |                   |                            |                          |                   |
|          | May 2017       |                            |                          |                   |                            |                          |                   |
|          | June 2017      |                            |                          |                   |                            |                          |                   |
|          | July 2017      |                            |                          |                   |                            |                          |                   |
|          | August 2017    |                            |                          |                   |                            |                          |                   |
|          | September 2017 |                            |                          |                   |                            |                          |                   |
|          |                | <b>FY17</b>                | 0.30 (0.03) <sup>a</sup> | 0.00 <sup>a</sup> | 4.05 <sup>a</sup>          | 0.98 (0.01) <sup>a</sup> | 0.19 <sup>a</sup> |
| Back 3.5 | October 2016   | 0.44 (0.04)                | 0.00                     | 10.27             | 2.14 (0.01)                | 1.75                     | 2.44              |
|          | November 2016  | 0.87 (0.07)                | 0.00                     | 5.37              | 2.28 (0.00)                | 2.09                     | 2.73              |
|          | December 2016  | 0.20 (0.02)                | 0.00                     | 2.74              | 2.24 (0.00)                | 2.05                     | 2.37              |
|          | January 2017   | 0.15 (0.03)                | 0.00                     | 1.79              | 2.14 (0.00)                | 1.97                     | 2.31              |
|          | February 2017  | 0.17 (0.03)                | 0.00                     | 0.58              | 2.06 (0.00)                | 1.95                     | 2.13              |
|          | March 2017     |                            |                          |                   |                            |                          |                   |
|          | April 2017     |                            |                          |                   |                            |                          |                   |
|          | May 2017       |                            |                          |                   |                            |                          |                   |
|          | June 2017      |                            |                          |                   |                            |                          |                   |
|          | July 2017      |                            |                          |                   |                            |                          |                   |
|          | August 2017    |                            |                          |                   |                            |                          |                   |
|          | September 2017 |                            |                          |                   |                            |                          |                   |
|          |                | <b>FY17</b>                | 0.45 (0.03)              | 0.00              | 10.27                      | 2.18 (0.00)              | 1.75              |

<sup>a</sup> Incomplete data record. See Table 2 for details.

Table 1 (cont'd). Fiscal Year 2017 average, minimum, and maximum salinity at above- and below-ground locations in marsh and tidal freshwater forest monitoring areas.

| Area    | Month          | Aboveground Salinity (psu) |             |      | Belowground Salinity (psu) |             |      |
|---------|----------------|----------------------------|-------------|------|----------------------------|-------------|------|
|         |                | Avg. (std. err.)           | Min         | Max  | Avg. (std. err.)           | Min         | Max  |
| Back 4  | October 2016   | 1.01 (0.06)                | 0.00        | 8.96 | 3.68 (0.02)                | 3.01        | 4.50 |
|         | November 2016  | 1.38 (0.11)                | 0.00        | 8.80 | 3.76 (0.02)                | 3.15        | 4.18 |
|         | December 2016  | 0.66 (0.06)                | 0.00        | 5.72 | 3.87 (0.01)                | 3.50        | 4.20 |
|         | January 2017   | 0.34 (0.05)                | 0.00        | 3.12 | 3.06 (0.02)                | 2.23        | 3.68 |
|         | February 2017  | 0.18 (0.04)                | 0.00        | 1.83 | 2.07 (0.00)                | 2.03        | 2.23 |
|         | March 2017     |                            |             |      |                            |             |      |
|         | April 2017     |                            |             |      |                            |             |      |
|         | May 2017       |                            |             |      |                            |             |      |
|         | June 2017      |                            |             |      |                            |             |      |
|         | July 2017      |                            |             |      |                            |             |      |
|         | August 2017    |                            |             |      |                            |             |      |
|         | September 2017 |                            |             |      |                            |             |      |
|         |                | <b>FY17</b>                | 0.89 (0.04) | 0.00 | 8.96                       | 3.43 (0.01) | 2.03 |
| Front 1 | October 2016   | 0.18 (0.02)                | 0.00        | 1.23 | 0.25 (0.00)                | 0.09        | 0.60 |
|         | November 2016  | 0.42 (0.03)                | 0.00        | 1.86 | 0.56 (0.01)                | 0.30        | 0.94 |
|         | December 2016  | 0.10 (0.01)                | 0.00        | 0.66 | 0.42 (0.00)                | 0.28        | 0.63 |
|         | January 2017   | 0.07 (0.00)                | 0.02        | 0.14 | 0.30 (0.00)                | 0.20        | 0.36 |
|         | February 2017  | 0.07 (0.01)                | 0.00        | 0.20 | 0.23 (0.00)                | 0.18        | 0.29 |
|         | March 2017     |                            |             |      |                            |             |      |
|         | April 2017     |                            |             |      |                            |             |      |
|         | May 2017       |                            |             |      |                            |             |      |
|         | June 2017      |                            |             |      |                            |             |      |
|         | July 2017      |                            |             |      |                            |             |      |
|         | August 2017    |                            |             |      |                            |             |      |
|         | September 2017 |                            |             |      |                            |             |      |
|         |                | <b>FY17</b>                | 0.23 (0.02) | 0.00 | 1.86                       | 0.36 (0.00) | 0.09 |

Table 1 (cont'd). Fiscal Year 2017 average, minimum, and maximum salinity at above- and below-ground locations in marsh and tidal freshwater forest monitoring areas.

| Area     | Month          | Aboveground Salinity (psu) |                          |                   | Belowground Salinity (psu) |             |      |
|----------|----------------|----------------------------|--------------------------|-------------------|----------------------------|-------------|------|
|          |                | Avg. (std. err.)           | Min                      | Max               | Avg. (std. err.)           | Min         | Max  |
| Front 2  | October 2016   | 0.52 (0.07)                | 0.00                     | 12.29             | 1.43 (0.02)                | 0.48        | 6.07 |
|          | November 2016  | 0.83 (0.08)                | 0.00                     | 6.53              | 1.84 (0.01)                | 1.15        | 2.26 |
|          | December 2016  | 0.21 (0.03)                | 0.00                     | 5.73              | 1.58 (0.01)                | 1.30        | 2.20 |
|          | January 2017   | 0.12 (0.02)                | 0.00                     | 1.87              | 1.04 (0.01)                | 0.34        | 1.77 |
|          | February 2017  | 0.24 (0.04)                | 0.00                     | 1.13              | 0.62 (0.01)                | 0.43        | 0.79 |
|          | March 2017     |                            |                          |                   |                            |             |      |
|          | April 2017     |                            |                          |                   |                            |             |      |
|          | May 2017       |                            |                          |                   |                            |             |      |
|          | June 2017      |                            |                          |                   |                            |             |      |
|          | July 2017      |                            |                          |                   |                            |             |      |
|          | August 2017    |                            |                          |                   |                            |             |      |
|          | September 2017 |                            |                          |                   |                            |             |      |
|          |                | <b>FY17</b>                | 0.48 (0.03)              | 0.00              | 12.29                      | 1.38 (0.01) | 0.34 |
| Middle 1 | October 2016   | 0.29 (0.02) <sup>a</sup>   | 0.08 <sup>a</sup>        | 0.35 <sup>a</sup> | 0.55 (0.02)                | 0.24        | 9.62 |
|          | November 2016  | 1.11 (0.09)                | 0.00                     | 3.46              | 0.88 (0.02)                | 0.37        | 1.68 |
|          | December 2016  | 0.37 (0.02)                | 0.00                     | 0.79              | 0.83 (0.00)                | 0.70        | 0.95 |
|          | January 2017   | 0.17 (0.02)                | 0.02                     | 0.39              | 0.64 (0.00)                | 0.36        | 0.74 |
|          | February 2017  | 0.09 (0.02)                | 0.00                     | 0.28              | 0.51 (0.00)                | 0.44        | 0.56 |
|          | March 2017     |                            |                          |                   |                            |             |      |
|          | April 2017     |                            |                          |                   |                            |             |      |
|          | May 2017       |                            |                          |                   |                            |             |      |
|          | June 2017      |                            |                          |                   |                            |             |      |
|          | July 2017      |                            |                          |                   |                            |             |      |
|          | August 2017    |                            |                          |                   |                            |             |      |
|          | September 2017 |                            |                          |                   |                            |             |      |
|          |                | <b>FY17</b>                | 0.59 (0.05) <sup>a</sup> | 0.00 <sup>a</sup> | 3.46 <sup>a</sup>          | 0.70 (0.01) | 0.24 |

<sup>a</sup> Incomplete data record. See Table 2 for details.

Table 1 (cont'd). Fiscal Year 2017 average, minimum, and maximum salinity at above- and below-ground locations in marsh and tidal freshwater forest monitoring areas.

| Area           | Month          | Aboveground Salinity (psu) |                  |                  | Belowground Salinity (psu) |             |       |       |
|----------------|----------------|----------------------------|------------------|------------------|----------------------------|-------------|-------|-------|
|                |                | Avg. (std. err.)           | Min              | Max              | Avg. (std. err.)           | Min         | Max   |       |
| Middle 2       | October 2016   | 0.84 (0.36)                | 0.00             | 11.67            | 0.75 (0.04)                | 0.19        | 11.17 |       |
|                | November 2016  | 0.34 (0.12)                | 0.00             | 6.20             | 1.44 (0.03)                | 0.48        | 5.50  |       |
|                | December 2016  | 0.16 (0.03)                | 0.00             | 0.94             | 1.04 (0.02)                | 0.42        | 2.00  |       |
|                | January 2017   | 0.11 (0.01)                | 0.00             | 0.57             | 0.70 (0.01)                | 0.32        | 0.98  |       |
|                | February 2017  | 0.10 (0.02)                | 0.08             | 0.12             | 0.56 (0.01)                | 0.34        | 0.99  |       |
|                | March 2017     |                            |                  |                  |                            |             |       |       |
|                | April 2017     |                            |                  |                  |                            |             |       |       |
|                | May 2017       |                            |                  |                  |                            |             |       |       |
|                | June 2017      |                            |                  |                  |                            |             |       |       |
|                | July 2017      |                            |                  |                  |                            |             |       |       |
|                | August 2017    |                            |                  |                  |                            |             |       |       |
|                | September 2017 |                            |                  |                  |                            |             |       |       |
|                | <b>FY17</b>    |                            | 0.30 (0.07)      | 0.00             | 11.67                      | 0.93 (0.01) | 0.19  | 11.17 |
|                | Middle 3       | October 2016               | 0.26 (0.26)      | 0.00             | 5.92                       | 1.02 (0.04) | 0.32  | 9.64  |
| November 2016  |                | N/A <sup>b</sup>           | N/A <sup>b</sup> | N/A <sup>b</sup> | 2.01 (0.04)                | 0.80        | 5.28  |       |
| December 2016  |                | 0.24 (0.05)                | 0.00             | 1.29             | 1.35 (0.02)                | 0.54        | 2.64  |       |
| January 2017   |                | 0.21 (0.05)                | 0.00             | 0.89             | 0.96 (0.01)                | 0.47        | 1.37  |       |
| February 2017  |                | N/A <sup>b</sup>           | N/A <sup>b</sup> | N/A <sup>b</sup> | 0.78 (0.01)                | 0.59        | 1.16  |       |
| March 2017     |                |                            |                  |                  |                            |             |       |       |
| April 2017     |                |                            |                  |                  |                            |             |       |       |
| May 2017       |                |                            |                  |                  |                            |             |       |       |
| June 2017      |                |                            |                  |                  |                            |             |       |       |
| July 2017      |                |                            |                  |                  |                            |             |       |       |
| August 2017    |                |                            |                  |                  |                            |             |       |       |
| September 2017 |                |                            |                  |                  |                            |             |       |       |
| <b>FY17</b>    |                |                            | 0.24 (0.06)      | 0.00             | 5.92                       | 1.27 (0.02) | 0.32  | 9.64  |

<sup>b</sup> There wasn't aboveground flooding for this reporting period.

Table 1 (cont'd). Fiscal Year 2017 average, minimum, and maximum salinity at above- and below-ground locations in marsh and tidal freshwater forest monitoring areas.

| Area     | Month          | Aboveground Salinity (psu) |             |       | Belowground Salinity (psu) |                          |                    |
|----------|----------------|----------------------------|-------------|-------|----------------------------|--------------------------|--------------------|
|          |                | Avg. (std. err.)           | Min         | Max   | Avg. (std. err.)           | Min                      | Max                |
| Middle 4 | October 2016   | 0.55 (0.09)                | 0.00        | 16.89 | 3.23 (0.07) <sup>a</sup>   | 1.02 <sup>a</sup>        | 11.16 <sup>a</sup> |
|          | November 2016  | 0.81 (0.09)                | 0.00        | 7.41  | 3.74 (0.02)                | 2.60                     | 4.90               |
|          | December 2016  | 0.14 (0.03)                | 0.00        | 6.34  | 3.38 (0.03)                | 2.17                     | 5.90               |
|          | January 2017   | 0.20 (0.04)                | 0.00        | 0.83  | 2.36 (0.02)                | 1.16                     | 3.33               |
|          | February 2017  | 0.16 (0.07)                | 0.00        | 1.53  | 1.95 (0.01)                | 1.48                     | 2.51               |
|          | March 2017     |                            |             |       |                            |                          |                    |
|          | April 2017     |                            |             |       |                            |                          |                    |
|          | May 2017       |                            |             |       |                            |                          |                    |
|          | June 2017      |                            |             |       |                            |                          |                    |
|          | July 2017      |                            |             |       |                            |                          |                    |
|          | August 2017    |                            |             |       |                            |                          |                    |
|          | September 2017 |                            |             |       |                            |                          |                    |
|          |                | <b>FY17</b>                | 0.50 (0.05) | 0.00  | 16.89                      | 3.03 (0.02) <sup>a</sup> | 1.02 <sup>a</sup>  |
| Middle 5 | October 2016   | 0.63 (0.05)                | 0.00        | 10.82 | 1.51 (0.01)                | 0.92                     | 2.42               |
|          | November 2016  | 0.84 (0.06)                | 0.00        | 5.57  | 1.54 (0.01)                | 1.17                     | 1.78               |
|          | December 2016  | 0.26 (0.02)                | 0.00        | 3.63  | 1.69 (0.00)                | 1.58                     | 1.75               |
|          | January 2017   | 0.15 (0.02)                | 0.00        | 1.85  | 1.56 (0.01)                | 1.19                     | 1.73               |
|          | February 2017  | 0.13 (0.02)                | 0.00        | 0.99  | 1.43 (0.00)                | 1.28                     | 1.63               |
|          | March 2017     |                            |             |       |                            |                          |                    |
|          | April 2017     |                            |             |       |                            |                          |                    |
|          | May 2017       |                            |             |       |                            |                          |                    |
|          | June 2017      |                            |             |       |                            |                          |                    |
|          | July 2017      |                            |             |       |                            |                          |                    |
|          | August 2017    |                            |             |       |                            |                          |                    |
|          | September 2017 |                            |             |       |                            |                          |                    |
|          |                | <b>FY17</b>                | 0.51 (0.02) | 0.00  | 10.82                      | 1.56 (0.00)              | 0.92               |

<sup>a</sup> Incomplete data record. See Table 2 for details.



Table 1 (cont'd). Fiscal Year 2017 average, minimum, and maximum salinity at above- and below-ground locations in marsh and tidal freshwater forest monitoring areas.

| Area           | Month          | Aboveground Salinity (psu) |             |      | Belowground Salinity (psu) |             |      |      |
|----------------|----------------|----------------------------|-------------|------|----------------------------|-------------|------|------|
|                |                | Avg. (std. err.)           | Min         | Max  | Avg. (std. err.)           | Min         | Max  |      |
| Swamp 1        | October 2016   | 0.07 (0.00)                | 0.00        | 0.43 | 0.07 (0.00)                | 0.06        | 0.08 |      |
|                | November 2016  | 0.07 (0.00)                | 0.00        | 0.08 | 0.07 (0.00)                | 0.06        | 0.09 |      |
|                | December 2016  | 0.05 (0.00)                | 0.00        | 0.07 | 0.07 (0.00)                | 0.05        | 0.09 |      |
|                | January 2017   | 0.04 (0.00)                | 0.00        | 0.05 | 0.06 (0.00)                | 0.05        | 0.07 |      |
|                | February 2017  | 0.04 (0.00)                | 0.04        | 0.05 | 0.05 (0.00)                | 0.04        | 0.06 |      |
|                | March 2017     |                            |             |      |                            |             |      |      |
|                | April 2017     |                            |             |      |                            |             |      |      |
|                | May 2017       |                            |             |      |                            |             |      |      |
|                | June 2017      |                            |             |      |                            |             |      |      |
|                | July 2017      |                            |             |      |                            |             |      |      |
|                | August 2017    |                            |             |      |                            |             |      |      |
|                | September 2017 |                            |             |      |                            |             |      |      |
|                | <b>FY17</b>    |                            | 0.06 (0.00) | 0.00 | 0.43                       | 0.06 (0.00) | 0.04 | 0.09 |
|                | Swamp 2        | October 2016               | 0.46 (0.09) | 0.00 | 10.95                      | 0.25 (0.00) | 0.14 | 0.37 |
| November 2016  |                | 0.43 (0.04)                | 0.00        | 1.80 | 0.33 (0.00)                | 0.31        | 0.37 |      |
| December 2016  |                | 0.22 (0.01)                | 0.01        | 0.36 | 0.27 (0.00)                | 0.21        | 0.32 |      |
| January 2017   |                | 0.10 (0.01)                | 0.00        | 0.18 | 0.20 (0.00)                | 0.18        | 0.23 |      |
| February 2017  |                | 0.08 (0.01)                | 0.00        | 0.13 | 0.16 (0.00)                | 0.13        | 0.19 |      |
| March 2017     |                |                            |             |      |                            |             |      |      |
| April 2017     |                |                            |             |      |                            |             |      |      |
| May 2017       |                |                            |             |      |                            |             |      |      |
| June 2017      |                |                            |             |      |                            |             |      |      |
| July 2017      |                |                            |             |      |                            |             |      |      |
| August 2017    |                |                            |             |      |                            |             |      |      |
| September 2017 |                |                            |             |      |                            |             |      |      |
| <b>FY17</b>    |                |                            | 0.37 (0.04) | 0.00 | 10.95                      | 0.25 (0.00) | 0.13 | 0.37 |

Table 1 (cont'd). Fiscal Year 2017 average, minimum, and maximum salinity at above- and below-ground locations in marsh and tidal freshwater forest monitoring areas.

| Area    | Month          | Aboveground Salinity (psu) |      |      | Belowground Salinity (psu) |      |      |
|---------|----------------|----------------------------|------|------|----------------------------|------|------|
|         |                | Avg. (std. err.)           | Min  | Max  | Avg. (std. err.)           | Min  | Max  |
| Swamp 3 | October 2016   | 0.25 (0.04)                | 0.00 | 5.72 | 0.32 (0.00)                | 0.20 | 0.57 |
|         | November 2016  | 0.38 (0.04)                | 0.00 | 3.04 | 0.39 (0.01)                | 0.19 | 0.66 |
|         | December 2016  | 0.11 (0.01)                | 0.00 | 0.68 | 0.32 (0.00)                | 0.21 | 0.41 |
|         | January 2017   | 0.09 (0.01)                | 0.00 | 0.26 | 0.18 (0.00)                | 0.01 | 0.22 |
|         | February 2017  | 0.09 (0.00)                | 0.01 | 0.11 | 0.11 (0.00)                | 0.09 | 0.14 |
|         | March 2017     |                            |      |      |                            |      |      |
|         | April 2017     |                            |      |      |                            |      |      |
|         | May 2017       |                            |      |      |                            |      |      |
|         | June 2017      |                            |      |      |                            |      |      |
|         | July 2017      |                            |      |      |                            |      |      |
|         | August 2017    |                            |      |      |                            |      |      |
|         | September 2017 |                            |      |      |                            |      |      |
|         | <b>FY17</b>    | 0.23 (0.02)                | 0.00 | 5.72 | 0.28 (0.00)                | 0.01 | 0.66 |

Table 2. Summary of FY17 salinity data losses from Aquatroll sensors deployed at SHEP monitoring areas between the dates of 01 October - 16 February 2017. Data loss periods and number of days may include periods within FY16. Minor data losses were incurred when data were downloaded near pre-programmed sensor measurements. Water level data losses may be beyond dates listed below.

| Area     | Position    | Data loss period |                  |       | # Days                 | Reason |
|----------|-------------|------------------|------------------|-------|------------------------|--------|
|          |             | Beginning        | End              |       |                        |        |
| Middle 1 | Aboveground | 09/28/2016 03:00 | 10/20/2016 12:00 | 22.38 | Circuit board failure  |        |
| Middle 4 | Belowground | 10/09/2016 07:00 | 10/20/2016 15:00 | 11.33 | Circuit board failure  |        |
| Back 3   | Belowground | 11/06/2016 02:00 | 11/06/2016 18:00 | 0.67  | Sensor fouling         |        |
| Back 3   | Belowground | 12/07/2016 08:00 | 12/09/2016 07:00 | 1.96  | Sensor fouling         |        |
| Back 3   | Belowground | 12/15/2016 20:00 | 12/17/2016 14:00 | 1.75  | Sensor fouling         |        |
| Back 3   | Belowground | 12/29/2016 10:00 | 12/29/2016 21:00 | 0.46  | Sensor fouling         |        |
| Back 3   | Belowground | 01/17/2017 04:00 | 01/27/2017 13:00 | 10.38 | Sensor fouling         |        |
| Back 3   | Aboveground | 01/19/2017 11:00 | 01/27/2017 13:00 | 8.08  | Missing Barotroll data |        |

Table 3. Comparison of belowground salinity measurements taken February 2017 via autonomous sensors (In-Situ Aquatrolls) versus a "spot check" measured via handheld YSI salinity meter (units: parts per thousand = ppt). Reports typically provide summaries of hourly Aquatroll measurements of salinity as practical salinity units (psu) though measurements of total dissolved solids as parts per thousand (ppt) are also collected. Here we report both Aquatroll measurements to facilitate comparisons with handheld YSI measurements. Accuracy of the handheld YSI meter is 0.1 (ppt), while accuracy of the Aquatrolls is 0.001 (psu, ppt); Aquatroll values were rounded to the nearest 0.1 to facilitate comparisons.

| Site     | Aquatroll Total             |                           | YSI "spot check"<br>(ppt) | YSI Measurement Time | Aquatroll Measurement Time |
|----------|-----------------------------|---------------------------|---------------------------|----------------------|----------------------------|
|          | Aquatroll Salinity<br>(psu) | Dissolved Solids<br>(ppt) |                           |                      |                            |
| Back 1   | 0.1                         | 0.1                       | 0.1                       | 02/15/2017 11:52     | 02/15/2017 11:00           |
| Back 2   | 0.1                         | 0.1                       | 0.1                       | 02/15/2017 12:18     | 02/15/2017 12:00           |
| Back 3   | 0.7                         | 0.9                       | 0.7                       | 02/15/2017 12:42     | 02/15/2017 12:00           |
| Back 3.5 | 2.1                         | 2.5                       | 2.1                       | 02/15/2017 13:04     | 02/15/2017 13:00           |
| Back 4   | 2.0                         | 2.5                       | 1.7                       | 02/15/2017 13:33     | 02/15/2017 13:00           |
| Front 1  | 0.2                         | 0.3                       | 0.2                       | 02/16/2017 11:53     | 02/16/2017 11:00           |
| Front 2  | 0.6                         | 0.8                       | 0.8                       | 02/16/2017 12:32     | 02/16/2017 12:00           |
| Middle 1 | 0.5                         | 0.6                       | 0.5                       | 02/15/2017 11:22     | 02/15/2017 11:00           |
| Middle 2 | 0.7                         | 0.9                       | 0.7                       | 02/15/2017 10:56     | 02/15/2017 10:00           |
| Middle 3 | 0.7                         | 0.8                       | 0.7                       | 02/15/2017 10:31     | 02/15/2017 10:00           |
| Middle 4 | 2.0                         | 2.5                       | 2.0                       | 02/16/2017 13:21     | 02/16/2017 13:00           |
| Middle 5 | 1.4                         | 1.8                       | 1.4                       | 02/16/2017 13:45     | 02/16/2017 13:00           |
| Swamp 1  | 0.0                         | 0.1                       | 0.1                       | 02/16/2017 09:04     | 02/16/2017 09:00           |
| Swamp 2  | 0.2                         | 0.2                       | 0.2                       | 02/16/2017 10:04     | 02/16/2017 10:00           |
| Swamp 3  | 0.1                         | 0.1                       | 0.1                       | 02/16/2017 10:51     | 02/16/2017 10:00           |