

**Monthly Report: April 2016**

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**By:**  
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Bill and Mary:

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 April 2016. 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.

Best Regards,

Jamie

### Marsh Vegetation

- No new activity to report.

### Water Data

- 18 Aquatrroll sensors were exchanged for a newer version of the sensor, with an updated circuit board.
  - This exchange was provided gratis by In-Situ in response to the recently high rate of sensor failure.
- All deployed sensors that were previously exchanged (due to failure), with the updated circuit boards, were calibrated for salinity during the monthly download trip on 19-21 April 2016.
- Analysis of 2015 water level values recorded at Swamp 3 revealed daily patterns that were tidal, but long-term trends indicated some unknown error was occurring, perhaps as though the belowground well was filling with sediments (Figure 1).
  - The Swamp 3 monitoring station was pulled from the ground on 20 April with the intention to clear the belowground well of accumulated sediments and outfit the well with several layers of leg hosiery, which has proven to decreased intrusion of sediments at other (non-SHEP) well deployments.
  - The lower portion of the belowground well was removed from the platform and inspected. No sediments were accumulated inside the well. The well was re-assembled, and outfitted with leg hosiery just as a preventative. The monitoring station was then re-set in the ground.
  - The belowground sensor was removed under the assumption that the sensor must be malfunctioning because the well was performing well, as there were no accumulated sediments. The sensor is being sent to the In-Situ service department to determine the problem. Note this sensor has the new circuitry.
  - A new (replacement) sensor was programmed and deployed.
- The complete record of sensor data were not downloaded during the April download/exchange/calibration effort.
  - No data were lost, but must be downloaded during the May trip.
  - An updated salinity table is not included with this April monthly report, but will be included in the May report.

- A “spot check” of salinity conditions were measured using a handheld YSI meter during the download/exchange/calibration effort in April.
  - 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 values 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.
  - A comparison of salinity values (Aquatrolls versus handheld YSI) is provided in Table 1.

#### Forest monitoring

- Monthly measurements of baldcypress tree growth were last taken on 20 April at Swamp 1, Swamp 2, and Swamp 3.
- Average basal area increase since last measurement:
  - Swamp 1: -0.2 cm<sup>2</sup> (15 Mar. – 20 April)
  - Swamp 2: -0.2 cm<sup>2</sup> (15 Mar. – 20 April)
  - Swamp 3: -0.1 cm<sup>2</sup> (15 Mar. – 20 April)

#### Herpetofauna (MS student) study

- No new activity to report.

### Swamp 3 water levels

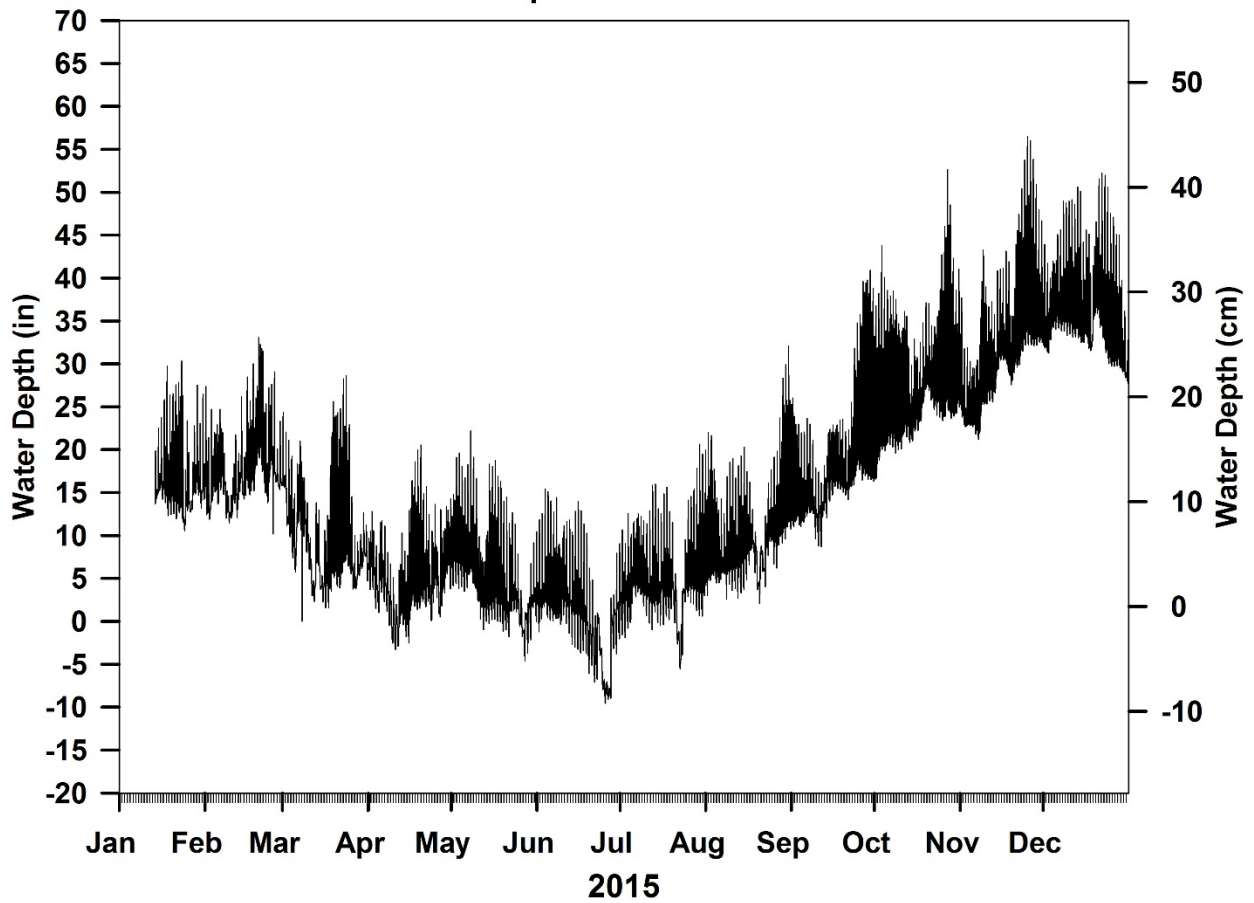


Figure 1. Annual water level measurements at the Swamp 3 tidal forest monitoring area. These measurements were post-processed to compensate for atmospheric conditions, but were not adjusted for ground level. It is assumed that the sensor was malfunctioning; the well was inspected and no sediment accumulation was present.

Table 1. Comparison of belowground salinity measurements taken April 2016 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.

<b>Site</b>	<b>Aquatroll Salinity (psu)</b>	<b>Aquatroll Total Dissolved Solids (ppt)</b>	<b>YSI "spot check" (ppt)</b>	<b>YSI Measurement Time</b>	<b>Aquatroll Measurement Time</b>
Back 1	0.10	0.14	0.1	04/19/2016 16:16	04/19/2016 15:45
Back 2	0.08	0.11	0.1	04/19/2016 10:15	04/19/2016 08:00
Back 3	0.15	0.20	N/A <sup>a</sup>	04/19/2016 11:24	04/19/2016 10:00
Back 3.5	1.83	2.24	1.8	04/19/2016 12:11	04/19/2016 11:00
Back 4	2.06	2.51	2.4	04/19/2016 13:00	04/19/2016 11:00
Front 1	0.07	0.09	0.1	04/19/2016 09:12	04/19/2016 07:55
Front 2	0.23	0.31	0.3	04/21/2016 15:05	04/21/2016 14:26
Middle 1	0.20	0.27	0.2	04/20/2016 11:01	04/20/2016 10:45
Middle 2	0.08	0.11	0.1	04/20/2016 10:07	04/20/2016 09:17
Middle 3	0.13	0.17	0.1	04/20/2016 08:58	04/20/2016 08:00
Middle 4	0.90	1.12	1.3	04/20/2016 12:01	04/20/2016 12:00
Middle 5	0.44	0.58	0.4	04/20/2016 13:18	04/20/2016 13:00
Swamp 1	0.06	0.08	0.1	04/20/2016 14:53	04/20/2016 14:00
Swamp 2	0.08	0.11	0.1	04/20/2016 16:28	04/20/2016 15:00
Swamp 3	0.07	0.10	0.1	04/20/2016 17:50	04/20/2016 16:00

a: Spot check was not performed prior to hand pumping the well.