

ACE Basin (ACE) National Estuarine Research Reserve Water Quality Metadata

January-December 2017 Report

Latest Update: 08/01/2018

I. Data Set and Research Descriptors

1) Principal investigator(s) and contact persons

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2) Entry verification

Deployment data are uploaded from the YSI data logger to a Personal Computer (IBM compatible). Files are exported from EcoWatch in a comma-delimited format (.CDF), EcoWatch Lite in a comma separated file (CSV) or KOR Software in an Excel File (.XLS) and uploaded to the CDMO where they undergo automated primary QAQC; automated depth/level corrections for changes in barometric pressure (cDepth or cLevel parameters); and become part of the CDMO's online provisional database. All pre- and post-deployment data are removed from the file prior to upload. During primary QAQC, data are flagged if they are missing or out of sensor range. The edited file is then returned to the Reserve for secondary QAQC where it is opened in Microsoft Excel and processed using the CDMO's NERRQAQC Excel macro. The macro inserts station codes, creates metadata worksheets for flagged data and summary statistics, and graphs the data for review. It allows the user to apply QAQC flags and codes to the data, remove any overlapping deployment data, append files, and export the resulting data file for upload to the CDMO. Upload after secondary QAQC, results in the data being ingested into the database as provisional plus data, recalculation of cDepth or cLevel parameters, and finally a tertiary QAQC by the CDMO and assimilation into the CDMO's authoritative online database. Where deployment overlap occurs between files, the data produced by the newly calibrated sonde is generally accepted as being the most accurate. For more information on QAQC flags and codes, see Sections 11 and 12. Denise Sanger, Saundra Upchurch, and Nicole Carey were responsible for these tasks.

3) Research objectives

Long-term water quality monitoring in the ACE Basin provides a unique opportunity to increase understanding of how various environmental factors influence estuarine processes. Based on discussions with local Coastal Zone Management (CZM) personnel and ACE Basin NERR staff knowledge of land use within the Reserve, the South Edisto River drainage basin was selected because it is well suited for studying contrasting hydrographic conditions and land use patterns.

The two major objectives of the ACE Basin monitoring program are: 1) compare water quality conditions in shallow creeks along a salinity gradient and at different levels of development in the South Edisto River watershed and 2) track changes to the saltwater demarcation line in the South Edisto River as a result of prolonged drought, extraction of river water, and sea level rise.

The program began on March 3, 1995 in two tributaries of the South Edisto River, Big Bay Creek and St. Pierre Creek; in October 2002, monitoring stations were established in Fishing Creek and Mosquito Creek, tributaries of the South Edisto River. In 2014, two sites were established in the South Edisto River proper at Jehossee Island and Grove Plantation.

Four primary monitoring stations (Edisto Island [replacement for Big Bay], Fishing Creek, Mosquito Creek and St. Pierre Creek) are used to study contrasting land use patterns in the reserve. The two “treatment” sites are Edisto Island and Mosquito Creek, where boat traffic is moderate to heavy and residential and commercial development is moderate. St. Pierre Creek and Fishing Creek, where boat traffic is light and development is sparse, are designated as “control” sites. The four sites are located along a salinity gradient ranging from the polyhaline (Edisto Island & St. Pierre Creek) to mesohaline (Mosquito Creek) to oligohaline (Fishing Creek). See *Section 5 - Site Location and Character* for detailed descriptions of the sites.

The secondary stations at Jehossee Island and Grove Plantation are used to track changes in the saltwater demarcation line. These two stations extend our coverage of the salinity gradient in the South Edisto River from the polyhaline to the limnetic zone. The Jehossee Island station is located in the oligohaline zone, and the Grove Plantation station is in the limnetic zone, approximately 0.1 nautical miles downstream of the legal saltwater demarcation line. See *Section 5 - Site Location and Character* for detailed descriptions of the sites.

YSI electronic data loggers are deployed to monitor the water temperature, specific conductance, dissolved oxygen, water level, pH and turbidity conditions, approximately 0.5 meters above the creek bottom. Turbidity monitoring was added to the program on April 11, 1996. Initially the loggers measured the parameters at 15 minute intervals; on August 11, 1995, the sampling interval was changed to 30 minutes; and on December 12, 2007, the sampling interval was changed back to 15 minutes.

4) Research methods

One YSI 6600 series data logger was deployed at four of the monitoring stations (St. Pierre Creek, Mosquito Creek, Grove Plantation and Jehossee Island). On November 15, 2017, St. Pierre Creek was switched from the 6600 series to the EXO2 data loggers. Edisto Island and Fishing Creek were the only monitoring stations using the YSI EXO2 data logger for the entire year. The data logger is attached to a deployment mount at each station to ensure that the sensor is positioned approximately 0.5 m from the creek bottom during a deployment. At each monitoring station, the deployment mount consists of a PVC pipe that is attached vertically to a stable structure. To facilitate water flow across the sensors, approximately two-inch diameter holes are drilled into the PVC pipes.

A Sutron Sat-Link2 transmitter was installed at the St. Pierre station on 06/28/2006 and transmits data to the NOAA GOES satellite, NESDIS ID #3b02f20a and at Fishing Creek station on 02/20/2013 NESDIS ID #3b04b1ce. (Where 3b02f20a and 3b04b1ce are the GOES ID for each particular station.). As of August 31, 2015, Fishing Creek station is no longer transmitting data. A Sutron Sat-Link2 transmitter was installed at the Grove Plantation station on 06/08/2016 and began transmitting data on 06/15/2016 at 10:15 to the NOAA GOES satellite, NESDIS ID #3b04b1ce. The St. Pierre site was changed to a YSI Storm3 telemetry system on November 15, 2017 after Hurricane Irma damaged the Sat-Link2. The St. Pierre and Grove Plantation transmissions are scheduled hourly and contain four (4) data sets reflecting fifteen minute data sampling intervals. Upon receipt by the CDMO, the data undergoes the same automated primary QAQC process detailed in Section 2 above. The “real-time” telemetry data become part of the provisional dataset until undergoing secondary and tertiary QAQC and assimilation in the CDMO’s authoritative online database. Provisional and authoritative data are available at <http://cdmo.baruch.sc.edu>.

Before the data loggers are deployed dissolved oxygen (DO) membranes on rapid pulse DO sensors are changed and allowed to stretch for 24 hours, and the voltage of the batteries are checked. The sondes are calibrated and programmed in accordance with guidelines set by CDMO and ACE Basin Reserve. The water depth sensor is zeroed in air by applying a depth offset during calibration that is calculated using the barometric pressure in the laboratory. The DO sensors on the YSI 6600 sondes are calibrated by the water saturated air method, and the EXO2 sensors are calibrated by air saturated water method; barometric pressure (mmHg) readings are measured with a YSI handheld. In addition to the procedures outlined in the CDMO manual, we conduct a DO membrane integrity test prior to deployment to determine if the membrane was installed properly or was damaged during calibration.

To minimize fouling (i.e. settlement of barnacles and sponges) of data loggers, sensors are wrapped in nonconductive copper tape. A plastic mesh is wrapped around the sensor guard to keep out large animals (i.e. crabs, fish). In addition, the inside of the PVC tubes are brushed after every deployment to remove fouling organisms.

The data loggers are deployed for one to two weeks during the summer months (April – September), and the sampling period is extended up to one month during the cooler months (October – March). A data logger is retrieved and replaced with a newly calibrated data logger prior to a 15-minute reading to prevent interruption of data collection. In-situ readings (water temperature, specific conductivity, salinity, and dissolved oxygen [% air sat and mg/L]) are measured with a hand-held YSI unit during the last 15-minute reading of the deployment to determine how much drift in the readings occurred during the deployment. Ambient conditions (i.e. precipitation and wind speed and direction) also are recorded.

When the data loggers are retrieved, they are taken to the laboratory for cleaning, post-deployment checks and servicing, in accordance with guidelines set by CDMO and ACE Basin Reserve. Post-deployment checks of all the parameters except turbidity are done before cleaning the data loggers. Turbidity checks are performed after cleaning the data loggers to prevent contamination of the turbidity standard. A DO membrane integrity test also is conducted to determine if the membrane was damaged during deployment.

A series of diagnostic values, including dissolved oxygen charge, dissolved oxygen gain, and pH millivolt value at pH 7 and at pH 10, are recorded during calibration and post-deployment checks of data loggers. These diagnostic values are strong indicators of the individual sensor performance, and they are used to determine the accuracy of the data.

The data are downloaded, and the dataset is reviewed to determine if any equipment malfunctions occurred during deployment that need immediate attention.

5) Site location and character

ACE Basin National Estuarine Research Reserve is one of the largest undeveloped estuaries on the East Coast. The study area encompasses the Ashpoo, Combahee and South Edisto River basins, which empty into St. Helena Sound. The NERR consists of approximately 150,000 acres of diverse estuarine wetlands providing preserved habitats for fish and wildlife.

The South Edisto River has a drainage area of approximately 394,176 ha, encompassing the area between Four Holes Swamp and St. Helena Sound. The river receives considerable input of freshwater (average annual streamflow is 74 m³/s). The official saltwater-freshwater demarcation line on the river lies at river mile 20; however during periods of very low flow, the saltwater interface can intrude to river mile 32, which is approximately 12 river miles from the inland boundary of the reserve. Salt marshes of smooth cordgrass (*Spartina alterniflora*) dominate the wetlands in the polyhaline and mesohaline, while waterfowl impoundments are the dominant land cover in the oligohaline and limnetic waters.

The average tidal range in the South Edisto River is approximately 2.0 m (6.6 ft.), with a maximum of 2.8 m (9.2 ft.) and a minimum of 1.4 m (4.6 ft.). The bottom habitat at all stations consists of mud which is intermixed with dead shell hash at the saltwater sites.

Station Code	SWMP Status	Station Name	Location	Active Dates	Reason Decommissioned	Notes
aceeiwq	P	Edisto Island	32.5040 N -80.3247 W	01/01/2015 00:00 - current	NA	NA
acefcwq	P	Fishing Creek	32.63593 N -80.36556 W	10/01/2002 00:00 - current	NA	NA
acemcwq	P	Mosquito Creek	32.5558 N -80.4380 W	10/01/2002 00:00 - current	NA	NA
acespwq	P	St. Pierre	32.52800 N -80.36144 W	03/01/1995 00:00 - current	NA	NA
acegpwq	S	Grove Plantation	32.6637 N -80.4130 W	01/01/2015 00:00 - current	NA	NA
acejiwq	S	Jehossee Island	32.6209 N -80.3965 W	01/01/2015 00:00 - current	NA	NA
acebbwq	P	Big Bay	32.4941 N -80.3241 W	03/01/1995 00:00 - 12/31/2014 00:00	see Big Bay description below	
acercwq	P	Rock Creek	32.54850 N -80.50361 W	03/01/1996 00:00 - 05/01/1996 00:00	see Rock Creek description	

Primary Monitoring Stations

Three of the four primary stations (Edisto Island, Fishing Creek, and St. Pierre Creek) are in tributaries of the South Edisto River and one station (Mosquito Creek) is in a tributary of both the South Edisto and Ashepoo rivers. The descriptions of the sites are as follow:

Edisto Island (EI) – GPS coordinates: 32.5040 N and -80.3247 W

On January 1, 2015, Edisto Island water quality station replaced the Big Bay station as a primary station. The Edisto Island station is approximately 1.27 km (0.68 nautical miles) upstream of the previous site (Big Bay) and is located on a dock at the Edisto Beach State Park. Water quality data was collected at both stations for 8 months and the overall results were very similar. Edisto Island station is also designated as a "treatment" site because of its proximity to developed areas. In 2017, the mean depth at the station was 2.51 m (8.2 ft.), and the mean salinity was 29.30 practical salinity units (psu).

The eastern bank of the Big Bay creek, at the new station is bordered by *Spartina alterniflora* and *Salicornia virginica*. The high ground is dominated by maritime forest, characterized by live oak (*Quercus virginiana*), slash pine (*Pinus taeda*), and cabbage palmetto (*Sabal palmetto*). A marsh island with no high ground borders the western bank; while American oyster (*Crassostrea virginica*) forms a reef along both creek banks. Boat traffic is heavy, especially during the warmer months, and the creek is closed to shellfish harvesting because of the surrounding human activities. Nonpoint sources of pollution, including fertilizers, pesticides, herbicides and PAHs, to the monitoring station are surface runoff from lawns, golf courses, and paved ramps. Docks and bulkheads are constructed of concrete or wood treated with creosote, CCA-treated, or Wolmanized process.

Fishing Creek (FC) – GPS coordinates: 32.63593 N and -80.36556 W

This monitoring station is in a tributary of Fishing Creek, approximately 2 km (1.08 nautical miles) from the mouth of the creek, and is located approximately 5 m (16.41 ft.) from the northern bank of the creek. The tributary flows through the eastern half of Jehossee Island, a Wildlife Management Area (WMA) protected by the USFWS, and Fishing Creek forms the northeast border of the island. The station is surrounded by extensive *Spartina cynosuroides* marsh and vast mud flats. The upland area is characterized by slash pine, live oak,

and cabbage palmetto. In 2017, the mean depth at the station was 2.82 m (9.2 ft.), and the mean salinity was 7.50 psu.

The Fishing Creek monitoring station is designated as a “control” site because there is no development in the immediate area, and boat traffic is relatively light in the creek. The WMA contains impoundments (formerly rice fields) that are managed as wildlife habitat for endangered fauna and migratory waterfowl. No pesticides or herbicides are applied to the wetlands. Water level in the wetland is regulated by rice trunks that control the flow of water between the impoundment and the South Edisto River.

Mosquito Creek (MC) – GPS coordinates: 32.5558 N and -80.4380 W

This monitoring station is in Mosquito Creek (a tributary of both the South Edisto and Ashepoo rivers), approximately 2.51 km (1.36 nautical miles) from the Ashepoo River and 12 km (6.48 nautical miles) from the South Edisto River, and it is approximately 5 m (16.41 ft.) from the southern bank of the creek. In 2017, the mean depth at the station was 3.77 m (12.4 ft.), and the mean salinity was 15.6 parts psu.

The Mosquito Creek station is designated as a "treatment" site because of the land use practices in the surrounding area. Agriculture fields and impounded wetlands are found upstream of the monitoring station. Approximately fifteen docks constructed of creosote, concrete, Wolmanized or CCA treated wood; a public boat landing; a commercial seafood business with commercial shrimp boats and a fueling dock are located approximately 1.00 km (0.54 nautical miles) downstream of the monitoring station. The major contributor of nonpoint source pollution to the monitoring station is surface runoff from the impoundments and agricultural lands that contain high levels of nutrients and, at times, herbicides and pesticides. Impoundment trunks open and drain into the creek increasing the nutrient load and possibly introducing herbicides and pesticides. Vegetation in the area includes salt marsh dominated by *Spartina alterniflora* and *Juncus roemerianus*. Upland fringe areas consist of cabbage palmetto, live oaks, and pine trees.

St. Pierre Creek (SP) – GPS coordinates: 32.52800 N and -80.36144 W

This monitoring station is in a small tributary of St. Pierre Creek, approximately 0.25 km (0.13 nautical miles) from the mouth of the creek, and it is approximately 5 m (16.41 ft.) from the northern bank of the creek. The tributary flows through the southern portion of Bailey Island, and the creek forms the eastern border of the island. The monitoring station is surrounded by a wide expanse of *Spartina alterniflora* marsh. Extensive mud flats and oyster reefs fringe the banks. Maritime forest communities comprised of species such as wax myrtles (*Morella cerifera*), live oaks (*Quercus virginiana*), and palmettos dominate the upland areas. In 2017, the mean depth at the station was 2.19 m (7.2 ft.), and the mean salinity was 28.0 psu.

The St. Pierre Creek station is designated as a “control” site because development in the immediate area was sparse when the station was established on March 3, 1995, and the tributary is subject to relatively light boat traffic. In 1996, the 695-acre island was sold, and the owners partnered with The Nature Conservancy to design a conservation-based development. Four hundred and three acres in the center of Bailey Island were set aside as a nature preserve that is managed by The Nature Conservancy, and the number of residential lots on the remaining 292 acres is limited to 67. Access to the island is limited to one bridge and all roads on the island are single lane and made of crushed seashells. In addition, a conservation manual was developed for the property owners that provide specific lot designs and construction guidelines as well as landscaping guidelines to protect the maritime and estuarine habitats.

Secondary Monitoring Stations

Both secondary stations (Grove Plantation and Jehossee Island) are in the South Edisto River proper. The descriptions of the sites are as follow:

Grove Plantation (GP) – GPS coordinates: 32.6637 N and -80.4130 W

This monitoring station is in the South Edisto River located at the Grove Plantation unit of the ACE Basin National Wildlife Refuge, which is owned and managed by the US Fish and Wildlife Service (USFWS). The station is approximately 18 m (59 ft) from the eastern bank of the Edisto River. The station is surrounded by

tidal freshwater fringe marsh and managed wetlands (aka “waterfowl impoundments”). The upland area is dominated by pine-mixed hardwood forest that is characterized by several species of oaks and pines. During years of normal rainfall, the salinity at this station generally is below 1 psu, but it will increase if rainfall is low. In 2017, the average depth at the station was 3.27 m (10.7 ft.), and the mean salinity was 0.3 psu.

Jehossee Island (JI) – GPS coordinates: 32.6209 N and -80.3965 W

This monitoring station is in the South Edisto River proper. It is located at the Jehossee Island unit of the ACE Basin National Wildlife Refuge, which is owned and managed by the US Fish and Wildlife Service (USFWS). The station is surrounded by *Spartina cynosuroides* fringe marsh and managed wetlands (aka “waterfowl impoundments”). The upland area is dominated by inland maritime forest that is characterized by slash pine, live oak, and cabbage palmetto. During years of normal rainfall, the salinity at this station generally is between 5 and 10 psu, and it will increase if rainfall is low. In 2017, the average depth at the station was 4.57 m (15.0 ft.), and the mean salinity was 7.1 psu.

Inactive Monitoring Stations

Big Bay and Rock Creek are inactive stations, and the descriptions of the sites are as follow:

Big Bay - GPS coordinates: 32.4941 N and -80.3241 W

This monitoring station was in Big Bay Creek proper, approximately 2 km (1.24 mi) from the mouth of the creek, and is located about 5 m (16.41 ft) from the southern bank of the creek. It was a "treatment" site because it was subject to nonpoint source pollution and was surrounded by moderate level of development. The southern bank of the Big Bay Creek near this station is bordered by residential and commercial development, with little setback from the bordering *Spartina* marsh. For instance, there are over forty private docks, two commercial seafood docks and a marina with 75 slips, three paved boat ramps, and two fueling areas along the southern bank. Docks and bulkheads are constructed of concrete, or creosote, CCA-treated or Wolmanized material. Boat traffic was heavy, especially during the warmer months, and the creek is closed to shellfish harvesting because of the surrounding human activities. The major sources of nonpoint source pollution were surface runoff from lawns, golf courses, and paved ramps that contain fertilizers, pesticides, herbicides and PAHs. All of the high ground along the southern bank was developed (i.e. residential homes, condominiums and restaurants); and maritime plant communities have been replaced by golf courses, lawns and ornamental gardens. Small patches of a few maritime species (i.e. live oak (*Quercus virginiana*), cabbage palmetto (*Sabal palmetto*), and Southern red cedar (*Juniperus silicicola*)) are found along the roads. In contrast, the northern bank is bordered by a wide expanse of *Spartina alterniflora* marsh, and no high ground is present. American oyster (*Crassostrea virginica*) forms a reef along the creek banks, especially the northern side, and on intertidal mud flats within the creek. The site was moved to Edisto Island due to the dock upon which it was located was owned by a private individual that was not maintaining the structure. Water quality data was collected at both stations for 8 months and the overall results were very similar.

Rock Creek - GPS coordinates: 32.54850 N and -80.50361 W

The Rock Creek site was located near an impoundment on North Hutchinson Island. The site was surrounded by *Spartina alterniflora* marsh, and the upland areas are dominated by maritime forest with wax myrtles, live oaks, and palmettos. An impoundment (a managed wildlife habitat) bordered the *Spartina* marsh near the site, and the outlet canal for the impoundment was about one meter away from the site. There was no development and very little boat traffic in this portion of the Reserve. The site was discontinued due to the loss of the deployment mount and data logger in July 1995.

6) Data collection period

The end times below marked with an asterisk (*) coincide with the last actual reading in that deployment so the times will not be in consecutive order with the following deployment begin time. The gap between the end time of one deployment and the begin time of the next deployment is attributed to either missing or rejected data due to in field maintenance, battery failure, or collector error. From 8/3 - 16/2017, data collected at Grove Plantation site were not retrievable because sonde was damaged by lightning strike. For further information, refer to the “Data Flagging and Editing” section.

Edisto Island

BEGAN	ENDED	SONDE
12/14/2016 - 11:30	01/11/2017 - 12:30	EXO2
01/11/2017 - 12:45	02/09/2017 - 13:00	EXO2
02/09/2017 - 13:15	03/10/2017 - 12:45	EXO2
03/10/2017 - 13:00	03/30/2017 - 11:00	EXO2
03/30/2017 - 11:15	04/12/2017 - 11:00	EXO2
04/12/2017 - 11:15	04/26/2017 - 09:30	EXO2
04/26/2017 - 09:45	05/09/2017 - 12:30	EXO2
05/09/2017 - 12:45	05/23/2017 - 12:30	EXO2
05/23/2017 - 12:45	06/05/2017 - 10:00	EXO2
06/05/2017 - 10:15	06/19/2017 - 06:30	EXO2
06/19/2017 - 06:45	07/05/2017 - 10:15	EXO2
07/05/2017 - 10:30	07/17/2017 - 20:30 *	EXO2
07/20/2017 - 13:00	08/03/2017 - 10:30	EXO2
08/03/2017 - 10:45	08/17/2017 - 11:30	EXO2
08/17/2017 - 11:45	08/30/2017 - 11:30	EXO2
08/30/2017 - 11:45	09/06/2017 - 12:15	EXO2
EXO2 not deployed: 09/06/2017 - 12:30 to 09/18/2017 - 11:15		
09/18/2017 - 11:30	10/03/2017 - 10:45	EXO2
10/03/2017 - 11:00	11/01/2017 - 11:00	EXO2
11/01/2017 - 11:15	12/01/2017 - 10:45 *	EXO2
12/01/2017 - 12:45	01/10/2018 - 11:30	EXO2

Fishing Creek

BEGAN	ENDED	SONDE
12/14/2016 - 12:30	01/11/2017 - 11:30	EXO2
01/11/2017 - 11:45	02/08/2017 - 10:15	EXO2
02/08/2017 - 10:30	03/08/2017 - 09:00	EXO2
03/08/2017 - 09:15	03/30/2017 - 12:45	EXO2
03/30/2017 - 13:00	04/12/2017 - 13:00	EXO2
04/12/2017 - 13:15	04/26/2017 - 11:30	EXO2
04/26/2017 - 11:45	05/08/2017 - 11:30	EXO2
05/08/2017 - 11:45	05/24/2017 - 07:15	EXO2
05/24/2017 - 07:30	06/05/2017 - 10:30	EXO2
06/05/2017 - 10:45	06/20/2017 - 11:15	EXO2
06/20/2017 - 11:30	07/05/2017 - 10:45	EXO2
07/05/2017 - 11:00	07/20/2017 - 12:15	EXO2
07/20/2017 - 12:30	08/03/2017 - 12:30	EXO2
08/03/2017 - 12:45	08/16/2017 - 07:30	EXO2
08/16/2017 - 07:45	08/30/2017 - 14:00	EXO2
08/30/2017 - 14:15	09/06/2017 - 14:30	EXO2
EXO2 not deployed: 09/06/2017 - 14:45 to 09/14/2017 - 12:30		
09/14/2017 - 12:45	10/02/2017 - 12:15	EXO2
10/02/2017 - 12:30	11/01/2017 - 12:30	EXO2
11/01/2017 - 12:45	12/04/2017 - 15:15	EXO2
12/04/2017 - 15:30	01/09/2018 - 15:15	EXO2

Grove Plantation

BEGAN	ENDED	SONDE
12/14/2016 - 13:30	01/11/2017 - 12:45	6600 EDS/V2
01/11/2017 - 13:00	01/25/2017 - 12:45	6600 EDS/V2
01/25/2017 - 13:00	02/08/2017 - 11:30	6600 EDS/V2
02/08/2017 - 11:45	03/08/2017 - 10:00	6600 EDS/V2
03/08/2017 - 10:30	03/30/2017 - 14:00	6600 EDS/V2
03/30/2017 - 14:15	04/12/2017 - 14:00	6600 EDS/V2
04/12/2017 - 14:15	04/26/2017 - 12:45	6600 EDS/V2
04/26/2017 - 13:00	05/08/2017 - 12:45	6600 EDS/V2
05/08/2017 - 13:00	05/24/2017 - 08:00	6600 EDS/V2
05/24/2017 - 08:15	06/05/2017 - 12:15	6600 EDS/V2
06/05/2017 - 12:30	06/20/2017 - 11:45	6600 EDS/V2
06/20/2017 - 12:00	06/26/2017 - 20:45 *	6600 EDS/V2
07/06/2017 - 11:00	07/20/2017 - 11:00	6600 EDS/V2
07/20/2017 - 11:30	08/03/2017 - 12:00	6600 EDS/V2
08/03/2017 - 12:15	08/16/2017 - 08:15 *	6600 EDS/V2
08/16/2017 - 08:30	08/30/2017 - 13:15	6600 EDS/V2
08/30/2017 - 13:30	09/06/2017 - 13:30	6600 EDS/V2
09/06/2017 - 13:45	09/14/2017 - 12:15	6600 EDS/V2
09/18/2017 - 12:30	10/02/2017 - 11:30	6600 EDS/V2
10/02/2017 - 11:45	11/01/2017 - 13:15	6600 EDS/V2
11/01/2017 - 13:45	12/04/2017 - 14:30	6600 EDS/V2
12/04/2017 - 14:45	12/19/2017 - 11:00*	6600 EDS/V2
12/19/2017 - 11:15	01/16/2018 - 14:15	6600 EDS/V2

Jehossee Island

BEGAN	ENDED	SONDE
12/14/2016 - 13:00	* 01/11/2017 - 12:00	6600 EDS/V2
01/11/2017 - 12:15	02/08/2017 - 10:45	6600 EDS/V2
02/08/2017 - 11:00	03/08/2017 - 09:30	6600 EDS/V2
03/08/2017 - 09:45	03/30/2017 - 13:15	6600 EDS/V2
03/30/2017 - 13:45	04/12/2017 - 13:30	6600 EDS/V2
04/12/2017 - 13:45	04/26/2017 - 12:00	6600 EDS/V2
04/26/2017 - 12:15	05/08/2017 - 12:00	6600 EDS/V2
05/08/2017 - 12:30	05/24/2017 - 08:45	6600 EDS/V2
05/24/2017 - 09:00	06/05/2017 - 11:30	6600 EDS/V2
06/05/2017 - 11:45	06/20/2017 - 12:15	6600 EDS/V2
06/20/2017 - 12:30	07/05/2017 - 11:15	6600 EDS/V2
07/05/2017 - 11:30	07/20/2017 - 10:15	6600 EDS/V2
07/20/2017 - 10:30	08/03/2017 - 11:15	6600 EDS/V2
08/03/2017 - 11:30	08/16/2017 - 07:00	6600 EDS/V2
08/16/2017 - 07:15	08/30/2017 - 12:15	6600 EDS/V2
08/30/2017 - 12:45	09/06/2017 - 13:00	6600 EDS/V2
6600 EDS/V2 not deployed: 09/06/2017 - 13:15 to 09/18/2017 - 11:30		
09/18/2017 - 11:45	10/02/2017 - 10:45	6600 EDS/V2
10/02/2017 - 11:00	11/01/2017 - 12:00	6600 EDS/V2
11/01/2017 - 12:15	12/04/2017 - 13:45	6600 EDS/V2
12/04/2017 - 14:00	01/09/2018 - 14:45	6600 EDS/V2

Mosquito Creek

BEGAN	ENDED	SONDE
12/14/2016 - 11:00	01/09/2017 - 11:45	6600 EDS/V2
01/09/2017 - 12:00	02/06/2017 - 10:30	6600 EDS/V2
02/06/2017 - 10:45	03/06/2017 - 10:30	6600 EDS/V2
03/06/2017 - 10:45	03/30/2017 - 09:30	6600 EDS/V2
03/30/2017 - 09:45	04/10/2017 - 10:30	6600 EDS/V2
04/10/2017 - 10:45	04/26/2017 - 13:45	6600 EDS/V2
04/26/2017 - 14:00	05/08/2017 - 12:00	6600 EDS/V2
05/08/2017 - 12:15	05/24/2017 - 09:30	6600 EDS/V2
05/24/2017 - 09:45	06/05/2017 - 09:15	6600 EDS/V2
06/05/2017 - 09:30	06/20/2017 - 13:45	6600 EDS/V2
06/20/2017 - 14:15	06/26/2017 - 04:45 *	6600 EDS/V2
07/05/2017 - 09:45	07/19/2017 - 12:45 *	6600 EDS/V2
07/20/2017 - 09:30	08/03/2017 - 10:15	6600 EDS/V2
08/03/2017 - 10:30	08/16/2017 - 09:45	6600 EDS/V2
08/16/2017 - 10:15	08/30/2017 - 11:15	6600 EDS/V2
08/30/2017 - 11:30	09/06/2017 - 12:00	6600 EDS/V2
6600 EDS/V2 not deployed: 09/06/2017 - 12:15 to 09/14/2017 - 11:15		
09/14/2017 - 11:30	10/02/2017 - 09:45	6600 EDS/V2
10/02/2017 - 10:00	11/01/2017 - 11:15	6600 EDS/V2
11/01/2017 - 11:30	12/04/2017 - 13:00	6600 EDS/V2
12/04/2017 - 13:15	01/09/2018 - 14:00	6600 EDS/V2

St. Pierre Creek

BEGAN	ENDED	SONDE
12/14/2016 - 11:45	01/09/2017 - 10:45	6600 EDS/V2
01/09/2017 - 11:00	02/06/2017 - 11:15	6600 EDS/V2
02/06/2017 - 11:30	03/06/2017 - 11:15	6600 EDS/V2
03/06/2017 - 11:30	03/30/2017 - 11:45	6600 EDS/V2
03/30/2017 - 12:00	04/10/2017 - 09:30	6600 EDS/V2
04/10/2017 - 09:45	04/26/2017 - 10:30 *	6600 EDS/V2
04/26/2017 - 11:00	05/08/2017 - 09:15	6600 EDS/V2
05/08/2017 - 09:45	05/24/2017 - 10:30	6600 EDS/V2
05/24/2017 - 10:45	05/31/2017 - 10:30 *	6600 EDS/V2
05/31/2017 - 11:00	06/05/2017 - 07:30 *	6600 EDS/V2
06/06/2017 - 13:30	06/20/2017 - 09:45	6600 EDS/V2
06/20/2017 - 10:00	07/05/2017 - 08:45	6600 EDS/V2
07/05/2017 - 09:00	07/20/2017 - 08:00	6600 EDS/V2
07/20/2017 - 08:15	07/26/2017 - 08:00	6600 EDS/V2
07/26/2017 - 08:15	08/03/2017 - 09:15	6600 EDS/V2
08/03/2017 - 09:30	08/16/2017 - 06:15	6600 EDS/V2
08/16/2017 - 06:30	08/30/2017 - 10:15	6600 EDS/V2
08/30/2017 - 10:30	09/06/2017 - 11:00	6600 EDS/V2
09/06/2017 - 11:15	09/14/2017 - 10:30	6600 EDS/V2
09/14/2017 - 10:45	10/02/2017 - 08:30	6600 EDS/V2
10/02/2017 - 08:45	11/01/2017 - 09:00	6600 EDS/V2
11/01/2017 - 09:15	11/15/2017 - 12:45*	6600 EDS/V2
11/15/2017 - 13:00	12/04/2017 - 11:45	EXO2
12/04/2017 - 12:00	01/09/2018 - 13:30	EXO2

7) Distribution

NOAA/ERD retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The NERRS retains the right to be fully credited for having collected and processed the data. Following academic courtesy standards, the NERR site where the data were collected will be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. Manuscripts resulting from this NOAA/OCRM supported research that are produced for publication in open literature, including refereed scientific journals, will acknowledge that the research was conducted under an award from the Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration. The data set enclosed within this package/transmission is only as good as the quality assurance and quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to the Recipient or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data.

NERR water quality data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see Principal Investigators and Contact Persons), from the Data Manager at the Centralized Data Management Office (please see personnel directory under the general information link on the CDMO home page) and online at the CDMO home page www.nerrdata.org. Data are available in comma delimited format.

Requested citation format:

NOAA National Estuarine Research Reserve System (NERRS). System-wide Monitoring Program. Data accessed from the NOAA NERRS Centralized Data Management Office website: <http://www.nerrdata.org/>; accessed 12 October 2012.

8) Associated researchers and projects

As part of the System-wide Monitoring Program (SWMP), nutrient and weather data are gathered at the ACE NERR in conjunction with water quality data obtained by YSI 6600-EDS or YSI EXO2 data loggers and meteorological data obtained by a Campbell Scientific CR1000 data logger. Diel nutrient samples are gathered once per month at the St. Pierre water quality monitoring station, and grab samples are obtained at each of the four sites once per month. The concentrations of the following parameters are measured and recorded for the nutrient monitoring program: ammonium (NH₄), nitrite + nitrate (NO₂ + NO₃), ortho-phosphate (PO₄), and chlorophyll-A (Chl-a). Real-time weather data are gathered 24/7 and is transmitted to the Centralized Data Management Office (CDMO). Historic water quality, nutrient, and weather data can be obtained at <http://cdmo.baruch.sc.edu>. Information about other studies conducted in the ACE Basin may be obtained from the ACE NERR Research Coordinator.

II. Physical Structure Descriptors

9) Sensor specifications

ACE NERR deployed mainly 6600 EDS/V2 data sondes and EXO2 data sondes in 2017. 6600 sondes were deployed at Mosquito Creek (MC), Grove Plantation (GP), and Jehossee Island (JI) sites for all 2017 deployments. At St. Pierre Creek (SP), 6600s were deployed until November 15, 2017 when the site was changed to EXO2 sondes. EXO2 sondes were deployed at Edisto Island (EI) and Fishing Creek (FC) site for all 2017 deployments. All 6600 and EXO2 data sondes are configured the same, with respect to the type of sonde. Rapid-pulse DO sensors were deployed with each 6600 sonde at Jehossee Island and Grove Plantation sites for all of 2017; at Mosquito Creek and St. Pierre sites, the rapid-pulse DO sensors were replaced with optical DO sensors starting with the July 5, 2017 deployment.

YSI 6600EDS/V2 data sonde:

Parameter: Temperature

Units: Celsius (C)

Sensor Type: Thermistor

Model#: 6560

Range: -5 to 50 C

Accuracy: +/- 0.15

Resolution: 0.01 C

Parameter: Conductivity

Units: milli-Siemens per cm (mS/cm)

Sensor Type: 4-electrode cell with auto ranging

Model#: 6560

Range: 0 to 100 mS/cm

Accuracy: +/- 0.5% of reading + 0.001 mS/cm

Resolution: 0.001 mS/cm to 0.1 mS/cm (range dependent)

Parameter: Salinity

Units: parts per thousand (ppt)

Sensor Type: Calculated from conductivity and temperature

Range: 0 to 70 ppt

Accuracy: +/- 1.0% of reading pr 0.1 ppt, whichever is greater

Resolution: 0.01 ppt

Parameter: Dissolved Oxygen % saturation

Units: percent air saturation (%)

Sensor Type: Rapid Pulse - Clark type, polarographic

Model#: 6562

Range: 0 to 500% air saturation

Accuracy: 0-200% air saturation: +/- 2% of the reading or 2% air saturation, whichever is greater; 200 to 500% air saturation: +/- 6% of the reading

Resolution: 0.1% air saturation

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature, and salinity)

Units: milligrams/Liter (mg/L)

Sensor Type: Rapid Pulse - Clark type, polarographic

Model#: 6562

Range: 0 to 50 mg/L

Accuracy: 0 to 20 mg/L: +/- 2% of the reading or 0.2 mg/L, whichever is greater
20 to 50 mg/L: +/- 6% of the reading

Resolution: 0.01 mg/L

Parameter: Dissolved Oxygen % saturation

Units: percent air saturation (%)

Sensor Type: Optical probe w/ mechanical cleaning

Model#: 6150 ROX

Range: 0 to 50 mg/L

Accuracy: 0-20 mg/L: +/-0.1 mg/l or 1% of the reading, whichever is greater
20 to 50 mg/L: +/- 15% of the reading

Resolution: 0.01 mg/L

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature, and salinity)
Units: milligrams/Liter (mg/L)
Sensor Type: Optical probe w/ mechanical cleaning
Model#: 6150 ROX
Range: 0 to 500% air saturation
Accuracy: 0-200% air saturation: +/- 1% of the reading or 1% air saturation, whichever is greater 200-500% air saturation: +/- 15% or reading
Resolution: 0.1% air saturation

Parameter: Depth (non-vented level – medium)
Units: meters (m)
Sensor Type: 6600 integrated stainless steel strain gauge
Model#: 6600 EDS/V2
Range: 0 to 61 m
Accuracy: +/- 0.12 m
Resolution: 0.001 m

Parameter: pH – bulb probe
Units: pH units
Sensor Type: Glass combination electrode
Model#: 6561
Range: 0 to 14 units
Accuracy: +/- 0.2 units
Resolution: 0.01 units

Parameter: Turbidity
Units: nephelometric turbidity units (NTU)
Sensor Type: Optical, 90 degree scatter, with mechanical cleaning
Model#: 6136
Range: 0 to 1000 NTU
Accuracy: +/- 2% of reading or 0.3 NTU (whichever is greater)
Resolution: 0.1 NTU

YSI EXO2 Sonde:

Parameter: Temperature
Units: Celsius (°C)
Sensor Type: Thermistor
Model#: 599870-01
Range: -5 to 50 °C
Accuracy: -5 to 35 °C: +/- 0.01 °C, 35 to 50 °C: +/- .005 °C
Resolution: 0.01 °C

Parameter: Salinity
Units: practical salinity units (psu)/parts per thousand (ppt)
Sensor Type: Calculated from conductivity and temperature
Range: 0 to 70 psu
Accuracy: +/- 1.0% of reading pr 0.1 ppt, whichever is greater
Resolution: 0.01 psu

Parameter: Dissolved Oxygen % saturation

Sensor Type: Optical, luminescence lifetime w/ mechanical cleaning

Model#: 599100-01; 599110 sensor cap

Range: 0 to 500% air saturation

Accuracy: 0 to 200% air saturation: $\pm 1\%$ of the reading or 1% air saturation, whichever is greater; 200 to 500% air saturation: $\pm 5\%$ of the reading

Resolution: 0.1% air saturation

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature and salinity)

Units: milligrams/Liter (mg/L)

Sensor Type: Optical, luminescence lifetime w/ mechanical cleaning

Model#: 599100-01; 599110 sensor cap

Range: 0 to 50 mg/L

Accuracy: 0 to 20 mg/L: ± 0.1 mg/L or 1% of the reading, whichever is greater
20 to 50 mg/L: $\pm 5\%$ of the reading

Resolution: 0.01 mg/L

Parameter: Depth (non-vented level – medium)

Units: meters (m)

Sensor Type: EXO2 integrated stainless steel strain gauge

Model#: 59950x-02 (EXO2 – medium)

Range: 0 to 100 m

Accuracy: $\pm 0.04\%$ FS (± 0.04 m)

Resolution: 0.001 m

Parameter: pH (unguarded)

Units: pH units

Sensor Type: Glass combination electrode

Model#: 599702 (wiped); 599795-02 module

Range: 0 to 14 units

Accuracy: ± 0.01 units within $\pm 10^\circ$ of calibration temperature, ± 0.02 units for entire temperature range

Resolution: 0.01 units

Parameter: Turbidity

Units: nephelometric turbidity units (NTU), converted from formazin nephelometric units (FNU)

Sensor Type: Optical, 90 degree scatter

Model#: 599101-01

Range: 0 to 4000 FNU

Accuracy: 0 to 999 FNU: 0.3 FNU or $\pm 2\%$ of reading (whichever is greater); 1000 to 4000 FNU $\pm 5\%$ of reading

Resolution: 0 to 999 FNU: 0.01 FNU, 1000 to 4000 FNU: 0.1 FNU

Dissolved Oxygen Qualifier (Rapid Pulse / Clark type sensor):

The reliability of dissolved oxygen (DO) data collected with the rapid pulse / Clark type sensor after 96 hours post-deployment for non-EDS (Extended Deployment System) data sondes may be problematic due to fouling which forms on the DO probe membrane during some deployments (Wenner et al. 2001). Some Reserves utilize the YSI 6600 EDS data sondes, which increase DO accuracy and longevity by reducing the environmental effects of fouling. Optical DO probes have further improved data reliability. The user is therefore advised to consult the metadata for sensor type information and to exercise caution when utilizing rapid pulse / Clark type sensor DO data beyond the initial 96-hour time period. Potential drift is not always problematic for some uses of the data, i.e. periodicity analysis. It should also be noted that the amount of fouling is very site specific and that not all data are affected. If there are concerns about fouling impacts on DO data beyond any information documented in the metadata and/or QAQC flags/codes, please contact the

Research Coordinator at the specific NERR site regarding site and seasonal variation in fouling of the DO sensor.

Depth Qualifier:

The NERR System-Wide Monitoring Program utilizes YSI data sondes that can be equipped with either vented or non-vented depth/level sensors. Readings for both vented and non-vented sensors are automatically compensated for water density change due to variations in temperature and salinity; but for all non-vented depth measurements, changes in atmospheric pressure between calibrations appear as changes in water depth. The error is equal to approximately 1.03 cm for every 1 millibar change in atmospheric pressure, and is eliminated for vented sensors because they are vented to the atmosphere throughout the deployment time interval.

Beginning in 2006, NERR SWMP standard calibration protocol calls for all non-vented depth sensors to read 0 meters at a (local) barometric pressure of 1013.25 mb (760 mm/hg). To achieve this, each site calibrates their depth sensor with a depth offset number, which is calculated using the actual atmospheric pressure at the time of calibration and the equation provided in the SWMP calibration sheet or digital calibration log. This offset procedure standardizes each depth calibration for the entire NERR System. If accurate atmospheric pressure data are available, non-vented sensor depth measurements at any NERR can be corrected.

In 2010, the CDMO began automatically correcting depth/level data for changes in barometric pressure as measured by the Reserve's associated meteorological station during data ingestion. These corrected depth/level data are reported as cDepth and cLevel, and are assigned QAQC flags and codes based on QAQC protocols. Please see sections 11 and 12 for QAQC flag and code definitions.

NOTE: older depth data cannot be corrected without verifying that the depth offset was in place and whether a vented or non-vented depth sensor was in use. No SWMP data prior to 2006 can be corrected using this method. The following equation is used for corrected depth/level data provided by the CDMO beginning in 2010: $((1013-BP)*0.0102)+\text{Depth/Level} = \text{cDepth/cLevel}$.

Salinity Units Qualifier:

In 2013, EXO2 sondes were approved for SWMP use and began to be utilized by Reserves. While the 6600 series sondes report salinity in parts per thousand (ppt) units, the EXO2 sondes report practical salinity units (psu). These units are essentially the same and for SWMP purposes are understood to be equivalent, however psu is considered the more appropriate designation. Moving forward the NERR System will assign psu salinity units for all data regardless of sonde type.

Turbidity Qualifier:

In 2013, EXO2 sondes were approved for SWMP use and began to be utilized by Reserves. While the 6600 series sondes report turbidity in nephelometric turbidity units (NTU), the EXO2 sondes use formazin nephelometric units (FNU). These units are essentially the same but indicate a difference in sensor methodology, for SWMP purposes they will be considered equivalent. Moving forward, the NERR System will use FNU/NTU as the designated units for all turbidity data regardless of sonde type. If turbidity units and sensor methodology are of concern, please see the Sensor Specifications portion of the metadata.

Chlorophyll Fluorescence Disclaimer:

YSI chlorophyll sensors (6025 or 599102-01) are designed to serve as a proxy for chlorophyll concentrations in the field for monitoring applications and complement traditional lab extraction methods; therefore, there are accuracy limitations associated with the data that are detailed in the YSI manual including interference from other fluorescent species, differences in calibration method, and effects of cell structure, particle size, organism type, temperature, and light on sensor measurements.

10) Coded variable definitions

Sampling Station:	Site code:	Station Code:
Edisto Island	EI	aceeiwq
Fishing Creek	FC	acefcwq
Grove Plantation	GP	acegpwq
Jehossee Island	JI	acejiwq
Mosquito Creek	MC	acemcwq
St. Pierre Creek	SP	acespwq

11) QAQC flag definitions

QAQC flags provide documentation of the data and are applied to individual data points by insertion into the parameter's associated flag column (header preceded by an F_). During primary automated QAQC (performed by the CDMO), -5, -4, and -2 flags are applied automatically to indicate data that is missing and above or below sensor range. All remaining data are then flagged 0, passing initial QAQC checks. During secondary and tertiary QAQC 1, -3, and 5 flags may be used to note data as suspect, rejected due to QAQC, or corrected.

-5	Outside High Sensor Range
-4	Outside Low Sensor Range
-3	Data Rejected due to QAQC
-2	Missing Data
-1	Optional SWMP Supported Parameter
0	Data Passed Initial QAQC Checks
1	Suspect Data
2	<i>Open - reserved for later flag</i>
3	Calculated data: non-vented depth/level sensor correction for changes in barometric pressure
4	Historical Data: Pre-Auto QAQC
5	Corrected Data

12) QAQC code definitions

QAQC codes are used in conjunction with QAQC flags to provide further documentation of the data and are also applied by insertion into the associated flag column. There are three (3) different code categories, general, sensor, and comment. General errors document general problems with the deployment or YSI datasonde, sensor errors are sensor specific, and comment codes are used to further document conditions or a problem with the data. Only one general or sensor error and one comment code can be applied to a particular data point, but some comment codes (marked with an * below) can be applied to the entire record in the F Record column.

General Errors

GIC	No instrument deployed due to ice
GIM	Instrument malfunction
GIT	Instrument recording error; recovered telemetry data
GMC	No instrument deployed due to maintenance/calibration
GNF	Deployment tube clogged / no flow
GOW	Out of water event
GPF	Power failure / low battery
GQR	Data rejected due to QA/QC checks
GSM	See metadata

Corrected Depth/Level Data Codes

GCC	Calculated with data that were corrected during QA/QC
GCM	Calculated value could not be determined due to missing data
GCR	Calculated value could not be determined due to rejected data
GCS	Calculated value suspect due to questionable data
GCU	Calculated value could not be determined due to unavailable data

Sensor Errors

SBO	Blocked optic
SCF	Conductivity sensor failure
SDF	Depth port frozen
SDG	Suspect due to sensor diagnostics
SDO	DO suspect
SDP	DO membrane puncture
SIC	Incorrect calibration / contaminated standard
SNV	Negative value
SOW	Sensor out of water
SPC	Post calibration out of range
SQR	Data rejected due to QAQC checks
SSD	Sensor drift
SSM	Sensor malfunction
SSR	Sensor removed / not deployed
STF	Catastrophic temperature sensor failure
STS	Turbidity spike
SWM	Wiper malfunction / loss

Comments

CAB*	Algal bloom
CAF	Acceptable calibration/accuracy error of sensor
CAP	Depth sensor in water, affected by atmospheric pressure
CBF	Biofouling
CCU	Cause unknown
CDA*	DO hypoxia (<3 mg/L)
CDB*	Disturbed bottom
CDF	Data appear to fit conditions
CFK*	Fish kill
CIP*	Surface ice present at sample station
CLT*	Low tide
CMC*	In field maintenance/cleaning
CMD*	Mud in probe guard
CND	New deployment begins
CRE*	Significant rain event
CSM*	See metadata
CTS	Turbidity spike
CVT*	Possible vandalism/tampering
CWD*	Data collected at wrong depth
CWE*	Significant weather event

13) Post deployment information

Probe Identification:

Turbidity 6136/599101-01 Probe

pH 6561/599702; 599795-02 Probe

Sp. Cond. 6560/599870-01 Probe

Standards for Calibration:

YSI 6073G Turbidity Standard
126 NTU

VWR Analytical (BDH)
buffer, reference standard 7.0 and 10.0

YSI 3169 Conductivity Calibrator 50 mS/cm +/- 1%

Edisto Island

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
01/11/2017	48.07	97.5	97.5	0.165	6.25	9.3	-0.8	131.7
02/09/2017	50.02	99.5	99.5	0.113	7.06	10.08	0.78	144.2
03/10/2017	50.66	99.7	99.7	0.026	7.0	10.00	-1.01	120.31
03/30/2017	49.77	100.6	100.6	0.134	6.99	10.0	-0.3	106.5
04/12/2017	48.46	100.4	100.4	0.002	7.11	10.06	3.51	132.99
04/26/2017	50.1	100.5	100.3	-0.003	6.99	9.97	-0.83	133.36
05/09/2017	49.38	99.7	99.7	-0.079	7.08	10.08	0.08	137.06
05/23/2017	35.9	98.58	98.48	-0.03	6.99	9.99	0.63	116.9
06/05/2017	49.45	100.0	100.0	0.065	7.02	10.0	-2.73	75.73
06/20/2017	50.86	100.1	100.1	0.076	7.06	10.04	1.60	112.5
07/05/2017	49.96	98.8	98.8	0.05	7.03	10.03	0.23	122.47
07/20/2017	49.72	99.3	100.6	0.098	7.04	10.07	0.3	115.77
08/03/2017	50.13	99.3	100.7	0.061	7.07	10.05	0.2	121.69
08/17/2017	49.5	99.5	100.2	0.069	7.2	10.14	0.01	120.58
08/30/2017	49.62	98.5	99.6	0.066	7.03	10.04	0.39	117.82
09/06/2017	Sonde was not deployed due to impending Hurricane Irma							
09/18/2017	49.72	100.5	101.1	0.165	7.15	10.22	-0.15	156.11
10/03/2017	49.4	100.3	100.3	0.065	7.13	9.95	2.35	115.04
11/01/2017	49.04	100.1	100.9	0.065	7.04	10.08	0.36	123.98
12/01/2017	49.25	101.7	101.7	0.101	6.94	9.98	0.36	112.41

Fishing Creek

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
01/11/2017	51.37	99.2	99.2	-0.058	7.05	10.09	0.75	139.6
02/08/2017	48.89	100.6	100.6	0.127	6.96	10.03	0.09	143.6
03/08/2017	50.13	99.6	99.6	0.009	7.11	10.08	3.6	154.55
03/30/2017	49.59	99.1	99.1	0.134	6.78	9.76	2.08	165.0
04/12/2017	48.17	100.0	100.0	-0.006	7.06	10.05	-0.58	132.41
04/26/2017	49.43	98.7	100.0	0.035	6.86	9.87	0.07	131.66
05/08/2017	48.73	98.2	98.3	0.134	7.09	9.98	0.11	126.4
05/24/2017	23.24	97.59	98.48	-0.06	6.8	9.82	1.2	118.60
06/05/2017	48.06	98.7	98.7	0.064	6.99	10.01	-0.07	126.9
06/20/2017	50.94	99.9	99.9	0.08	6.93	9.86	1.58	117.80
07/05/2017	49.68	98.5	98.5	0.031	7.06	10.04	0.6	122.82
07/20/2017	50.04	99.5	100.8	0.074	7.15	10.24	-0.65	118.91
08/03/2017	49.86	99.4	100.6	0.054	7.07	10.05	0.12	119.21
08/16/2017	49.54	99.6	100.6	0.073	6.97	9.97	-0.25	122.5
08/30/2017	49.2	97.9	100.2	0.074	6.99	10.0	1.14	118.56
09/06/2017	Sonde was not deployed due to impending Hurricane Irma							
09/14/2017	49.69	98.8	101.5	0.147	7.08	10.11	-1.29	148.54
10/02/2017	48.5	100.9	100.9	0.062	7.13	10.01	2.96	121.2
11/01/2017	48.74	98.2	101.2	0.093	7.02	10.11	0.47	122.81
12/04/2017	48.74	100.0	101.7	0.102	7.42	10.40	0.51	125.03

Grove Plantation

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
01/11/2017	51.34	102.4	102.4	-0.041	7.0	10.01	-0.5	116.7
01/25/2017	49.65	103.6	103.6	-0.009	7.04	10.02	-0.3	145.1
02/08/2017	49.42	99.6	99.6	0.103	6.96	9.7	0.8	135.1
03/08/2017	50.17	103.1	103.1	0.036	7.03	10.02	-0.2	157.3
03/30/2017	49.8	101.3	101.3	0.126	7.02	9.9	0.4	102.8
04/12/2017	48.63	104.4		0.015	7.03	10.02	0.7	128.8
04/26/2017	50.39	99.9	101.0	0.045	7.07	10.01	-0.8	140.3
05/08/2017	48.75	109.1	109.1	-0.068	7.08	10.07	0.5	129.3
05/24/2017	49.64	99.4	99.4	-0.034	6.89	9.89	-0.4	111.9
06/05/2017	48.95	86.8	91.0	0.062	7.03	10.0	-0.4	127.9
06/20/2017	50.07	104.1	104.1	0.052	6.91	9.93	-0.7	125.3
07/06/2017	49.43	107.7	107.7	0.026	6.9	9.87	-0.1	122.0
07/20/2017	50.04	99.1	99.7	0.043	6.91	9.86	0.0	122.9
08/03/2017	No post-checks due to equipment failure caused by lightning strike							
08/16/2017	49.7	106.4	105.6	0.042	7.02	10.0	0.5	120.4
08/30/2017	50.38	104.0	107.4	0.069	7.15	10.16	-0.1	121.0
09/06/2017	49.89	98.8	100.3	0.024	6.92	9.86	-0.8	121.2
09/18/2017	49.3	108.0	105.5	0.165	7.00	9.98	0.5	149.8
10/02/2017	49.7	110.0	110.0	0.048	6.93	9.90	0.1	127.7
11/01/2017	48.23	110.7	90.1	0.118	7.06	10.02	-0.7	122.6
12/04/2017	50.50	104.2	103.6	0.032	6.86	9.77	-0.6	117.5
12/19/2017	48.56	100.8	101.4	0.106	6.94	9.96	0.1	113.6

Jehossee Island

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
01/11/2017	49.1	101.7	101.7	-0.011	6.92	10.07	0.4	131.6
02/08/2017	49.23	112.0	112.0	0.117	7.06	10.13	0.7	136.9
03/08/2017	49.0	100.3	101.2	-0.046	7.03	10.03	-0.1	152.5
03/30/2017	50.0	101.4	101.4	0.115	7.03	10.04	-0.1	104.3
04/12/2017	48.49	104.6	104.6	0.012	7.07	10.06	1.2	126.9
04/26/2017	50.15	101.3	101.1	0.046	6.97	9.97	-0.9	138.8
05/08/2017	49.03	105.1	105.2	-0.063	7.05	10.05	0.4	130.4
05/24/2017	49.54	103.0	103.0	-0.041	7.0	10.01	-3.0	117.1
06/05/2017	47.18	105.1	101.2	0.058	7.06	8.97	-4.1	127.0
06/20/2017	50.31	95.2	95.2	0.078	6.99	10.0	1.9	119.1
07/05/2017	48.8	100.3	100.3	0.043	7.06	9.63	0.0	123.6
07/20/2017	50.02	104.0	103.9	0.057	7.02	9.94	0.0	121.4
08/03/2017	48.5	115.7	110.1	0.055	7.01	10.03	-0.2	120.9
08/16/2017	49.33	79.9	64.0	0.033	7.02	10.01	0.4	120.3
08/30/2017	48.83	105.4	101.1	0.069	7.03	10.05	0.1	122.1
09/06/2017	Sonde was not deployed due to impending Hurricane Irma							
09/18/2017	49.29	104.3	60.7	0.166	7.02	10.02	0.0	149.5
10/02/2017	49.91	92.4	84.5	0.066	7.03	9.99	-0.4	131.4
11/01/2017	48.94	106.1	94.8	0.102	7.04	10.08	-0.1	122.3
12/04/2017	50.6	108.6	95.1	0.116	7.05	10.04	-0.3	118.6

Mosquito Creek

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
01/09/2017	51.14	107.7	107.7	-0.012	7.04	10.09	1.7	130.9
02/06/2017	49.76	82.9	82.9	0.084	7.05	10.09	1.6	134.5
03/06/2017	50.23	107.7	107.7	0.049	7.18	10.15	0.1	150.2
03/30/2017	50.12	103.0	103.0	0.141	6.97	10.05	0.5	104.6
04/10/2017	48.94	104.2	103.4	0.028	7.02	10.01	1.0	126.8
04/26/2017	51.17	93.9	75.1	0.039	7.03	10.04	0.2	143.7
05/08/2017	49.04	107.9	107.7	-0.083	7.02	9.99	0.4	129.3
05/24/2017	50.26	101.1	101.2	-0.032	7.06	10.07	-0.5	109.7
06/05/2017	49.64	106.9	103.5	0.07	7.06	10.04	0.1	131.5
06/20/2017	50.54	103.6	103.6	0.087	7.14	10.12	1.9	119.5
07/05/2017	49.82	102.9	102.9	0.063	6.96	9.83	0.4	123.7
07/20/2017	49.88	103.5	103.3	0.065	7.01	10.06	-0.2	122.5
08/03/2017	50.15	101.2	102.0	0.08	6.92	9.9	-0.2	121.2
08/16/2017	50.7	100.4	100.9	0.064	7.2	10.19	1.2	122.0
08/30/2017	50.25	99.3	100.5	0.07	6.96	9.99	-0.2	119.8
09/06/2017	Sonde was not deployed due to impending Hurricane Irma							
09/14/2017	49.89	101.9	102.0	0.154	7.07	10.06	-0.6	146.4
10/02/2017	49.77	100.4	100.4	0.077	7.06	10.06	0.1	125.0
11/01/2017	49.30	100.6	101.2	0.104	7.51	9.97	-0.1	120.8
12/04/2017	50.77	101.3	102.9	0.131	7.01	10.01	0.1	117.7

St. Pierre Creek

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (NTU)	Turb (NTU)
01/09/2017	51.72	90.4	89.7	-0.03	6.97	10.0	1.2	128.6
02/06/2017	49.45	21.2	21.2	0.016	7.09	10.12	0.9	135.3
03/06/2017	49.98	82.3	81.9	-0.044	7.04	10.05	0.0	150.8
03/30/2017	49.88	94.8	94.6	0.133	7.06	10.04	1.3	105.0
04/10/2017	49.25	107.7	98.9	0.011	7.13	9.9	0.2	128.7
04/26/2017	50.44	55.1	35.0	0.045	6.99	9.96	0.0	141.7
05/08/2017	48.74	108.1	108.2	-0.074	7.03	10.03	1.0	127.6
05/24/2017	51.11	99.1	99.4	0.053	6.96	9.9	1.0	141.9
05/31/2017	48.62	98.0	98.4	-0.03	7.14	10.12	0.8	101.9
06/06/2017	49.11	100.0	96.3	0.077	7.0	9.98	-0.2	130.1
06/20/2017	48.9	79.4	79.4	0.089	6.89	9.89	-0.4	117.4
07/05/2017	49.6	101.3	101.3	0.018	6.9	9.89	-0.4	125.3
07/20/2017	48.96	100.8	100.8	0.049	6.94	9.91	-0.1	123.7
07/26/2017	49.75	100.6	101.8	0.038	6.91	9.95	-0.5	123.6
08/03/2017	49.47	99.0	101.2	0.071	7.41	10.42	-0.2	121.5
08/16/2017	49.59	99.0	100.5	0.043	6.96	9.95	0.9	120.4
08/30/2017	49.87	99.3	100.1	0.069	7.01	10.06	0.1	120.6
09/06/2017	49.94	100.4	100.7	0.078	7.02	10.02	-0.7	118.3
09/14/2017	47.69	101.3	101.6	0.148	7.05	9.94	0.7	143.2
10/02/2017	49.75	100.5	100.5	0.065	6.84	9.52	-0.5	128.0
11/01/2017	50.03	100.5	100.4	0.066	7.01	9.98	-0.4	129.8
11/15/2017	48.84	103.5	104.0	0.109	7.14	10.13	0.41	128.86
12/04/2017	49.56	102.7	103.4	0.123	7.21	10.17	1.03	129.45

14) Other Remarks / Notes

Data are missing due to equipment or associated specific probes not being deployed, equipment failure, time of maintenance or calibration of equipment, or repair/replacement of a sampling station platform. Any NaNs in the dataset stand for “not a number” and are the result of low power, disconnected wires, or out of range readings. If additional information on missing data is needed, contact the Research Coordinator at the reserve submitting the data.

ACE NERR Water Quality Site Histories

Primary Sites

Edisto Island:

2014 - Water quality station installed in **May**.

2015 - Edisto Island officially went online on **January 1**. (Coordinates: 32.5040N and -80.3247W)

2016 - PVC tube replaced on **June 1**.

2016 - PVC tube lost on **October 26** due to Hurricane Matthew.

2016 - Sign posts installed to provide more stability to PVC tube on **November 9**.

2016 - PVC tube replaced on **November 14**.

2017 - PVC tube replaced on **December 1** - new tube at same vertical position of old tube; new tube has 1” and 2” diameter holes along the length of the tube similar to the new design recommended by YSI.

Fishing Creek:

2002 - Fishing Creek officially went online on **October 22** (Coordinates: 32.6358 N 80.3655W).

2009 - PVC tube replaced in **May** (about 0.2 meters deeper).

2010 - The sign post mount replaced in **January** with a 40-ft, 8-in diameter pressure-treated piling.

2013 - Sutron Sat-Link2 transmitter installed in **March** at Fishing Creek to transmit real-time data.

2015 - Sutron Sat-Link2 telemetry equipment removed on **August 31**

2016 - YSI 6600 sondes replaced with EXO2 sondes on **December 14**.

2017 - PVC tube design changed on **December 11**. The new tube was positioned 45 cm higher on the piling, which is the historical position of the tube. New tube has more holes - new tube has 1” and 2” diameter holes along the length of the tube similar to the new design recommended by YSI.

Grove Plantation:

2015 - Water quality station officially went online on **January 1** (Coordinates: 32.6637N and -80.4130W)

2016 - Telemetry system was installed in **June**

2016 - Telemetry system began transmitting real-time data on **June 15**.

2017 - Telemetry unit stopped telemetering from **July 10** to **December 19**.

2017 - PVC tube design changed on **December 11**. The new tube has 1” and 2” diameter holes along the length of the tube similar to the new design recommended by YSI.

Jehossee Island:

2015 – Station officially went online on **January 1** (Coordinates: 32.6209N and -80.3965W).

Mosquito Creek:

2002 - Mosquito Creek officially went online on **October 22**. The deployment mount was a sign post attached to the bridge (Coordinates: 32.5558 N 80.4380W).

2007 - Deployment mount installed 0.5 meters away from old mount in **August**. This a deeper location.

2009 - The deployment mount was moved away from the bridge during construction of new bridge. The installation of the new deployment mount was completed in **August**; new site is about 0.2 meters deeper.

2016 - A more secure deployment mount constructed on **May 17**, fasteners that provide additional support were added on **May 18** – new PVC tube is 18 feet long.

2017 - Rapid Pulse DO sensors on YSI 6600 sondes replaced with Optical DO sensors on **July 5**.

St. Pierre:

1995 - St. Pierre water quality station officially went online in **March** (Coordinates: 32 31.724N 81 21.573W). Original mount design was 12-ft galvanized sign post (driven 2 feet into sediment) and 4" diameter PVC tube attached vertically, bottom of tube ~0.1 m from creek bottom

1997 - Changed deployment mount design on **February 7**. Sonde deployed in a pyramid shaped cage (2.5 feet long and 1.5 feet high) with a PVC pipe strapped horizontally across the top of the cage, ~ one foot off from creek bottom. The cage is tethered to a galvanized pole to prevent any possible dragging by the tide.

2000 - St Pierre site moved to other side of channel and station modified in **April** (coordinates changed: 32 31 40.59518N 80 21 41.2548W).

2006 - Changed deployment mount design on **April 14** - PVC tube was attached vertically to the sign post, bottom was ~ one foot off from creek bottom

2006 - Sign post mount was replaced in **May** with a 40-ft, 8-in diameter treated pressure piling.

2006 - Sutron Sat-Link2 transmitter installed in **June** at St. Pierre to transmit real-time data.

2017 - Changed deployment mount design on **June 6**. The new tube has 1" and 2" diameter holes along the length of the tube similar to the new design recommended by YSI. The new tube was positioned 55 cm higher on the piling, which is slightly higher than the historical position of the tube.

2017 - Rapid Pulse DO sensors on YSI 6600 sondes replaced with Optical DO sensors on **July 6**.

2017 - Hurricane Irma destroyed the Sutron Sat-Link2 transmitter on **September 11**. A YSI Storm3 transmitter was installed on **November 15**.

2017 - YSI 6600 sondes replaced with EXO2 sondes on **November 15**.

Inactive Stations

Big Bay:

2014 - Big Bay site officially went offline on **December 31**. Site moved to dock at Edisto Beach State Park - new station name is Edisto Island.

Rock Creek:

1996 - Rock Creek water quality station went offline in **July**.

Blanket Statements: All Stations

Effect of Freshwater Input on Water Quality

Water quality at the SWMP sites are influenced by the river water level and streamflow rate in the South Edisto River at the USGS gauging station at Givhans Ferry. We observe a negative correlation between salinity and the river stage - significant salinity decreases when river crests above flood level (+10 feet) and salinity increases when the river level falls below 5 feet. The same negative correlation is observed between streamflow and salinity, regardless of the river stage - decreases in salinity when streamflow is above 15,000 ft³/sec and increases when streamflow is below 5,000 ft³/sec.

Effect of Significant Rain Events on Water Quality

Water quality at the SWMP sites are influenced by significant rain events during low tides. We observe dips in salinity and dissolved oxygen levels and spikes in turbidity during slack low tide at the sites.

Sonde Exchange In-Situ Readings

Taking in-situ readings at the end of deployment were resumed in 2017.

Dissolved Oxygen Hypoxia Coding

Dissolved oxygen percent and mg/L readings are coded <0> (CDA) when a hypoxic event is recorded (≤ 3 mg/L) unless another metadata code was applied for a deployment.

Wiper Brush Malfunction Coding

Wiper brush used to clean sensors during deployment was lost during some deployments. All post-calibration checks were in the acceptable range. Values are flagged as <1> [SWM]. Any other data concerns that occurred during the deployment are listed under the appropriate parameter heading.

Missing Data

Sonde was not at the correct depth in the deployment tube for last or first reading of the deployment. This is caused by the sonde being pulled prematurely or deployed during the first reading. These values are considered post deployment values. Values are flagged as <-2>.

Turbidity Spike Coding

For YSI 6000 series sondes, turbidity values between 300 and 1000 NTU are coded <1> [STS] or [CTS]. For YSI EXO series sondes, turbidity values between 300 and 4000 NTU (FNU) are coded <1> [STS] or [CTS]. These spikes are typically observed during low tides, max flood tides, and/or rain events.

Turbidity readings above 1000 NTU for YSI 6000 series sondes and above 4000 NTU (FNU) for YSI EXO series are rejected and are coded <-3> [STS] or [CTS] unless another metadata code was applied for a deployment. These values are above the sensor specifications.

Turbidity Negative Readings Coding

Negative turbidity values are rejected and are coded <-3> [SNV] (CSM). These values are below the sensor specifications.

Significant Weather Events

The significant weather event data listed in the table below is from the National Hurricane Center administered by the National Oceanic and Atmospheric Administration (NOAA). All events listed are ones that have impacted the South Carolina Coast beginning in 2017. As the National Hurricane Center updates their information concerning the events this table will be updated to reflect that information.

Significant Weather Event	Date Started	Date Ended	Max Wind Speed
Hurricane Irma	August 30, 2017	September 11, 2017	N/A

Hurricane Irma:

Hurricane Irma was a Category 5 hurricane that moved along the west coast of Florida with rainfall and storm surge along the SC coast. The impact of hurricane Irma was observed at the Bennett's Point meteorological station in Green Pond, South Carolina and in the South Edisto River. The data collected from 09/11/2017 at 00:00 to 09/12/2017 at 23:45 at St. Pierre and Grove Plantation sites in the S. Edisto River are flagged for a significant weather event that occurred when the hurricane passed by the reserve. The F_Record column is flagged as {CWE} because all parameters were affected. Note: no sondes were deployed at the other sites during this time period.

Data Editing/Flagging Notes: Organized by Station, Parameter, and Code

Edisto Island

All Parameters Blanket Statement for Edisto Island

The data collected from 10/02/2017 - 11:45 to 10/03/2017 - 10:45 during the September 18 deployment (09/18/2017 - 11:30 to 10/03/2017 - 10:45) were collected at the wrong depth due to possible tampering. Depth values are flagged as <1> [GSM] (CWD); and the other parameters are flagged as <0> [GSM] (CWD). The F_Record is flagged as {CVT}.

The data were collected at the wrong depth from 10/03/2017 - 11:00 to 11/01/2017 - 11:00. Upon deployment of a new sonde on 10/03/2017, the EXO2 did not reach the bottom due to fouling in the deployment tube. Depth values are flagged as <1> [GSM] (CWD) and the other parameters are flagged as <0> [GSM] (CWD). Other data concerns that occurred during the deployment are listed under the appropriate parameter heading.

The data were collected at the wrong depth from 11/01/2017 - 11:15 to 11/02/2017 - 10:45 (except at 09:45 which was rejected for being out of water). Upon deployment of a new sonde on 11/01/2017, the EXO2 did not reach the bottom due to fouling, and a lost screen was in the deployment tube. The site was visited the next day to clean out the tube. The difference may be significant due to reduced flow around the probes. The depth values are flagged as <1> [GSM] (CWD); dissolved oxygen and pH values are flagged as <-3> [GNF] (CSM); and the other parameters are flagged as <0> [GSM] (CWD). Other data concerns that occurred during the deployment are listed under the appropriate parameter heading or in a blanket statement.

Rejected Data (Flag <-3>)

The data collected at 11/02/2017 - 09:45 were rejected due to sonde being out of water. The sonde was in the tube but the sonde was not submerged, as indicated by a depth of 0.13 meter. The values are flagged as <-3> [GOW] (CSM).

Missing Data (Flag <-2>)

The data collected from 07/17/2017 - 20:45 to 07/20/2017 - 12:45 during the July 5 deployment were missing due to low battery. The values are flagged as <-2> [GPF] (CSM).

The data collected during the September 6 deployment (09/06/2017 - 12:30 to 09/18/2017 - 11:15) were missing because sonde was not deployed due to impending Hurricane Irma. The values are flagged as <-2> (CSM).

The data collected from 11:00 to 12:30 on 12/01/2017 during the November 1 deployment were missing due to in-field maintenance. The tube was replaced with a new tube. The values are flagged as <-2> [GSM] (CMC). Note: the design of the deployment tube changed (see Scientific Methods section).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

The data collected during the following time periods were rejected due to QAQC checks. The reason that the salinity readings dipped and then rose again to normal levels was probably due to a temporary equipment malfunction because no rain was recorded during this time. The post deployment checks were within acceptable ranges, and the other readings are within the range observed at this site at this time of year. The values are flagged as <-3> [SQR] (CSM).

06/16/2017 - 04:15 (21.2 psu)

06/16/2017 - 04:30 (12.0 psu)

07/14/2017 - 14:45 (25.3 psu)

08/08/2017 - 23:00 (15.5 psu)

08/17/2017 - 06:00 (15.6 psu)

10/16/2017 - 07:45 (26.0 psu)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the May 23 deployment (05/23/2017 - 12:45 to 06/05/2017 -10:00) were suspect due to the post calibration being out of range. The post calibration check of specific conductivity (35.9 mS/cm) was out of range. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

The data collected from 11/01/2017 - 11:15 to 11/02/2017 - 10:45 (except at 09:45 which was rejected for being out of water) were rejected due to low water flow near sensors. Upon deployment of a new sonde on 11/01/2017, the EXO2 did not reach the bottom due to fouling, and a lost screen in the deployment tube. The site was visited the next day to clean out the tube. The values are flagged as <-3> [GNF] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

pH

Rejected Data (Flag <-3>)

The data collected during the January 11 deployment (01/11/2017 - 12:45 to 02/09/2017 - 13:00) were rejected due to post-calibration out of range. The post calibration check of pH7 and pH10 (6.25 was 9.3, respectively) were out of range, and the post-sensor diagnostics value for pH7 (93.2) was not acceptable. The readings were higher than the previous deployment and ultimately lower than the next deployment. The values are flagged as <-3> [SSM] (CSM).

The data collected from 11/01/2017 - 11:15 to 11/02/2017 - 10:45 (except at 09:45 which was rejected for being out of water) were rejected due to low water flow near sensors. Upon deployment of a new sonde on 11/01/2017, the EXO2 did not reach the bottom due to fouling, and a lost screen in the deployment tube. The site was visited the next day to clean out the tube. The values are flagged as <-3> [GNF] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

The turbidity data collected at the end of the April 12 deployment were rejected from 04/26/2017 - 01:45 to 04/26/2017 - 09:30 were rejected due to QAQC checks. The values during this time period remained >190 NTU for several hours and the post calibration check of the 0 NTU was elevated. The values are flagged as <-3> [SQR] (CSM).

The turbidity data collected from 11/17/2017 - 00:00 to 12/01/2017 - 10:45 were rejected due to QAQC checks. During the deployment the values lose the tidal pattern and erratically fluctuate at higher levels than normal. The post-deployment check was acceptable. The values are flagged as <-3> [SQR] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the following deployments were suspect due to post-calibration out of range. The post calibration checks in 0 NTU were outside the acceptable range but the post calibration checks in 125 NTU were within the acceptable range. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

04/12/2017 - 11:15 to 04/26/2017 - 01:30 (3.51/133.0 post cal)

10/03/2017 - 11:00 to 11/01/2017 - 11:00 (2.33/115.0 post cal)

The data collected during the June 5 deployment (06/05/2017 - 10:15 to 06/19/2017 - 06:30) were suspect due to post calibration out of range. The post calibration checks in 0 and 124 NTU solutions (-2.73 and 75.73, respectively) were outside the acceptable range. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

Turbidity spikes on 06/29/2017 - 2:00 and 8/15/2017 - 14:45 were rejected due to them being exceptionally high compared to surrounding data

Passed Initial QAQC Checks (Flag <0>)

Fishing Creek

All Parameters Blanket Statement for Fishing Creek

The data were collected at the wrong depth from 01/01/2017 - 00:00 to 12/11/2017 - 09:15. The discrepancy was discovered during the internal review of the 2016 annual data file. However, this difference is not considered significant because the S. Edisto River and the creek are well-mixed systems and new tube was placed in the same thermocline. In 2017, the average depth after the installation was 2.3 meters, and it was 2.9 meters prior to the installation. The depth values are flagged as <1> (CWD), and the other parameters are flagged as <0> (CWD). The F_record is flagged {CSM}. Other data concerns that occurred during the deployment are listed under the appropriate parameter heading or in a blanket statement. Note: The data were collected at the correct depth from 12/11/2017 at 10:00 to 12/31/2017 at 23:45 because the tube was replaced with a new tube at correct vertical position on the piling.

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

The data collected during the September 6 deployment (09/06/2017 - 14:45 to 09/14/2017 - 12:30) were missing because sonde was not deployed due to impending Hurricane Irma. The values are flagged as <-2> (CSM).

The data collected from 09:30 to 09:45 on 12/11/2017 during the December 4 deployment (12/04/2017 - 15:30 to 01/19/2018 - 15:15) were missing due to in-field maintenance/cleaning. The sonde was removed from the water while the tube was replaced with a new tube, and then the sonde was re-deployed. The new tube was placed at correct vertical position on the piling. The values are flagged as <-2> [GMC] (CSM). Note: the design of the deployment tube changed (see Scientific Methods section).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the May 24 deployment (05/24/2017 - 07:30 to 06/05/2017 -10:30) were suspect due to the post calibration out of range. The post calibration check of 23.24 mS/cm was out of range. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

pH

Rejected Data (Flag <-3>)

The first pH record of the following deployments were rejected due to spikes/dips in pH when the sonde was deployed. This is not typical; however, it is thought to be attributed to acclimation of the probe. The post deployment checks and sensor diagnostics were within an acceptable range. The values are flagged as <-3> [GSM] (CND).

02/08/2017 - 10:30

03/08/2017 - 9:15

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the following deployments are flagged as suspect due to cause unknown. One of the sensors was reading lower than the other sensor. All post-calibration values were within range. The values are flagged as <1> [GSM] (CCU).

03/30/2017 - 13:00 to 04/12/2017 - 13:00

05/24/2017 - 07:30 to 06/05/2017 - 10:30

06/20/2017 - 11:30 to 07/05/2017 - 10:45

The data collected during the December 4 deployment (12/04/2017 - 15:30 to 12/31/2017 - 23:45) (except 12/11/2017 09:30 to 09:45 when sonde was out of water for the tube replacement) were suspect due to post calibration being out of range. The post deployment pH7 and pH10 checks (7.42 and 10.40, respectively) and the pH7 voltage (-61.0) were out of range, but the pH10 and pH slope were within the acceptable range. There was mud and algae on the sensor when the sonde was retrieved, and post-calibration check was done on the biofouled sensor. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

The turbidity data collected from 11/29/2017 - 00:00 to 12/04/2017 - 15:15 were rejected due to QAQC checks. During the period, the values lose the tidal pattern and fluctuate at higher levels than normal. The post-deployment check was acceptable. The values are flagged as <-3> [SQR] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the following deployments were suspect due to the post calibration being out of range. The post calibration 0 NTU values were out of range and the first two deployments the post calibration 124 NTU values were out of range. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

03/08/2017 - 09:15 to 03/30/2017 - 12:45 (3.6/154.6) 03/30/2017 - 13:00 to 04/12/2017 - 13:00 (2.08/165.0)

10/02/2017 - 12:30 to 11/01/2017 - 12:30 (2.96/121.2)

The turbidity spike on 07/18/2017 - 00:00 was rejected due to them being exceptionally high compared to surrounding data.

Passed Initial QAQC Checks (Flag <0>)

Grove Plantation

All Parameters Blanket Statement for Grove Plantation

Data collected from 09/11/2017 - 00:00 to 09/12/2017 - 23:45 during the September 6 deployment (09/06/2016 - 13:45 to 09/18/2017 - 12:15) at Grove Plantation site are flagged for a significant weather event. Based on the depth, the surge from Hurricane Irma reached the site two hours after St. Pierre site, the other site with a sonde deployed during the hurricane. Temperature reading was lowest at 14:15, while sonde recorded highest readings for other parameters (salinity, DO, depth, pH, and turbidity). The post-deployment DO checks were acceptable, so the sonde was not bio-fouled by the surge; also, the tube wasn't filled with sediments because the difference between the end of the deployment readings (49.7% air sat and 4.1 mg/L) and field check readings (56.0% air sat and 4.62 mg/L) was only 12.7%. All parameters were affected. The F_Record column is flagged as {CWE}.

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

The data collected from 06/26/2017 - 21:00 to 07/06/2017 - 10:45 during the June 20 deployment were missing due to low battery. The values are flagged as <-2> [GPF] (CSM).

The data collected during the August 3 deployment (08/03/2017 - 12:15 to 08/16/2017 - 08:15) were missing due to equipment malfunction. The sonde was hit by a lightning strike and the data could not be retrieved. The values are flagged as <-2> [GIM] (CSM).

The data collected from 12/11/2017 - 10:45 to 12:30 during the December 4 deployment (12/04/2017 - 14:45 to 12/19/2017 - 11:00) were missing due to equipment maintenance. The sonde was removed from the tube and out of the water while the old tube was replaced, and the sonde was re-deployed before the 12:45 reading. The values are flagged as <-2> [GMC] (CSM). Note: the design of the deployment tube changed (see Scientific Methods section).

Suspect Data (Flag <1>)

The first readings after the new tube was installed (12/11/2017 - 12:45) during the December 4 deployment (12/04/2017 - 14:45 to 12/19/2017 - 11:00) were suspect due to in-field maintenance/cleaning. The same sonde was deployed before and after the old tube was replaced with a new tube. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [GSM] (CMC).

Passed Initial QAQC Checks (Flag <0>)

The data collected from 12/11/2017 - 12:45 to 12/19/2017 - 11:00 following the deployment tube swap was not at the wrong depth. The depressed depth seen during this time period is due to low flow down the S. Edisto river. A similar trend was also noticed in a downstream site. The F_Record is flagged as {CSM}.

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

The data collected from 01/01/2017 - 00:00 to 1/11/2017 - 12:45 during the December 14 deployment (12/14/2016 at 13:30 to 01/11/2017 at 12:45) were rejected due to a sensor malfunction. The pre/post-deployment checks and sensor diagnostics were within range; however, upon pre-calibrating for the next deployment it was out of range. Due to failure to pre-calibrate properly after cleaning and due to age the sensor was retired. The values are flagged as <-3> [SSM] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the June 5 deployment (06/05/2017 - 12:30 to 06/20/2017 - 11:45) were suspect due to the post calibration being out of range. The post calibration check of 86.8 % air saturation was outside the acceptable range. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

The decrease in DO between 08/16/2017 - 08:30 and 08/29/2017 - 23:45 of the August 16 deployment (08/16/2017 - 08:30 and 08/30/2017 - 13:15) corresponded to the period of increased freshwater input to the S. Edisto River. Similar drop in DO was observed at the downstream site, Jehossee Island; however, the salinity at the other sites (Edisto Island, Fishing Creek, Mosquito Creek, and St. Pierre) was not depressed. The wiper brush also fell off during the deployment. The values are flagged as <1> [SWM] (CSM).

The data collected from 10/29/2017 - 00:00 to 11/01/2017 - 13:15 during the October 2 deployment (10/02/2017 - 11:45 to 11/01/2017 - 13:15) were considered suspect due to QAQC checks. The post calibration checks and sensor diagnostics were within the acceptable range, but the last reading was ~6% higher than the first reading of the new sonde. The cause of the significant jump in readings was unknown. The values are flagged as <1> [GSM] (CCU).

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

pH

Rejected Data (Flag <-3>)

The first pH record of the following deployments were rejected due to spikes/dips in pH when the sonde was deployed. This is not typical; however, it is thought to be attributed to acclimation of the probe. The post deployment checks and sensor diagnostics were within an acceptable range. The values are flagged as <-3> [GSM] (CND).

02/08/2017 - 11:45	04/26/2017 - 13:00	05/24/2017 - 08:15
06/05/2017 - 12:30	07/06/2017 - 11:00	09/06/2017 - 13:45
09/18/2017 - 12:30	12/04/2017 - 14:45	

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the February 8 deployment (02/08/2017 - 11:45 to 03/08/2017 - 10:00) were suspect due to sensor diagnostic was out of range. The post deployment pH slope was 149, indicating that the sensor was fouled during the deployment. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SDG] (CBF).

The data collected during the December 4 deployment (12/04/2017 at 15:00 to 12/19/2017 at 11:00) were suspect due to post sensor diagnostics were out of range. The post pH slope of 154.9 was out of range, but the post deployment pH7 and pH10 checks were within the acceptable range. Mud was observed on sensors and body of sonde. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SDG] (CBF).

Passed Initial QAQC checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC checks (Flag <0>)

Jehossee Island

All Parameters Blanket Statement for Jehossee Island

The data during the July 5 deployment (07/05/2017 - 11:30 to 07/20/2017 - 10:15) were collected at the wrong depth. When deployed, the sonde did not reach the bottom of tube. Depth values are flagged as <1> (CWD), and other parameters are flagged as <0> (CWD). The F_Record is flagged as {CSM}. Other data concerns that occurred during the deployment are listed under the appropriate parameter heading.

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

The data collected during the September 6 deployment (09/06/2017 - 13:15 to 09/18/2017 - 11:30) were missing because sonde was not deployed due to impending Hurricane Irma. The values are flagged as <-2> (CSM).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The first reading of the July 5th deployment (07/05/2017 - 11:30 to 07/20/2017 - 10:15) is suspect due to a dip in the temperature when the sonde was deployed. This is not typical; however, it is thought to be attributed to acclimation of the probe. The post deployment checks were within an acceptable range. The value is flagged as <1> [GSM] (CND).

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the following deployments were suspect due to the post calibration being out of range. The post deployment DO % air saturation checks were outside the acceptable range; the sensor diagnostics values were acceptable. The data were not rejected because they were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM). NOTE: low readings during the August 16 deployment appeared to correspond to the period of increased freshwater input to the S. Edisto River, and a similar drop in DO was observed at the upstream site, Grove Plantation.

01/01/2017 - 00:00 to 01/11/2017 - 12:00 (110.1%)	02/08/2017 - 11:00 to 03/08/2017 - 09:30 (112.0%)
08/03/2017 - 11:30 to 08/16/2017 - 07:00 (115.7%)	08/16/2017 - 07:15 to 08/30/2017 - 12:15 (64.0%)

The data collected from 10/02/2017 - 11:00 to 11/01/2017 - 12:00 were suspect due to QAQC checks. The post-deployment DO % air saturation check of 84.5% was outside the acceptable range; but the sensor diagnostics values were acceptable. There was also sustained values above 100 % air saturations from 10/07/2017 to 10/22/2017 which may indicate there was problem with the sensor. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

pH

Rejected Data (Flag <-3>)

The first pH record of February 8 deployment (02/08/2017 - 11:00 to 03/08/2017 - 09:30) were rejected due to a spike in pH when the sonde was deployed. This is not typical; however, it is thought to be attributed to acclimation of the probe. The post deployment checks and sensor diagnostics were within an acceptable range. The values are flagged as <-3> [GSM] (CND).

The data collected during the June 5 deployment (06/05/2017 - 11:45 to 06/20/2017 - 12:15) were rejected due to sensor malfunction. The post deployment check of pH10 (8.97) was out of range, and the post-deployment pH slope of 109.8 was well outside the acceptable range. The pH sensor on the sonde was replaced for the July 5 deployment. The readings were not within the range observed at this site at this time of year. The values are flagged as <-3> [SSM] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the July 5 deployment (07/05/2017 - 11:30 to 07/20/2017 - 10:15) were suspect due to sensor diagnostics out of range. The post-deployment pH slope of 147.6 and the pH10 post-deployment check of 9.6 were outside the acceptable range, but the pH 7 post-deployment check of 7.06 was within the acceptable range. The data were not rejected because the difference between last reading of this deployment and first reading of next deployment was within acceptable, and the readings were within the range observed at this site at this time of year. The values are flagged as <1> [SDG] (CSM).

Passed Initial QAQC checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the following deployments were suspect due to the post calibration being out of range. The post calibration 0 NTU values were out of range but the post calibration checks in 125 NTU were within the acceptable range. . The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM). The turbidity spikes are flagged as <1> [SPC] (CTS).

05/24/17 - 09:00 to 06/05/17 - 11:30 (-3.0/117.1) 06/05/17 - 11:45 to 06/20/17 - 12:15 (-4.1/127.0)

Passed Initial QAQC checks (Flag <0>)

Mosquito Creek

All Parameters Blanket Statement for Mosquito Creek

From January 9 at 12:00 to July 19 at 10:00, the temperature readings recorded by the two sondes that are assigned to this site differed by more than 1 degree Celsius. Based upon evaluating the temperature at other sites, the sonde reading the lower values was determined to be affected. The temperature values were flagged as <1> [SSM] (CSM). The temperature differences did not affect the specific conductivity, dissolved oxygen (mg/L), and pH values. F_Record column was flagged as {CSM} for the following time periods.

01/09/2017 12:00 to 02/06/2017 10:30	05/08/2017 12:15 to 05/24/2017 09:30
03/06/2017 10:45 to 03/30/2017 09:30	06/05/2017 09:30 to 06/20/2017 13:45
04/10/2017 10:45 to 04/26/2017 13:45	07/06/2017 09:45 to 07/19/2017 10:00

Rejected Data (Flag <-3>)

The data collected at following times during the July 5 deployment (07/05/2017 - 09:45 to 07/20/2017 - 09:15) were rejected due to instrument malfunction. The values are flagged as <-3> [GIM] (CSM).

07/19/2017 - 10:30 to 11:30 07/19/2017 - 12:00 to 12:45

Missing Data (Flag <-2>)

The data collected during the June 26 deployment from 06/26/2017 - 05:00 to 07/05/2017 - 09:30 were missing due to low battery. The values are flagged as <-2> [GPF] (CSM).

The data collected at following times during the July 5 deployment (07/05/2017 - 09:45 to 07/20/2017 - 09:15) were missing due to instrument malfunction. The values are flagged as <-2> [GIM] (CSM).

07/19/2017 - 10:15 and 11:45 07/19/2017 - 13:00 to 07/20/2017 - 09:15

The data collected from September 6 deployment (09/06/2017 - 12:15 to 09/14/2017 - 11:15) were missing because sonde was not deployed due to impending Hurricane Irma. The values are flagged as <-2> (CSM).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the following deployments were suspect due to sensor malfunction. The temperature values were greater than 1 degree Celsius lower than the standard thermistor, which is outside the acceptable range. The difference did not appear to affect other parameters. The values are flagged as <1> [SSM] (CSM).

01/09/2017 - 12:00	to	02/06/2017 - 10:30	03/06/2017 - 10:45	to	03/30/2017 - 09:30
04/10/2017 - 10:45	to	04/26/2017 - 13:45	05/08/2017 - 12:15	to	05/24/2017 - 09:30
06/05/2017 - 09:30	to	06/20/2017 - 13:45			

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

The data collected from 03/19/2017 - 09:00 to 03/30/2017 - 09:30 during the March 6 deployment (03/06/2017 - 10:45 to 03/30/2017 - 09:30) were rejected due to QAQC checks. The increase in values prior to these elevated levels correspond to values observed at other sites. The values are above 100% for an extended period of time which is not typically observed at this site. Post-calibration checks are within the acceptable range. Values are flagged as <-3> [SQR] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the February 6 deployment (02/06/2017 - 10:45 to 03/06/2017 - 10:30) were suspect due to the post calibration being out of range. The post-deployment check of 82.9 % was outside the acceptable range, but the sensor diagnostics values were acceptable. The data were not rejected because readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

The field check DO reading was 25+% higher than the last DO readings of the sonde during the following deployments. The sensor was not bio-fouled because the post-deployment checks and sensor diagnostics values were within acceptable ranges, and there was no obvious downward drift in the readings during the deployment. The values are flagged as <0> [GSM] (CDF).

08/03/2017 - 10:30 to 08/16/2017 - 09:45 (sonde: 34.3% air sat, 2.4 mg/L - handheld: 46.0% air sat, 3.15 mg/L)

Depth

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

pH

Rejected Data (Flag <-3>)

The first pH record of the following deployments were rejected due to spikes/dips in pH when the sonde was deployed. This is not typical; however, it is thought to be attributed to acclimation of the probe. The post deployment checks and sensor diagnostics were within an acceptable range. The values are flagged as <-3> [GSM] (CND).

01/09/2017 - 12:00

03/30/2017 - 09:45

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the November 1 deployment (11/01/2017 - 11:30 to 12/04/2017 - 13:00) were suspect due to the post calibration being out of range. The pH7 post-deployment check of 7.51 and the pH slope of 133.7 were outside the acceptable range, but the pH10 post-deployment check of 9.97 was within the acceptable range. The data were not rejected because the difference between last reading of this deployment and first reading of next deployment was acceptable, and the readings were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

The data collected from 08/08/2017 - 10:45 to 08/16/2017 - 09:45 during the August 3rd deployment (08/03/2017 - 10:30 to 08/16/2017 - 09:45) were rejected due to QAQC checks. During the period, the values lose the tidal pattern and fluctuate at higher levels than normal. The post-deployment check was acceptable. Values are flagged as <-3> [SQR] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC checks (Flag <0>)

St. Pierre Creek

All Parameters Blanket Statement for St. Pierre Creek

The data were collected at wrong depth from 01/01/2017 - 00:00 to 06/05/2017 - 07:30 because the new tube that was installed on June 15, 2016 was positioned higher on deployment mount. The tube was placed higher than historical deployments due to concerns with sedimentation around the pole. In 2017, the average depth after the installation was 1.9 meters, and it was 2.5 meters prior to the installation. Overall, this difference in depth is not considered significant because the S. Edisto River and the creek are well-mixed systems, and the new tube was placed in the same thermocline. The depth values are flagged as <1> (CWD), and the other parameters are flagged as <0> (CWD). The F_Record was flagged as {CSM}. Other data concerns that occurred during these deployments are listed under the appropriate parameter headings below or in one of the preceding blanket statements. The tube was positioned at correct vertical position on the piling before the first reading (13:30) of the June 6 deployment.

Data collected from 09/11/2017 - 00:00 to 09/12/2017 - 23:45 at St. Pierre site were flagged for a significant weather event. Based on the depth, the surge from Hurricane Irma reached the site two hours before Grove Plantation site, the other site with a sonde deployed during the hurricane. The post deployment DO checks were acceptable, so the sonde was not biofouled by the surge. The F_Record column is flagged as {CWE} because all parameters were affected.

Rejected Data (Flag <-3>)

The data collected from 05/22/2017 - 22:45 to 06/05/2017 - 07:30 from the May 8 and May 31, 2017 deployments were rejected due to QAQC checks. Mud was accumulating in the PVC tube and burying the sensor; as a result,

specific conductivity, dissolved oxygen, pH and turbidity readings during this period were not typical for this site. The values are flagged as <-3> [SQR] (CSM).

Missing Data (Flag <-2>)

The data collected from 06/05/2017 - 07:45 to 06/06/2017 - 13:15 were missing due to maintenance. The tube was filled with mud so deployment was postponed until the new tube was installed at the correct depth on the deployment mount. The values are flagged as <-2> [GMC] (CSM).

The data collected during the July 5 deployment (07/05/2017 - 09:00 to 07/20/2017 - 08:00) were missing due to low battery. The values are flagged as <-2> [GPF] (CSM).

The data collected during the November 1 deployment (11/01/2017 - 09:15 to 11/15/2017 - 12:45) were missing due to sonde was not set to log. The values are flagged as <-2> [GPF] (CSM).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

The data collected during the February 6 deployment (02/06/2017 - 11:30 to 03/06/2017 - 11:15) were rejected due to sensor malfunction. The post deployment check of 21.2% air saturation was significantly lower than normal, but the readings were higher than expected at the site during this time of year, indicating a sensor malfunction and not biofouling. The DO anode was re-conditioned and successfully calibrated for the March 30 deployment. The values are flagged as <-3> [SSM] (CSM).

The data collected from 05:30 to 10:15 on 08/30/2017 during the August 16 deployment (08/16/2017 - 06:15 to 08/30/2017 - 10:15) were rejected due biofouling. The post deployment DO check of 99.0 % air saturation was acceptable so the sensor was not bio-fouled. The biofouling was in the tube because there was a light cover of

biofouling organisms on the sensors and sondes, mud was on top of the sonde when sonde was retrieved. In addition, there was a large difference between the last DO readings of the sonde (30.8% air sat, 2.2 mg/L) and the field check readings (58.7% air sat, 4.06 mg/L). The values are flagged as <-3> [GSM] (CBF).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the following deployments were suspect due to post calibration out of range. The post deployment check during the January 9 (89.7%) and the March 6th (81.9%) deployments were outside the acceptable range. The reading were within the range typically observed during this time of year. The values are flagged as <1> [SPC] (CSM).

01/09/2017 - 11:00 to 02/06/2017 - 11:15

03/06/2017 - 11:30 to 03/30/2017 - 11:45

The data collected during the April 26 deployment (04/26/2017 - 11:00 to 05/08/2017 - 09:15) were suspect due to post-calibration out of range. The post calibration check of dissolved oxygen (55.1 % air saturation) was well outside the acceptable range. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

The data collected during the June 20 deployment (06/20/2017 - 10:00 to 07/5/2017 - 08:45) were suspect due to post-calibration out of range. The post calibration check of dissolved oxygen (79.4 % air saturation) was well outside the acceptable range. The readings were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC checks (Flag <0>)

The data collected at the following times during the March 30th deployment (03/30/2017 - 12:00 to 04/10/2017 - 09:45) were considered reasonable after QAQC checks. For several hours at multiple time periods, there was a significant drops in DO percent and mg/L. Post-calibration checks were within the acceptable range. The low DO readings correspond to salinity drops, low tide and rainfall recorded at Bennett's Point. Values are flagged as <0> [GSM] (CDF).

03/30/2017 - 16:00 to 19:15

04/03/2017 - 18:45 to 19:30

04/05/2017 - 20:00 to 21:45

Depth

Rejected Data (Flag <-3>)

The data collected from 09:45 to 10:30 on 05/08/2017 were rejected due to QAQC checks. The sonde was deployed before the first reading at 09:45, but the sonde was stuck in the tube near the water surface. The other parameters were not rejected because they were within the range observed after the sonde dropped to the correct depth, which occurred prior to the 1045 reading. The values are flagged as <-3> [SQR] (CSM).

The data collected during the following times has been marked rejected due to sensor malfunction. The depths in these cases are reading 0.00. However, other parameters do not show the sonde being out of water and these do not coincide with infield maintenance. We believe this may be an issue with the sensor itself. The values are flagged <-3> [SSM] (CSM).

11/27/2017 22:30

11/29/2017 22:45

11/30/2017 3:30

12/02/2017 23:30

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC checks (Flag <0>)

pH

Rejected Data (Flag <-3>)

The first pH record of the following deployments were rejected due to spikes/dips in pH when the sonde was deployed. This is not typical; however, it is thought to be attributed to acclimation of the probe. The post deployment checks and sensor diagnostics were within an acceptable range. The values are flagged as <-3> [GSM] (CND).

01/09/2017 - 11:00

09/06/2017 - 11:15

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data during the April 10 deployment (04/10/2017 - 09:45 to 04/26/2017 - 10:30) were suspect due to possible sensor malfunction; however, the data were observed to be similar to other sites in the ACE during this time period. The sensor deployed was reading significantly lower than the sensor retrieved. The post-calibration and diagnostic values were within the accepted range. The values are flagged as <1> [SSM] (CSM).

The data collected during the August 3 deployment (08/03/2017 - 09:30 to 08/16/2017 - 06:15) were suspect due to post-calibration out of range. The post calibration checks of pH 7 (7.41) and 10 (10.42) were out of range. The readings were higher than those of adjacent deployments but were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

The data collected during the October 2 deployment (10/02/2017 - 08:45 to 11/01/2017 - 09:00) were suspect due to post-calibration out of range. The post calibration checks of pH 7 (6.84) and 10 (9.52) and pH slope (141.2) were out of range. The readings were higher than those of adjacent deployments but were within the range observed at this site at this time of year. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected from 10/08/2017 - 00:00 to 11/01/2017 - 09:00 during the October 2 deployment (10/02/2017 - 08:45 to 11/01/2017 - 09:00) were considered suspect due to QAQC checks. During the period, the values lose the tidal pattern and fluctuate at higher levels than normal. The post-deployment check was acceptable. Values are flagged as <1> [GSM] (CCU) unless a spike was observed.

Passed Initial QAQC checks (Flag <0>)