

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 with Windows 7 or newer operating system. Files are exported from EcoWatch in a comma-delimited format (.CDF), EcoWatch Lite in a comma separated file (CSV) or KOR Software in a comma separated file (CSV) 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 ingestion into the database as provisional plus data, recalculation of cDepth or cLevel parameters, and finally 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., Saundra Upchurch, Denise Sanger, Grace Lewis, and Rachel Bonafilia 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 to: 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 secondary stations 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. The Jehossee Island station is in the mesohaline zone, and the Grove Plantation station is in the oligohaline to freshwater zone, approximately 0.16 km (0.1 nautical miles) downstream of the legal saltwater demarcation line. See *Section 5 – Site Location and Character* for detailed descriptions of the sites.

In July 2020, a station at the SCDNR Marine Resources Division campus was established, named Fort Johnson, in Charleston Harbor, which is approximately 53 km from St. Helena Sound estuary. This project strengthens the NERRS and IOOS collaborations and efforts to integrate long term monitoring data between the two programs. Funding for this station was provided by the SouthEast Coastal and Ocean Regional Association (SECOORA) through its’ IOOS grant. The establishment of a station in Charleston Harbor provides a multitude of benefits to a variety of stakeholders, including recreational and commercial boating interests, scientists, and managers. The deepening of Charleston Harbor Estuary to accommodate larger vessels will begin in early 2018, which may alter salinity regimes and circulation patterns within the harbor, and water quality data before and after this project will be of great value in assessing the project impacts.

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 (1.64 ft) from the sediment. Turbidity monitoring was added to the program on April 11, 1996. Chlorophyll was added to the program with the Fort Johnson site. Initially the loggers measured the parameters at fifteen-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 –

From 1995 to 2013, YSI 6600 series sondes were deployed at all monitoring stations. In 2019, YSI 6600 sondes were only deployed at Grove Plantation (replaced with EXO2 in December) and Jehossee Island; YSI EXO2 were deployed at the other four stations (Edisto Island, Fishing Creek, Mosquito Creek, and St. Pierre). We started to migrate to EXO2 sondes in 2014 when Edisto Island station came on online; Fishing Creek site was switched to an EXO2 sonde in 2016, St. Pierre Creek station in 2017, Mosquito Creek station in 2018, and Grove Plantation station in December 2019. Starting with January 12th, 2022 deployment, Jehossee Island (secondary site) site was switched to EXO sondes.

In 2018, ACE Basin Reserve started replacing the rapid pulse DO sensors with optical DO (ODO) sensors. The other stations were switched to ODO sensors during the following years: Fishing Creek station in 2016; Grove Plantation, Mosquito Creek, and St. Pierre stations in 2017; and Jehossee Island station in 2018. ODO sensor was always installed at the Edisto Island monitoring station.

On December 7, 2023, the reserve switched to vented sondes at the Edisto Island station. The differential depth transducer is exposed to the atmosphere via a cable as well as to the water column, so real-time atmosphere, as well as water, barometric pressure is used to calculate depth.

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; in 2017, the Sat-Link2 was replaced with a Storm3

transmitter. A Sutron Sat-Link2 transmitter was installed at the Fishing Creek station from 02/20/2013 to 08/31/2015 and transmitted to the NOAA GOES satellite, NESDIS ID #3B04B1CE. On June 8, 2018, Fishing Creek Sutron Sat-Link2 transmitter was installed at the Grove Plantation station and began transmitting data on 06/15/2016 to the NOAA GOES satellite, NESDIS ID #3B04B1CE; on 12/10/2019, the Sat-Link2 was replaced with a Storm3 transmitter in December 2019. On August 14, 2020, a telemetry unit was installed on the Fort Johnson site on and began transmitting data to the NOAA GOES satellite, NESDIS ID #3B008FBC. On December 7, 2022, the telemetry unit installed at the Edisto Island site began transmitting data on 12/12/2022 to the NOAA GOES satellite, NESDIS ID #3B011824.

Telemetry transmissions from all stations 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>.

The Fort Johnson station also monitors chlorophyll fluorescence. Water samples taken near the sonde during a reading serves as the in-situ chlorophyll check. The samples are processed using the ACE Nutrient Processing method or as follows:

The samples are filtered by ACE NERR staff within four hours of collection. While wearing gloves, 25 mm filters are placed on a clean manifold using clean forceps to prevent contamination, and the manifold is assembled. The sample bottle is gently agitated by 10 inversions to suspend the particulates and 40 mLs of agitated sample water is poured into a tube on the manifold. This process is repeated for all samples, rinsing the graduated cylinder with deionized water and sample water between bottles. The samples are then vacuum filtered and placed into scintillation vials, pigment filter side up. One mL of MgCO₃ is added to each scintillation vial. Filters are stored in a -20°C freezer until analysis. The ACE uses a modification of EPA Method 445.0 (EPA/600/R-92/121) to analyze the samples. Chlorophylls are analyzed using a Turner Trilogy Fluorometer with a non-acidification module. Thirty-six to 48 hours before analyzing the samples, 9 mL of acetone are added to each vial. The samples are vortexed and returned to the freezer. After 24 hours, the samples are removed from the freezer and vortexed again. Samples are analyzed 36-48 hours after initial acetone extraction.

Before the data loggers are deployed, 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 measured with a YSI handheld. A station offset (elevation relative to MSL) is also applied during calculation of depth sensor on the level sonde. The ROX DO sensors on the sondes are calibrated by the air saturated water method, and the barometric pressure (mmHg) reading is measured with a YSI handheld. In prior years, the rapid pulse DO sensors on the YSI 6600 sondes were calibrated by the water saturated air method, and a DO membrane integrity test was performed on rapid pulse sensors to determine if the membrane was installed properly or was damaged during calibration. The pH sensor is calibrated by the two-point method (pH 7 and 10), and the turbidity sensor by the two-point method (0 standard and 124/126 NTU/FNU standard). In addition, a series of diagnostic values, including dissolved oxygen charge (rapid pulse only), dissolved oxygen gain, and pH millivolt value at pH 7 and at pH 10, and pH slope also are recorded during calibration process.

To minimize fouling (i.e., settlement of barnacles and sponges) of data loggers, sensors are wrapped in nonconductive copper tape. The inside of the PVC tube is brushed after every deployment to remove fouling organisms. The PVC tube is replaced with new or refurbished tube approximately once per year. In 2019, portions of the tubes that are always submerged were painted with copper-based anti-fouling paint (approximately 1 m from the bottom of the tube), and the fouling organisms growing on the outside of the tubes were scrapped off as needed. In 2019, we stopped wrapping plastic mesh around the sensor guard and started using copper guards.

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 cloud cover) are also 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 are done before cleaning the sensors. Prior to April of 2019, sondes and sensors were cleaned before turbidity post-deployment checks. Wiper brushes and pads (ROX ODO only) are left on for the dissolved oxygen post-deployment check but removed prior to checking the remaining parameters. A clean wiper pad is installed on the 6600 turbidity sensor before the post-deployment checks. With the rapid pulse sensor, a DO membrane integrity test also was performed to determine if the membrane was damaged during deployment (no rapid pulse sensors were used in 2020).

A series of diagnostic values, including dissolved oxygen charge (rapid pulse only), and pH millivolt value at pH 7 and at pH 10, and pH slope are also recorded during post-deployment checks of data loggers. These diagnostic values are strong indicators of the individual sensor performance during deployment, and they are used to determine the accuracy of the data. The data are downloaded, and the datasets are reviewed to determine if any equipment malfunctions occurred during deployment that need immediate attention.

Site Name	Edisto Island
Site infrastructure description	The PVC deployment tube is attached to a concrete piling with braces from the concrete piling to the tube. The deck of the site is wood.
Surveying equipment	Trimble R8s receiver and Trimble TSC3 data controller
Survey monument used	No monument used.
Survey occupation date	12/07/2022 ¹ ; 10/25/2023 ²
Survey occupation duration	60 sec, 9-10 replicate measures
Ellipsoid height	-34.8349 ¹ ; -34.8318 ²
Level offset	-2.5874 ¹ ; -2.5843 ²
“Quick Check” marker for deployment tube	None
“Quick Check” for sonde being deployed at the same location	Zip ties are fastened around the deployment rope at the point that aligns with the top of the tube when the rope is taught, indicating proper deployment depth.
Annual resurveying	Each tube replacement – pre and post.

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 Ashepoo, Combahee and South Edisto River basins, which empty into St. Helena Sound. The NERR consists of approximately 60,702 ha (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 (974,030 ac), 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, 2613.29 ft³/sec). The official saltwater-freshwater demarcation line on the river lies

at river mile 20 (32.19 km); however, during periods of very low flow, the saltwater interface can intrude to river mile 32 (51.5 km), which is approximately 12 river miles (19.31 km) from the inland boundary of the reserve. Salt marshes of smooth cordgrass (*Spartina alterniflora*) dominate the wetlands in the euhaline, polyhaline, and mesohaline, while waterfowl impoundments are the dominant land cover in the oligohaline and fresh 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
acefjwq	S	Fort Johnson	32.75334 N -79.89898 W	07/22/2020 15:15 - current	NA	NA
acechwq	S	Charleston Harbor	32.7573 N -79.8589 W	01/01/2018 00:00 - 08/30/2018	see Charleston Harbor description below	Data only avail. from ACE
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	NA
acercwq	P	Rock Creek	32.54850 N -80.50361 W	03/01/1996 00:00 - 05/01/1996 00:00	see Rock Creek description	NA

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 2023, the mean level at the station was 0.16 m (0.53 ft), and the mean salinity was 30.0 (17.4 – 36.2, min-max) 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.

Site name	Edisto Island
Latitude and longitude	32.5040 N -80.3247 W
Tidal range (<i>meters</i>)	1.821 (mean range of tide at Carter's Dock, NOAA station 8667679)
Salinity range (<i>psu</i>)	17.4-36.2, 30.0 (2023 min-max, average, varies yearly)
Type and amount of freshwater input	Some input from the South Edisto River which has an average annual streamflow of 74 m ³ /s
Water depth (<i>meters, MLW</i>)	-1.049 (MLW at Carter's Dock, NOAA station 8667679, relative to NAVD88)
Sonde distance from bottom (<i>meters</i>)	0.5 m, estimate
Bottom habitat or type	Soft sediment, mud, dead shell hash
Pollutants in area	Limited surface runoff of fertilizers, pesticides, herbicides and PAHs, CCA, creosote
Description of watershed	Major River Basin: Edisto, 10-Digit Watershed: 0305020603, Edisto River. See description below

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 2023, the average depth at the station was 2.51 m (8.23 ft), and the mean salinity was 7.9 (0.1-29.8, min-max) 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.

Site name	Fishing Creek
Latitude and longitude	32.63593 N -80.36556 W
Tidal range (<i>meters</i>)	1.879 (mean range of tide at Dawhoo Bridge, NOAA station 8666799)
Salinity range (<i>psu</i>)	0.1-29.8, 7.9 (2023 min-max, average, varies yearly)
Type and amount of freshwater input	Some input from the South Edisto River which has an average annual streamflow of 74 m ³ /s. No freshwater input from N. Edisto River
Water depth (<i>meters, MLW</i>)	-1.043 (MLW at Dawhoo Bridge, NOAA station 8666799, relative to NAVD88)

Sonde distance from bottom (<i>meters</i>)	0.8 m, estimate
Bottom habitat or type	Soft sediment, mud, dead shell hash
Pollutants in area	No anthropogenic pollutants. Mainly nutrients from impoundments.
Description of watershed	Major River Basin: Edisto, 10-Digit Watershed: 0305020604, North Edisto River. See description below

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 2023, the average depth at the station was 4.22 m (13.8 ft), and the mean salinity was 17.1 (0.7-32.4, min-max) 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.

Site name	Mosquito Creek
Latitude and longitude	32.5558 N -80.4380 W
Tidal range (<i>meters</i>)	1.896 (mean range of tide at Musselboro Island, NOAA station 8667209)
Salinity range (<i>psu</i>)	0.7-32.4, 17.1 (2023 min-max, average, varies yearly)
Type and amount of freshwater input	Some input from the South Edisto River which has an average annual streamflow of 74 m ³ /s, input from Ashepoo River is not measured but limited
Water depth (<i>meters, MLW</i>)	-1.071 (MLW at Musselboro Island, NOAA Station 8667209, relative to NAVD88)
Sonde distance from bottom (<i>meters</i>)	0.2 m, estimate
Bottom habitat or type	Soft sediment, mud, shell hash, debris
Pollutants in area	Mainly nutrients from impoundments, run-off from agriculture, residential and light commercial downstream
Description of watershed	Major River Basin: Salkehatchie, 10-Digit Watershed: 0305020710, Lower Ashepoo River. See description below

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 2023, the average depth at the station was 1.99 m (6.53 ft), and the mean salinity was 29.0 (2.1-35.5, min-max) 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 (281.26 ha) 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 (118.17 ha) is limited to 67 (27.11 ha). 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.

Site name	St. Pierre
Latitude and longitude	32.52800 N -80.36144 W
Tidal range (<i>meters</i>)	1.855 (mean range of tide at Peters Point, NOAA station 8667425)
Salinity range (<i>psu</i>)	2.1-35.5, 29.0 (2023 min-max, average, varies yearly)
Type and amount of freshwater input	average annual streamflow on S. Edisto River is 74 m ³ /s
Water depth (<i>meters</i> , <i>MLW</i>)	-1.048 (MLW at Peters Point, NOAA station 8667425, relative to NAVD88)
Sonde distance from bottom (<i>meters</i>)	0.8 m, estimate
Bottom habitat or type	Soft sediment, mud, dead shell hash
Pollutants in area	No anthropogenic pollutants
Description of watershed	Major River Basin: Edisto, 10-Digit Watershed: 0305020603, Edisto River. See description below

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 2023, the average depth at the station was 3.47 m (11.4 ft), and the mean salinity was 0.1 (0.0-4.5, min-max) psu.

Site name	Grove Plantation
Latitude and longitude	32.6637 N -80.4130 W

Tidal range (<i>meters</i>)	1.728 (mean range of tide at Willtown Bluff, NOAA station 8666367)
Salinity range (<i>psu</i>)	0.0-4.5, 0.1 (2023 min-max, average, varies yearly)
Type and amount of freshwater input	Input from the South Edisto River which has an average annual streamflow of 74 m ³ /s. Site is in the oligohaline to freshwater zone, 0.16 km downstream of the legal saltwater demarcation line.
Water depth (<i>meters, MLW</i>)	-0.832 (MLW at Willtown Bluff, NOAA station 8666367, relative to NAVD88)
Sonde distance from bottom (<i>meters</i>)	0.8 m, estimate
Bottom habitat or type	Soft sediment, mud, sand
Pollutants in area	Mainly nutrients from impoundments.
Description of watershed	Major River Basin: Edisto, 10-Digit Watershed: 0305020603, Edisto River. See description below

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

This monitoring station is in the South Edisto River. It is located at the Jehossee Island unit of the ACE Basin National Wildlife Refuge, which is owned and managed by the 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 2023, the average depth at the station was 4.81 m (15.8 ft), and the mean salinity was 6.7 (0.0-28.4, min-max) psu.

Site name	Jehossee Island
Latitude and longitude	32.6209 N -80.3965 W
Tidal range (<i>meters</i>)	1.879 (mean range of tide at Dawhoo Bridge, NOAA station 8666799)
Salinity range (<i>psu</i>)	0.0-28.4, 6.7 (2023 min-max, average, varies yearly)
Type and amount of freshwater input	Input from the South Edisto River which has an average annual streamflow of 74 m ³ /s. Site is in the mesohaline zone.
Water depth (<i>meters, MLW</i>)	-1.043 (MLW at Dawhoo Bridge, NOAA station 8666799, relative to NAVD88)
Sonde distance from bottom (<i>meters</i>)	1.4 m, estimate
Bottom habitat or type	Soft sediment, mud
Pollutants in area	Mainly nutrients from impoundments
Description of watershed	Major River Basin: Edisto, 10-Digit Watershed: 0305020603, Edisto River. See description below

Fort Johnson (FJ) – GPS coordinates: 32.7533 N and -79.8989 W

This monitoring station is in Charleston Harbor on the southern side near the confluence of the Ashley River. The deployment mount is attached to the outer piling of SC DNR/Marine Resources Division boat slip. In 2023, the average depth at the station was 3.32 m (10.9 ft), and the mean salinity was 27.3 (16.3-35.4, min-max) psu.

Site name	Fort Johnson
Latitude and longitude	32.7533 N -79.8989 W
Tidal range (<i>meters</i>)	1.591 (mean range of tide at Charleston, SC, NOAA Station 8665530)
Salinity range (<i>psu</i>)	16.3 – 35.4, 27.3 (2023 min-max, average, varies yearly)
Type and amount of freshwater input	Input from the Cooper River. Some, but limited contribution from the Ashley and Wando Rivers.
Water depth (<i>meters</i> , <i>MLW</i>)	-0.900 (MLW at Charleston sc, NOAA station 8665530, relative to NAVD88)
Sonde distance from bottom (<i>meters</i>)	0.5 m, estimate
Bottom habitat or type	Soft sediment, shell hash, some rock and concrete
Pollutants in area	Mainly anthropogenic pollutants, commercial and residential
Description of watershed	Major River Basin: Santee, 10 Digit Watershed: 0305020107, Cooper River. See description below

Inactive Monitoring Stations

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

Big Bay (BB) – 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 was 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 was bordered by residential and commercial development, with little setback from the bordering *Spartina alterniflora* 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 was 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.

Charleston Harbor (CH) – GPS coordinates: 32.7573 N and -79.8589 W

The Charleston Harbor station was about 85 meters from Fort Moultrie on Sullivan's Island to the east, and about 0.8 km north from the mouth of Charleston Harbor Estuary. Fort Moultrie is a National Monument and part of the Fort Sumter National Park. The station was surrounded by water on three sides, and by beach to the east. The Charleston Harbor data and metadata are only available by contacting the reserve directly. Data was collected from 11/29/2017 to 08/30/2018. The site was destroyed on 08/30/2019. Data and metadata are only available directly from the ACE Basin NERR.

Rock Creek (RC) – 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 were dominated by maritime forest with wax myrtles, live oaks, and palmettos. An impoundment (a managed wildlife habitat) bordered the *Spartina alterniflora* 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, collector error, or sonde was lost. **Note:** see Section 14 for more information about the stations.

Edisto Island

BEGAN	ENDED	SONDE
12/07/2022 – 15:30	01/10/2023 – 10:15	EXO2- Vented
01/10/2023 – 10:30	01/18/2023 – 09:00	EXO2- Vented
01/18/2023 – 09:15	02/01/2023 – 09:15	EXO2- Vented
02/01/2023 – 09:30	02/21/2023 – 13:15	EXO2- Vented
02/21/2023 – 13:30	03/07/2023 – 11:30	EXO2- Vented
03/07/2023 – 11:45	04/04/2023 – 10:15	EXO2- Vented
04/04/2023 – 10:30	04/18/2023 – 10:15	EXO2- Vented
04/18/2023 – 10:30	05/02/2023 – 09:00	EXO2- Vented
05/02/2023 – 09:15	05/16/2023 – 09:00	EXO2- Vented
05/16/2023 – 09:15	06/01/2023 – 08:45	EXO2- Vented
06/01/2023 – 09:00	06/14/2023 – 07:30	EXO2- Vented
06/14/2023 – 07:45	06/27/2023 – 10:00	EXO2- Vented
06/27/2023 – 10:15	07/12/2023 – 07:00	EXO2- Vented
07/12/2023 – 07:15	07/27/2023 – 11:00	EXO2- Vented
07/27/2023 – 11:15	08/12/2023 – 08:45*	EXO2- Vented
08/12/2023 – 10:15	08/29/2023 – 08:45	EXO2- Vented
08/29/2023 – 09:00	09/12/2023 – 09:30	EXO2- Non-vented
09/12/2023 – 09:45	09/26/2023 – 09:30*	EXO2- Non-vented
10/25/2023 – 12:45	11/13/2023 – 11:45	EXO2- Non-vented
11/13/2023 – 12:00	12/12/2023 – 11:00*	EXO2- Vented
12/13/2023 – 11:45	01/10/2024 – 12:30	EXO2- Vented

Fishing Creek

BEGAN	ENDED	SONDE
12/06/2022 – 13:00	01/10/2023 – 12:45	EXO2
01/10/2023 – 13:00	02/01/2023 – 12:00	EXO2
02/01/2023 – 12:15	03/07/2023 – 14:15	EXO2
03/07/2023 – 14:30	03/20/2023 – 13:30*	EXO2
03/20/2023 – 14:15	04/04/2023 – 13:00	EXO2
04/04/2023 – 13:15	04/18/2023 – 14:00	EXO2
04/18/2023 – 14:15	05/02/2023 – 11:30	EXO2
05/02/2023 – 11:45	05/16/2023 – 12:30	EXO2
05/16/2023 – 12:45	06/01/2023 – 11:30	EXO2
06/01/2023 – 11:45	06/08/2023 – 23:30*	EXO2
06/14/2023 – 10:30	06/27/2023 – 12:45	EXO2
06/27/2023 – 13:00	07/12/2023 – 09:45	EXO2
07/12/2023 – 10:00	07/28/2023 – 11:30	EXO2
07/28/2023 – 11:45	08/10/2023 – 09:45	EXO2
08/10/2023 – 10:00	09/01/2023 – 11:45	EXO2
09/01/2023 – 12:00	09/12/2023 – 12:30	EXO2
09/12/2023 – 12:45	09/26/2023 – 12:15	EXO2
09/26/2023 – 12:30	10/10/2023 – 10:00	EXO2
10/10/2023 – 10:15	11/13/2023 – 13:15	EXO2
11/13/2023 – 13:30	12/13/2023 – 13:15	EXO2
12/13/2023 – 13:30	01/11/2024 – 11:00	EXO2

Grove Plantation

BEGAN	ENDED	SONDE
12/06/2022 – 13:45	01/07/2023 – 14:15*	EXO2
01/10/2023 – 13:30	02/01/2023 – 12:30	EXO2
02/01/2023 – 12:45	03/07/2023 – 14:45*	EXO2
03/07/2023 – 15:15	04/04/2023 – 13:30	EXO2
04/04/2023 – 13:45	04/07/2023 – 08:00*	EXO2
04/18/2023 – 14:45	05/02/2023 – 12:00	EXO2
05/02/2023 – 12:15	05/16/2023 – 13:00	EXO2
05/16/2023 – 13:15	06/01/2023 – 12:00	EXO2
06/01/2023 – 12:15	06/09/2023 – 07:15*	EXO2
06/09/2023 – 08:30	06/27/2023 – 13:15	EXO2
06/27/2023 – 13:30	07/12/2023 – 10:15	EXO2
07/12/2023 – 10:30	08/10/2023 – 10:15*	EXO2
08/10/2023 – 11:00	09/01/2023 – 11:00	EXO2
09/01/2023 – 11:15	09/12/2023 – 13:00	EXO2
09/12/2023 – 13:15	09/26/2023 – 12:45	EXO2
09/26/2023 – 13:00	10/10/2023 – 10:30	EXO2
10/10/2023 – 10:45	11/13/2023 – 13:45	EXO2
11/13/2023 – 14:00	12/13/2023 – 14:00	EXO2
12/13/2023 – 14:15	01/11/2024 – 10:15	EXO2

Jehossee Island

BEGAN	ENDED	SONDE
12/06/2022 – 12:30	01/10/2023 – 12:15	EXO3
01/10/2023 – 12:30	02/01/2023 – 11:30	EXO3
02/01/2023 – 11:45	03/07/2023 – 13:45	EXO3
03/07/2023 – 14:00	04/04/2023 – 12:30	EXO3
04/04/2023 – 12:45	04/18/2023 – 13:30	EXO3
04/18/2023 – 13:45	05/03/2023 – 13:30	EXO3
05/03/2023 – 13:45	05/12/2023 – 08:15*	EXO3
05/12/2023 – 09:15	06/01/2023 – 11:00	EXO3
06/01/2023 – 11:15	06/14/2023 – 09:45	EXO3
06/14/2023 – 10:00	06/27/2023 – 12:15	EXO2
06/27/2023 – 12:30	07/27/2023 – 12:30	EXO3
07/27/2023 – 12:45	09/01/2023 – 10:15	EXO2
09/01/2023 – 10:30	09/12/2023 – 12:00	EXO2
09/12/2023 – 12:15	09/26/2023 – 11:45*	EXO3
10/11/2023 – 12:30	11/13/2023 – 12:45	EXO3
11/13/2023 – 13:00	12/12/2023 – 13:45	EXO3
12/12/2023 – 14:00	01/11/2024 – 11:30	EXO3

Mosquito Creek

BEGAN	ENDED	SONDE
12/06/2022 – 11:45	01/10/2023 – 11:30	EXO2
01/10/2023 – 11:45	02/01/2023 – 10:45	EXO3
02/01/2023 – 11:00	03/07/2023 – 13:00	EXO2
03/07/2023 – 13:15	04/04/2023 – 11:45	EXO2
04/04/2023 – 12:00	04/14/2023 – 09:00*	EXO2
04/14/2023 – 12:45	05/02/2023 – 10:30	EXO2
05/02/2023 – 10:45	05/16/2023 – 11:15	EXO2
05/16/2023 – 11:30	06/01/2023 – 10:15	EXO2
06/01/2023 – 10:30	06/14/2023 – 09:00	EXO2
06/14/2023 – 09:15	06/27/2023 – 11:30	EXO2
06/27/2023 – 11:45	07/12/2023 – 08:30	EXO2
07/12/2023 – 08:45	07/27/2023 – 09:45	EXO2
07/27/2023 – 10:00	08/10/2023 – 08:45	EXO2
08/10/2023 – 09:00	09/01/2023 – 08:45	EXO2
09/01/2023 – 09:00	09/12/2023 – 11:15	EXO2
09/12/2023 – 11:30	09/26/2023 – 11:00	EXO2
09/26/2023 – 11:15	10/10/2023 – 09:00	EXO2
10/10/2023 – 09:15	11/13/2023 – 12:00	EXO2
11/13/2023 – 12:15	12/12/2023 – 12:45*	EXO2
12/12/2023 – 13:15	12/20/2023 – 08:45*	EXO2

St. Pierre

BEGAN	ENDED	SONDE
12/06/2022 – 11:00	01/10/2023 – 10:45	EXO2
01/10/2023 – 11:00	02/01/2023 – 10:00	EXO2
02/01/2023 – 10:15	02/21/2023 – 14:45*	EXO3
02/21/2023 – 15:30	03/07/2023 – 12:15	EXO3
03/07/2023 – 12:30	04/04/2023 – 11:00	EXO3
04/04/2023 – 11:15	04/18/2023 – 10:45	EXO3
04/18/2023 – 11:00	05/02/2023 – 09:45	EXO3
05/02/2023 – 10:00	05/16/2023 – 09:45	EXO3
05/16/2023 – 10:00	06/01/2023 – 09:30	EXO3
06/01/2023 – 09:45	06/14/2023 – 08:15	EXO3
06/14/2023 – 08:30	06/27/2023 – 10:45	EXO3
06/27/2023 – 11:00	07/12/2023 – 07:45	EXO3
07/12/2023 – 08:00	07/27/2023 – 10:30	EXO3
07/27/2023 – 10:45	08/10/2023 – 07:45	EXO3
08/10/2023 – 08:00	09/12/2023 – 10:15	EXO3
09/12/2023 – 10:30	09/26/2023 – 10:15	EXO3
09/26/2023 – 10:30	10/10/2023 – 08:15	EXO3
10/10/2023 – 08:30	11/13/2023 – 10:45	EXO3
11/13/2023 – 11:00	12/12/2023 – 11:45	EXO3
12/12/2023 – 12:00	01/11/2024 – 12:00	EXO3

Fort Johnson

BEGAN	ENDED	SONDE
12/15/2022 – 14:30	01/11/2023 – 08:15	EXO2
01/11/2023 – 08:30	01/31/2023 – 13:15	EXO2
01/31/2023 – 13:30	03/06/2023 – 13:15	EXO2
03/06/2023	No Data	EXO2
04/10/2023 – 13:30	05/01/2023 – 12:30	EXO2
05/01/2023 – 12:45	05/23/2023 – 12:45	EXO2
05/23/2023 – 13:00	06/08/2023 – 09:15	EXO2
06/08/2023 – 09:30	06/26/2023 – 12:30	EXO2
06/26/2023 – 12:45	07/13/2023 – 15:15	EXO2
07/13/2023 – 15:30	08/11/2023 – 11:00	EXO2
08/11/2023 – 11:15	08/30/2023 – 09:00	EXO2
08/30/2023 – 09:15	09/12/2023 – 13:00	EXO2
09/12/2023 – 13:15	09/28/2023 – 09:45	EXO2
09/28/2023 – 10:00	10/13/2023 – 08:45	EXO2
10/13/2023 – 09:00	11/09/2023 – 13:30	EXO2
11/09/2023 – 13:45	12/13/2023 – 10:45	EXO2
12/13/2023 – 11:00	01/16/2024 – 13:45	EXO2

7) Distribution –

NOAA 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 should be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. 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.

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.nerrsdata.org/>; accessed 12 October 2022.

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.nerrsdata.org. Data are available in comma delimited format.

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 only EXO2/EXO3 data sondes in 2023: The EXO2 and EXO3 data sondes were configured the same, Optical DO sensors were installed at all monitoring stations. At 12/7/2022 – 15:30, switched to vented EXO2 sondes at Edisto Island site.

YSI EXO Sonde:

Parameter: Temperature

Units: Celsius I

Sensor Type: CT2 probe, Thermistor

Model#: 599870

Range: -5 to 50 C

Accuracy: -5 to 35: +/- 0.01, 35 to 50: +/- .005

Resolution: 0.01 C

Parameter: Conductivity

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

Sensor Type: CT2 probe, 4-electrode cell with autoranging

Model#: 599870

Range: 0 to 200 mS/cm

Accuracy: 0 to 100: +/- 0.5% of reading or 0.001 mS/cm; 100 to 200: +/- 1% of reading

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

Parameter: Salinity

Units: practical salinity units (psu)/parts per thousand (ppt)

Sensor Type: CT2 probe, 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

OR

Parameter: Temperature

Units: Celsius

Sensor Type: Wiped probe; Thermistor

Model#: 599827

Range: -5 to 50 C

Accuracy: ± 0.2 C

Resolution: 0.001 C

Parameter: Conductivity

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

Sensor Type: Wiped probe; 4-electrode cell with autoranging

Model#: 599827

Range: 0 to 100 mS/cm

Accuracy: $\pm 1\%$ of the reading or 0.002 mS/cm, whichever is greater

Resolution: 0.0001 to 0.01 mS/cm (range dependent)

Parameter: Salinity

Units: practical salinity units (psu)/parts per thousand (ppt)

Model#: 599827

Sensor Type: Wiped probe; Calculated from conductivity and temperature

Range: 0 to 70 ppt

Accuracy: $\pm 2\%$ of the reading or 0.2 ppt, whichever is greater

Resolution: 0.01 psu

Parameter: Dissolved Oxygen % saturation

Sensor Type: Optical probe w/ mechanical cleaning

Model#: 599100-01

Range: 0 to 500% air saturation

Accuracy: 0-200% air saturation: $\pm 1\%$ of the reading or 1% air saturation, whichever is greater
200-500% air saturation: $\pm 5\%$ of 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 probe w/ mechanical cleaning

Model#: 599100-01

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: $\pm 5\%$ of the reading

Resolution: 0.01 mg/L

Parameter: Non-vented Level – Shallow (Depth)

Units: feet or meters (ft or m)

Sensor Type: Stainless steel strain gauge

Range: 0 to 33 ft (10 m)

Accuracy: ± 0.013 ft (0.004 m)

Resolution: 0.001 ft (0.001 m)

Parameter: Vented Level – Shallow (Depth)

Units: feet or meters (ft or m)

Sensor Type: Stainless steel strain gauge

Range: 0 to 33 ft (10 m)

Accuracy: +/- 0.010 ft (0.003 m)
Resolution: 0.001 ft (0.001 m)

Parameter: pH

Units: pH units

Sensor Type: Glass combination electrode

Model#: 599701(guarded) or 599702(wiped)

Range: 0 to 14 units

Accuracy: +/- 0.1 units within +/- 10° of calibration temperature, +/- 0.2 units for entire temperature range

Resolution: 0.01 units

Parameter: Turbidity

Units: 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 +/-2% of reading (whichever is greater); 1000 to 4000 FNU +/-5% of reading

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

Parameter: Chlorophyll

Units: micrograms/Liter

Sensor Type: Optical probe

Model#: 599102-01

Range: 0 to 400 ug/Liter

Accuracy: Dependent on methodology

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 1.02 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:

$$((1013-BP)*0.0102)+Depth/Level = cDepth/cLevel.$$

Salinity Units Qualifier:

In 2013, EXO 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 EXO 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, EXO 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 EXO 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:	Sampling 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
Fort Johnson	FJ	acefjwq

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 *Open – reserved for later flag*
- 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
SCS	Chlorophyll spike
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 –
 Edisto Island**

Deployment Date (m/d/y)	Post-Deployment Checks							
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Level (m)	pH (7)	pH (10)	Turb (FNU)	Turb (FNU)
12/07/2022	49.15	100.3	100.4	-2.617	7.01	10.04	0.04	125.5
01/10/2023	48.01	101.7	102.0	-2.897	7.09	10.14	-0.26	125.8
01/18/2023	46.90	100.8	100.9	-2.806	7.03	10.02	0.89	118.3
02/01/2023	51.52	99.8	99.9	-2.184	8.25	11.11	-0.48	124.7
02/21/2023	49.00	100.6	100.5	-2.561	7.07	10.07	0.85	122.0
03/07/2023	52.98	101.5	101.3	-2.323	12.93	15.92	0.17	123.0
04/04/2023	49.42	99.9	99.9	-2.632	7.10	10.18	0.59	119.7
04/18/2023	49.72	99.9	100.1	-2.382	ND	ND	0.69	119.6
05/02/2023	49.50	99.8	100.0	-2.644	7.03	10.11	0.51	118.6
05/16/2023	47.82	99.2	99.2	-2.439	7.03	10.09	0.62	121.8
06/01/2023	49.18	100.4	100.1	-2.263	7.05	10.01	0.88	117.3
06/14/2023	48.01	97.9	98.0	-2.253	7.01	10.05	2.93	130.4
06/27/2023	49.87	99.9	99.9	-2.198	6.96	10.11	0.95	125.3
07/12/2023	49.81	99.4	99.4	-2.753	7.12	10.14	-0.31	123.1
07/27/2023	49.94	99.2	99.2	-2.410	7.16	10.18	0.08	127.2
08/12/2023	49.92	99.1	99.1	-2.391	7.09	10.09	0.48	124.3
08/29/2023	48.75	101.6	101.4	-2.555	7.14	10.19	0.48	126.5
09/12/2023	48.78	100.3	100.1	-2.502	7.07	10.01	-0.03	127.3

10/25/2023	49.56	101.4	100.9	-2.440	7.06	9.99	0.38	121.2
11/13/2023	50.92	100.8	100.9	-2.437	7.08	10.14	-0.02	126.3
12/13/2023	49.96	101.8	100.6	-2.368	7.01	10.03	0.30	123.3

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 (FNU)	Turb (FNU)
12/06/2022	48.12	100.3	100.1	0.087	6.93	10.07	0.71	119.9
01/10/2023	47.01	102.4	102.5	0.094	7.02	10.04	1.06	120.0
02/01/2023	49.17	101.0	101.0	0.128	7.07	10.00	1.90	121.0
03/07/2023	50.75	101.2	101.2	0.181	7.11	10.15	0.03	125.5
03/20/2023	49.59	101.3	100.5	0.094	7.07	10.06	0.53	122.3
04/04/2023	47.31	100.2	100.2	0.040	7.06	9.94	-1.06	116.4
04/18/2023	49.44	98.9	99.2	-0.036	7.07	10.07	-0.70	122.3
05/02/2023	50.24	99.7	99.9	-0.032	6.97	10.04	0.15	118.9
05/16/2023	48.40	99.8	99.8	0.008	7.14	10.07	-0.55	118.7
06/01/2023	49.13	ND	ND	-0.009	7.03	9.96	0.41	122.0
06/14/2023	48.11	99.1	99.1	0.010	11.10	12.06	2.07	127.0
06/27/2023	50.31	99.1	99.1	0.010	7.10	10.07	0.53	126.0
07/12/2023	49.11	99.6	99.6	0.062	7.39	10.38	1.69	125.9
07/28/2023	50.43	98.2	98.4	0.032	7.09	10.03	1.69	127.8
08/10/2023	50.11	100.4	100.3	0.114	ND	ND	0.63	125.3
09/01/2023	50.01	99.5	99.6	0.042	7.16	10.11	0.88	124.3
09/12/2023	49.45	99.5	99.4	0.094	7.07	10.06	0.08	123.9
09/26/2023	50.56	94.1	96.9	-0.036	7.12	10.12	0.24	125.2
10/10/2023	49.93	101.1	100.7	0.164	7.12	10.06	0.22	124.0
11/13/2023	49.39	102.3	101.8	0.257	6.91	10.04	0.84	128.0
12/13/2023	49.34	100.3	100.3	0.012	7.00	10.00	0.50	123.5

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 (FNU)	Turb (FNU)
12/06/2022	49.75	99.1	99.5	0.136	6.98	10.06	0.31	122.4
01/10/2023	48.21	100.9	101.0	0.097	7.09	10.07	0.01	119.0
02/01/2023	48.89	100.7	100.6	0.117	7.07	9.98	0.06	115.7
03/07/2023	48.01	103.1	102.9	0.099	7.11	10.08	0.85	124.0
04/04/2023	48.58	ND	ND	0.035	6.96	9.99	-0.98	119.1
04/18/2023	50.03	99.8	103.0	-0.075	7.13	10.07	0.13	116.9
05/02/2023	48.91	102.0	102.2	-0.046	7.03	10.10	0.77	116.4
05/16/2023	49.11	99.9	99.9	0.031	7.05	10.01	-0.02	120.3
06/01/2023	49.44	101.1	101.1	-0.035	7.17	10.13	-0.17	123.7
06/09/2023	48.09	100.6	100.6	0.025	7.03	10.00	1.28	113.2
06/27/2023	50.24	100.7	100.6	0.064	7.11	10.10	2.15	126.5
07/12/2023	50.00	94.4	94.5	0.029	7.10	10.04	7.09	114.4
08/10/2023	50.05	100.9	101.0	0.112	7.11	10.12	0.11	123.5
09/01/2023	49.54	100.6	100.3	0.057	6.09	9.05	-0.09	129.6
09/12/2023	49.68	100.5	100.4	0.092	7.08	10.13	-0.11	124.1
09/26/2023	50.22	94.9	97.8	-0.039	7.20	10.20	0.83	124.7
10/10/2023	49.99	101.7	101.6	0.164	7.10	10.11	-0.68	125.1
11/13/2023	49.47	102.2	101.6	0.260	7.05	10.09	0.30	125.6

12/13/2023	49.35	100.3	100.4	0.019	6.99	10.05	0.12	125.6
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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)
12/06/2022	48.01	100.2	100.6	0.091	7.03	10.03	0.51	120.0
01/10/2023	49.91	100.7	100.8	0.097	7.06	10.07	0.40	120.3
02/01/2023	48.26	98.8	98.8	0.126	7.10	10.01	-0.17	124.9
03/07/2023	48.02	100.7	100.3	0.103	7.46	10.28	0.28	122.1
04/04/2023	48.50	99.1	99.3	0.005	6.94	9.94	1.09	118.4
04/17/2023	51.14	99.2	99.2	0.039	7.12	10.15	-0.33	130.0
05/03/2023	50.75	100.0	99.8	0.106	6.95	10.00	-0.79	123.3
05/12/2023	48.12	ND	ND	0.024	7.01	10.00	1.49	119.7
06/01/2023	52.82	98.7	99.0	-0.039	7.05	10.04	1.68	115.0
06/14/2023	48.53	99.8	99.8	0.007	7.15	10.20	0.11	130.4
06/27/2023	50.05	100.2	100.2	0.088	7.17	10.16	1.46	125.5
07/27/2023	49.67	86.7	84.5	0.088	7.00	9.99	2.01	118.9
09/01/2023	49.57	100.4	100.0	0.036	7.06	10.08	0.92	122.2
09/12/2023	49.70	100.0	100.0	0.086	7.04	10.10	-0.15	124.7
10/11/2023	49.74	100.4	100.2	0.155	7.08	10.10	0.28	124.2
11/13/2023	50.06	102.6	102.6	0.251	7.04	10.04	0.70	125.3
12/12/2023	49.47	99.7	99.6	0.039	6.99	10.04	-0.20	124.4

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 (FNU)	Turb (FNU)
12/06/2022	47.99	100.1	100.2	0.096	7.16	10.12	0.22	120.0
01/10/2023	48.31	99.3	99.5	0.094	7.02	10.01	0.33	119.2
02/01/2023	49.74	100.0	99.9	0.118	7.16	10.02	0.34	119.3
03/07/2023	49.21	100.4	100.0	0.099	7.09	10.09	0.31	123.4
04/04/2023	49.79	98.4	99.7	0.011	6.99	10.01	1.40	115.2
04/14/2023	49.73	99.4	98.8	-0.078	7.16	10.20	-0.30	112.4
05/02/2023	50.21	100.2	100.4	-0.031	6.99	10.06	-0.16	123.3
05/16/2023	48.59	100.9	100.7	0.032	7.13	9.98	0.74	118.8
06/01/2023	52.82	98.7	99.0	-0.039	7.05	10.04	1.68	115.0
06/14/2023	45.63	99.9	99.9	0.011	7.00	10.09	-0.17	126.5
06/27/2023	51.20	100.5	100.5	0.037	7.06	10.13	-0.94	126.9
07/12/2023	49.50	100.3	100.2	0.110	7.09	10.09	0.70	127.3
07/27/2023	50.17	98.6	98.5	0.033	7.06	10.06	0.77	143.7
08/10/2023	49.60	100.5	100.7	0.108	7.10	10.16	3.20	128.0
09/01/2023	49.48	101.9	101.8	0.036	7.12	10.13	0.01	127.7
09/12/2023	49.25	99.3	99.0	0.089	7.12	10.14	0.68	123.9
09/26/2023	50.64	94.9	97.8	-0.035	7.12	10.13	0.11	125.1
10/10/2023	49.75	100.8	100.6	0.159	7.08	10.09	0.04	123.9
11/13/2023	49.73	100.9	101.0	0.260	7.07	10.09	-0.34	124.6
12/12/2023	50.13	101.1	101.3	0.199	7.05	10.11	-0.20	124.4

St. Pierre

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 (FNU)	Turb (FNU)
12/06/2022	46.89	101.6	101.6	0.111	7.09	10.02	0.87	117.5
01/10/2023	47.20	103.3	103.2	0.090	7.03	10.02	1.67	117.4
02/01/2023	51.37	98.8	98.8	0.067	7.01	10.07	0.32	123.7
02/21/2023	48.52	99.6	99.8	0.121	7.00	9.90	0.33	123.5
03/07/2023	48.13	99.9	99.6	0.106	6.97	10.11	0.13	120.3
04/04/2023	48.50	94.3	94.9	0.033	7.00	9.95	-0.20	118.2
04/18/2023	49.48	99.0	99.1	-0.046	6.89	9.57	-0.04	120.3
05/02/2023	48.89	99.7	99.8	-0.038	6.96	10.06	0.89	122.0
05/16/2023	47.96	99.8	100.1	0.031	7.01	10.02	0.17	121.8
06/01/2023	49.41	100.3	99.9	-0.045	7.20	10.30	1.87	116.5
06/14/2023	45.41	100.8	100.7	0.013	7.02	10.05	2.01	128.4
06/27/2023	50.82	99.2	99.2	0.018	7.05	10.05	0.88	124.9
07/12/2023	49.59	101.1	101.0	0.098	7.14	10.17	0.76	123.6
07/27/2023	50.14	98.4	98.4	0.030	7.11	10.05	2.45	128.2
08/10/2023	49.96	100.7	100.6	0.022	7.11	10.14	0.05	124.3
09/12/2023	49.12	99.8	99.7	0.081	7.11	10.13	0.03	124.9
09/26/2023	50.18	95.5	98.2	-0.030	7.09	10.05	0.15	123.8
10/10/2023	50.00	100.2	100.0	0.156	7.12	10.11	-0.50	123.9
11/13/2023	49.86	101.0	100.9	0.260	7.06	10.10	0.20	124.8
12/12/2023	49.44	99.2	99.5	0.000	7.06	10.08	0.51	121.5

Fort Johnson

Deployment Date (m/d/y)	Post-Deployment Checks								Chl 0 (mg/L)	Chl (mg/L)/ std
	SpCond (ms/cm)	DO 1 (% sat)	DO 2 (% sat)	Depth (m)	pH (7)	pH (10)	Turb (0 FNU)	Turb (124 FNU)		
12/15/2022	49.80	102.0	100.6	0.089	7.09	10.30	0.03	127.1	-0.05	75.7/76.5
01/11/2023	48.47	99.6	99.8	0.073	7.05	9.95	0.41	121.3	-0.13	62.4/66.8
01/31/2023	49.25	103.1	102.2	0.074	7.18	10.18	1.60	121.3	-0.40	64.3/66.2
03/06/2023	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
04/10/2023	48.66	101.3	97.6	-0.075	7.03	10.06	0.08	121.7	0.18	55.9/68.2
05/01/2023	48.67	101.4	101.5	0.052	7.15	10.07	-0.33	124.9	-0.07	70.3/66.5
05/23/2023	50.33	98.6	98.5	-0.052	7.38	10.37	-0.72	126.8	0.11	62.9/59.2
06/08/2023	48.37	98.6	99.0	-0.002	7.09	10.09	2.50	120.7	-0.11	63.5/67.1
06/26/2023	51.03	92.8	93.5	0.015	ND	ND	4.98	160.1	1.74	44.9/65.8
07/13/2023	50.29	98.2	98.9	0.044	7.31	9.60	0.07	125.5	-0.10	65.3/66.4
08/11/2023	49.81	99.5	99.6	-0.057	7.06	10.05	2.58	123.0	0.28	77.2/66.6
08/30/2023	48.84	99.3	99.1	0.008	7.11	10.17	0.42	127.3	-0.01	57.7/66.1
09/12/2023	49.77	100.8	101.0	0.048	7.11	9.98	0.01	123.5	0.30	69.0/66.3
09/28/2023	50.34	100.0	100.2	0.019	7.16	10.17	0.40	124.1	0.42	66.5/66.5
10/13/2023	45.90	100.5	100.1	0.037	7.17	10.10	0.27	123.3	0.26	68.8/ND
11/09/2023	49.59	102.7	102.8	0.247	7.06	10.07	1.40	125.8	-0.05	68.6/68.8
12/13/2023	49.50	98.5	98.7	ND	7.07	10.15	0.02	123.7	0.11	66.6/67.5

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 was installed in **May** – Fasteners used to attach tube to the dock.

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

2016 - PVC tube swapped with new tube on **June 1**.

2016 - PVC tube swapped with new tube on **November 19** because previous tube fell off and could find it.

2017 – PVC tube swapped with new tube with more holes along the length of tube on **December 1**.

2019 – PVC tube swapped with new tube with antifouling paint near bottom and the bottom strut was replaced on **February 28**.

2020 – The PVC tube was not swapped in 2020 but the outside of PVC tube was scraped to remove biofouling on **December 9**.

2021 – The PVC tube was swapped with tube without anti-fouling paint, the broken bottom Uni-strut was replaced, and the bottom signpost support was re-driven into the sediment on **May 6**.

2022 – PVC tube removed, barnacles scrapped off outside, and tube re-installed on **February 1**.

2022 – Storm transmitter installed to transmit real-time data and started transmitting data on **December 12**.

2022 – The PVC tube was swapped on **December 7**. Also, the un-vented sonde was replaced with a vented sonde.

2022 – The PVC tube was swapped on **December 7**. Also, the un-vented sonde was replaced with a vented sonde. The elevation, relative to North American Vertical Datum of 1988 (NAVD88), of the tube was measured before it was removed; elevation (NAVD 88) of the new tube was measured after installation. Note: the new tube was attached to the second deployment post at the site.

2023 – The PVC tube broke prior to sonde retrieval on **September 26** and was replaced with tube without anti-fouling paint on **October 25**.

2023 – The Yagi antenna was replaced with a top hat **December 13**.

Fishing Creek:

2002 – Fishing Creek site installed in **October** (Coordinates: 32.63593 N and -80.36556 W).

2010 – Fishing Creek signpost mount was replaced in **January** with a 40-ft, 8-in diameter pressure-treated piling.

2012 – Fishing Creek site PVC tube replaced on **May 31** – Fasteners used to attach tube to the 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 – Fishing Creek site 6600 sondes were replaced with EXO2 sondes on **December 14**.

2017 – PVC tube swapped with new tube with more holes along the length of tube on **December 11**.

2019 – PVC tube swapped with old tube that was cleaned and then coated with antifouling paint (intertidal area of tube only) on **March 28**.

2020 – The PVC tube was not swapped in 2020 but the outside of PVC tube was scraped.

2021 – The PVC tube was swapped with new tube without anti-fouling paint on **June 8**.

2023 – The PVC tube was swapped with new tube without anti-fouling paint on **March 20**.

Mosquito Creek:

2002 – Mosquito Creek site installed in **October** (Coordinates: 32.5558 N and -80.4380 W).

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

2009 – Site mount moved due to demolition of old bridge and construction of new one at same location in **August** (about 0.2 meters deeper).

2012 – Mosquito Creek site PVC tube was leaning during **May 2** and **May 16** deployments.

2012 – Mosquito Creek site PVC tube replaced on **May 31** – Fasteners used to attach tube to the bridge.

2016 – PVC tube was replaced, and a new mounting structure was installed on **May 17**.

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

2018 – PVC tube swapped with new tube with more holes along the length of tube on **February 27**.

2018 – YSI 6600 sonde was replaced with EXO2 sonde on **November 5**.

2019 – PVC tube swapped with new tube with antifouling paint near bottom on **May 13**.
2021 – The PVC tube was swapped with new tube without anti-fouling paint on **May 26**.
2023 – The PVC tube was swapped with new tube without anti-fouling paint on **April 14** and repositioned on **April 17** and **April 18**.

St. Pierre Creek:

1995 – Water quality station was installed in **March**. (Coordinates: 32.52800 N and -80.36144 W).
2000 – Site moved to other side of channel in **April** (Coordinates changed: 32.5279 N -80.3615 W).
2006 – Sign post mount was replaced in **May** – with a 40-ft, 8-in diameter pressure-treated piling.
2006 – Sutron Sat-Link2 transmitter was installed in **June**.
2009 – St. Pierre site PVC tube replaced in **June** (about 0.06 meters deeper).
2012 – St. Pierre site PVC tube replaced on **June 1** – Fasteners used to attach tube to the piling.
2016 – PVC tube was re-positioned on piling on **July 18**.
2016 – Yagi antenna was replaced with the top hat design on **September 12**.
2016 – ISCO platforms were removed, and one was installed at different position on **November 4**.
2017 – PVC tube was re-positioned on piling on **June 6** – sonde is now higher on piling.
2017 – Rapid Pulse DO sensors on YSI 6600 sondes were replaced with Optical DO sensors on **July 5**.
2017 – PVC tube swapped with new tube with more holes along the length of tube (see Section 3) on **June 6**.
2017 – YSI 6600 sonde was replaced with an EXO2 sonde and switched to YSI Storm 3 telemetry system on **November 15**.
2019 – PVC tube swapped with new tube with antifouling paint near bottom on **May 28**.
2020 – The PVC tube was not swapped in 2020 but the outside of PVC tube was scraped.
2021 – The PVC tube was swapped with new tube without anti-fouling paint on **June 8**.
2023 – The PVC tube was swapped with new tube without anti-fouling paint on **February 21**.

Secondary Sites

Fort Johnson – Charleston Harbor estuary:

2020 – A PVC tube was installed on a pre-existing piling in **July**.
2020 – YSI EXO2 sonde was deployed on **July 22**.
2020 – YSI Storm telemetry unit was installed and began transmitting data on **August 14**.
2021 – PVC tube was removed, cleaned onsite and replaced on **November 30**.

Grove Plantation – St. Helena Sound estuary:

2013 – A 40-ft, 8-in diameter treated pressure piling was installed on **November 8**.
2014 – YSI sonde was deployed on **January 15**.
2015 – Grove Plantation site officially went online on **January 1** (Coordinates: 32.6637N and -80.4130W).
2016 – Grove Plantation telemetry system was installed in **June**.
2016 – Grove Plantation site began transmitting real-time data on **June 15**.
2017 – Rapid Pulse DO sensors on YSI 6600s were replaced with Optical DO sensors on **December 4**.
2017 – PVC tube swapped with new tube with more holes along the length of tube on **December 11**.
2019 – PVC tube swapped with new tube with antifouling paint near bottom on **March 28**.
2019 – YSI 6600 sonde was replaced with an EXO2 sonde on **December 9**.
2019 – Switched to YSI Storm 3 telemetry system on **December 10**.
2020 – The PVC tube was not swapped in 2020 but the outside of PVC tube was scraped.
2021 – The PVC tube was swapped with tube without anti-fouling paint on **May 27**.
2023 – The PVC tube was swapped with new tube without anti-fouling paint on **June 23**.

Jehossee Island – St. Helena Sound estuary:

2013 – Jehossee Island water quality station installed via PVC tube attached USFWS dock on **August 19**.
2015 – Jehossee Island site officially went online on **January 1** (Coordinates: 32.6209 N and -80.3965 W).
2018 – PVC tube swapped with new tube with more holes along the length of tube on **January 30**.
2018 – Rapid Pulse DO sensors on YSI 6600 sondes were replaced with Optical DO sensors in **November**.
2019 – PVC tube swapped with new tube with antifouling paint near bottom on **April 29**.
2020 – PVC broke prior to sonde retrieval on **March 6**.

2020 – PVC tube reinstalled on **December 11**.

2021 – PVC tube was removed cleaned and replaced on **August 4**.

2022 – The PC6600 sondes were replaced with EXO2/EXO3 sondes on **January 12**.

2023 – The PVC tube broke prior to sonde retrieval on **September 26** and a new tube without anti-fouling paint was installed on **October 11**.

Inactive Stations

Big Bay:

1995 – Big Bay water quality station was installed in tributary of Big Bay Creek in **March** (Coordinates: 32 29.662N and -80 19.427W).

2001– Big Bay station replaced in **October** due to old age and excessive biofouling of oysters (Coordinates: 32 29 38.72125N and -80 19 21.69864W).

2003 – Big Bay station moved to the creek proper in **July** after embankment collapsed near data logger (Coordinates: 32.4941N and -80.3241W).

2014 – Big Bay site officially went offline on **December 31**.

Charleston Harbor – Charleston Harbor Estuary:

2017 – Deployment mount was installed (PVC tube with holes along the length of the tube is mounted to a 40-ft, 8-in diameter treated pressure piling) in **October**.

2018 – Charleston Harbor site officially went online on **January 1** (Coordinates: 32.7573 N and -79.8589 W).

2018 – Telemetered transmission began on **January 4**.

2018 – Site was destroyed on **August 30**.

2019 – Data and metadata removed from CDMO. Only available directly from Reserve.

Rock Creek:

1996 – Rock Creek water quality station was installed in **March** (Coordinates: 32.5404 N and -80.4821 W [approximation because location was not measured while site was active]).

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

Blanket Statements: All Stations

Missing Data Coding

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

Dissolved Oxygen Hypoxia Coding

Dissolved oxygen percent and mg/L readings are coded <0> (CDA) when a hypoxic event is recorded (≤ 3 mg/L).

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 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 FNU for YSI EXO series are rejected and are coded <-3> [STS] or [CTS]. These values are above the sensor specifications.

Turbidity Negative Readings Coding

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

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

Significant Weather Events

Weather Event	Date/Time Started	Date/Time Ended	Max Wind Speed
Winter Storm/Nor'easter	December 17, 2023	December 18, 2023	23 mph

Effect of Freshwater Input on Water Quality

Water quality at the SWMP sites is 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, 3.05 meters) and salinity increases when the river level falls below drought level (5 feet, 1.52 meters). 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 (424.75 m³/sec) and increases when streamflow is below 5,000 ft³/sec (141.58 m³/sec). The following are times when gauge height at Givhans Ferry were near flood or drought river stage.

Flood river stage level (above or around 10 feet)

01/29/2023 – 18:15 to 02/10/2023 – 10:15

02/12/2023 – 11:00 to 02/23/2023 – 08:30

06/27/2023 – 10:45 to 07/01/2023 – 23:00

09/01/2023 – 10:45 to 09/10/2023 – 22:00

12/24/2023 – 15:45 to 12/31/2023 – 07:45

Drought river stage level (below or around 5 feet)

04/30/2023 – 10:15 to 05/03/2023 – 22:15

05/09/2023 – 23:15 to 05/22/2023 – 18:30

06/10/2023 – 04:00 to 06/20/2023 – 15:00

08/24/2023 – 21:30 to 08/31/2023 – 04:45

09/30/2023 – 09:30 to 10/17/2023 – 18:45

10/28/2023 – 07:30 to 11/22/2023 – 09:30

12/08/2023 – 10:15 to 12/17/2023 – 07:30

Edisto Island

All Parameters Blanket Statement for Edisto Island

Rejected Data (Flag <-3>)

The data was collected at the wrong level during September 12th deployment (09/12/2023 – 09:45 to 9/26/2023 – 09:30). During the deployment the tube broke at the bottom mounting bolt and the sonde was no longer deployed in the tube. The tube was suspected of having broken on 09/18/2023 but was not discovered until 09/26/2023. The sonde was removed, and no sonde was redeployed until the tube could be replaced. The level values were corrected, due to the use of incorrect station offset. The level offset used was -2.504, the correct level offset was -2.524 m. To correct level, 0.020 m was subtracted from each recorded value. After the suspected break at 09/17/2023 23:45, the data are flagged as <-3> [GSM] (CWD). The F_Record column of these rows are flagged as {CSM}.

Missing Data (Flag <-2>)

The data collected on 04/09/2023 – 12:00 to 12:30 during the April 4th deployment (04/04/2023 – 10:30 to 04/18/2023 – 10:15) were missing due to sonde malfunction. Reason for malfunction is unknown; however, the depth and pH sensors didn't record readings during the previous interval. The values are flagged as <-2> [GIM] (CSM).

The data collected on 08/12/2023 – 09:00 to 10:00 were missing due to the swapping of sensors, downloading of data and new deployment initiated using the same sonde with laboratory calibrated probes. The values are flagged as <-2> [GMC] (CSM).

The data collected from 09/26/2023 – 09:45 to 10/25/2023 – 12:30 were missing because no sonde was deployed. The sonde was removed because the deployment tube was damaged. The bottom of the tube broke during the

previous deployment, below the second mounting hole. The broken tube was removed, and a new tube was installed on 10/25/2023 before the 12:45 reading. The values are flagged as <-2> [GMC] (CSM).

No data was collected from 12/12/2023 – 11:15 to 12/13/2023 – 11:30 due to maintenance. During this time the vented sonde was returned to the laboratory for post-calibration, cleaning, and recalibration, due to the lack of a second vented sonde to swap with. The values are flagged as <-2> [GMC] (CSM).

Suspect Data (Flag <1>)

The data was collected at the wrong level during September 12th deployment (09/12/2023 – 09:45 to 9/26/2023 – 09:30). During the deployment the tube broke at the bottom mounting bolt and the sonde was no longer deployed in the tube. The tube was suspected of having broken on 09/18/2023 but was not discovered until 09/26/2023. The sonde was removed, and no sonde was redeployed until the tube could be replaced. The level values were corrected, due to the use of incorrect station offset. The level offset used was -2.504, the correct level offset was -2.524 m. To correct level, 0.020 m was subtracted from each recorded value. Prior to suspected break at 09/18/2023 00:00, the depth data are flagged as <1> [GSM] (CWD) and the data are flagged as <0> [GSM] (CWD). The F_Record column of these rows are flagged as {CSM}.

Temperature

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

The datum collected at 23:00 on 09/01/2023 during the August 29th deployment (08/29/2023 – 09:00 to 09/12/2023 – 09:30) was rejected due to a dip in salinity (34.6, 22.0, 34.6). The low value of 22.0 psu did not occur during low tide and no rainfall was recorded at the Bennetts Point meteorological station. The value collected is within the range typically observed at this site. The cause for the dip in salinity is unknown but thought to be attributed to a sensor malfunction. the value is flagged as <-3> [GSM] (CCU).

Suspect Data (Flag <1>)

The data collected during the January 18th deployment (01/18/2023 – 09:15 to 02/01/2023 – 09:15) were suspect due to post-calibration out of range. The post-deployment check of 46.898 mS/cm for specific conductivity is outside the accepted range of 47 - 53 mS/cm. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected during the March 7th deployment (03/07/2023 – 11:45 to 04/04/2023 – 10:15) were suspect due to sensor diagnostics. The sensor diagnostics check of 0.52 for specific conductivity before deployment was outside the accepted range of 0.419-0.519, set by the CDMO. The post-deployment reading of 52.980 mS/cm was very close to the accepted range of 53 mS/cm. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SDG] (CSM).

The data collected during the following times were suspect due to a dip in salinity. The values occurred during early flood tide. No rainfall was recorded at the Bennetts Point meteorological station. The values collected were within the range typically observed at this site. The cause for the dips in salinity is unknown. The values were not rejected since this occurred over several successive tides. The values are flagged as <1> [GSM] (CCU).

09/06/2023 – 08:15 (21.9)	09/06/2023 – 08:30 (19.7)	09/06/2023 – 08:45 (21.3)
09/07/2023 – 09:15 (18.6)	09/08/2023 – 10:15 (20.4)	09/08/2023 – 10:30 (19.5)
09/09/2023 – 11:45 (20.2)		

DO Percent/mg/L

Rejected Data (Flag <-3>)

The datum collected at 23:00 on 09/01/2023 during the August 29th deployment (08/29/2023 – 09:00 to 09/12/2023 – 09:30) was rejected due to conductivity potential sensor failure. Specific conductivity values are used to calculate dissolved oxygen mg/L. The value is flagged as <-3> [SCF] (CSM).

Suspect Data (Flag <1>)

The DO mg/L and percent saturation data collected during the times were suspect due the sudden drop in values. The cause of the sudden drop is unknown. The values are flagged as <1> [GSM] (CCU).

12/28/2023 – 15:30 (5.0)

12/29/2023 03:30 (5.8)

Level

Rejected Data (Flag <-3>)

The datum collected at 11:15 on 03/15/2023 during the March 7th deployment (03/07/2023 – 11:45 to 04/04/2023 – 10:15) was rejected due to an unreasonable dip in level. Although the value is within the sensor specifications, there was a two or greater order of magnitude difference between the 15-minute intervals, which is not typical for this site. The value is flagged as <-3> [SQR] (CSM).

The datum collected at 11:45 on 04/09/2023 during the April 4th deployment (04/04/2023 – 10:30 to 04/18/2023 – 10:15) was rejected due to sensor malfunction. The reading was recorded as “NAN”. Reason for malfunction is unknown; however, the sonde didn’t record readings during the next three intervals. The value is flagged as <-3> [SSM] (CSM).

The data collected during the July 12th deployment (07/12/2023 – 07:15 to 07/27/2023 – 11:00) was rejected due to the vented telemetry cable being compromised by an oyster shell, causing a divot in the rubber. The level data must be rejected. The wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. Since the values are rejected, they were not corrected. If the values were to be corrected 0.0114 m would be subtracted from each recorded value. The values are flagged as <-3> (CSM) or [GSM].

The data collected during the July 27th (07/27/2023 – 11:15 to 08/12/2023 – 08:45) was rejected due to the vented telemetry cable being compromised by an oyster shell, causing a divot in the rubber. The level data must be rejected. The wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. Since the values are rejected, they were not corrected. If the values were to be corrected 0.1024 m would be subtracted from each recorded value. The values are flagged as <-3> (CSM) or [GSM]

The data collected during the August 12th deployment (08/12/2023 – 10:15 to 08/29/2023 – 08:45) was rejected due to the vented telemetry cable being compromised by an oyster shell, causing a divot in the rubber. The level data must be rejected. The data collected was also wrong due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. Since the values are rejected, they were not corrected. If the values were to be corrected -0.0006 m would be subtracted from each recorded value. The vented cable was removed at the end of the deployment. The level data from a vented sonde must be rejected. The values are flagged as <-3> (CSM) or [GSM].

The datum collected at 23:00 on 09/01/2023 during the August 29th deployment (08/29/2023 – 09:00 to 09/12/2023 – 09:30) was rejected due to conductivity potential sensor failure. Specific conductivity values are used to calculate level. The value is flagged as <-3> [SCF] (CSM).

Passed Initial QAQC Checks (Flag <0>)

The data collected during the October 25th deployment (10/25/2023 – 12:45 to 11/13/2023 – 11:45) were collected using an unvented sonde. The values are flagged as <0> (CSM) or [GSM].

Corrected Data Flag <5>

The data collected during the December 7th, 2022 deployment (01/01/2023 – 00:00 to 01/10/2023 – 10:30) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. The level offset used was -2.436 m, the correct level offset was -2.5874 m. To correct level, 0.1514 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the January 10th deployment (01/10/2023 – 10:45 to 01/18/2023 – 09:00) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. The level offset used was -2.512 m, the correct level offset was -2.5874 m. To correct level, 0.0754 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the January 18th deployment (01/18/2023 – 09:15 to 02/01/2023 – 09:15) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. The level offset used was -2.571 m, the correct level offset is -2.5874 m. To correct level, 0.0164 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the February 1st deployment (02/01/2023 – 09:30 to 02/21/2023 – 13:15) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. The level offset used was -2.462 m, the correct level offset was -2.5874 m. To correct level, 0.1254 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the February 21st deployment (02/21/2023 – 13:30 to 03/07/2023 – 11:30) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. The level offset used was -2.572 m, the correct level offset was -2.5874 m. To correct level, 0.0154 was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the March 7th deployment (03/07/2023 – 11:45 to 04/04/2023 – 10:15) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. The level offset used was -2.465 m, the correct level offset was -2.5874 m. To correct level, 0.1224 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the April 4th deployment (04/04/2023 – 10:30 to 04/18/2023 – 10:15) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sond, and the incorrect station offset. The level offset used was -2.503 m, the correct level offset was -2.5874 m. To correct level, 0.0844 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the April 18th deployment (04/18/2023 – 10:30 to 05/02/2023 – 09:00) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. The level offset used was -2.569 m, the correct level offset was -2.5874 m. To correct level, 0.0184 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 2nd deployment (05/02/2023 – 09:15 to 05/16/2023 – 09:00) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. The level offset used was -2.612 m, the correct level offset was -2.5874 m. To correct level, -0.0246 was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 16th deployment (05/16/2023 – 09:00 to 06/01/2023 – 08:45) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. The level offset used was -2.462 m, the correct level offset was -2.5874 m. To correct level, 0.1254 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 1st deployment (06/01/2023 – 09:15 to 06/14/2023 – 07:30) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. The level offset used was -2.508 m, the correct level offset was -2.5874 m. To correct level, 0.0794 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 14th deployment (06/14/2023 – 07:45 to 06/27/2023 – 10:00) were corrected due to the wrong level offset used for calibration. The level offset was calculated using the incorrect station offset. The level offset used was -2.568 m, the correct level offset was -2.5874 m. To correct level, 0.0194 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 27th deployment (06/27/2023 – 10:15 to 07/12/2023 – 07:00) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure, the incorrect protocol for a vented sonde, and the incorrect station offset. The level offset used was -2.563 m, the correct level offset was -2.5874 m. To correct level, 0.0244 was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the August 29th deployment (08/29/2023 – 09:00 to 09/12/2023 – 09:30) were corrected due to the wrong level offset used for calibration. The sonde was unvented. The level offset was calculated using the incorrect station offset. The level offset used was -2.580 m, the correct level offset was -2.60 m. To correct level, 0.0194 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the September 12th deployment (09/12/2023 – 09:45 to 9/26/2023 – 09:30) were corrected due to the wrong level offset used for calibration. The sonde was unvented. The level offset was calculated using the incorrect station offset. The level offset used was -2.504 m, the correct level offset was -2.524 m. To correct level, 0.0200 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the November 13th deployment (11/13/2023 – 12:00 to 12/12/2023 – 11:00) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure which was the incorrect protocol for a vented sonde. The level offset used was -2.436 m, the correct level offset was -2.5843 m. To correct level, 0.148 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the December 13th deployment (12/13/2023 – 11:45 to 12/31/2023 – 23:45) were corrected due to the wrong level offset used for calibration. The level offset was calculated using barometric pressure which was the incorrect protocol for a vented sonde. The level offset used was -2.369 m, the correct level offset was -2.5843 m. To correct level, 0.216 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

pH

Rejected Data (Flag <-3>)

The data collected from 02/04/2023 – 00:00 to 02/21/2023 – 13:15 during the February 1st deployment (02/01/2023 – 09:30 to 02/21/2023 – 13:15) were rejected due to sensor diagnostics out of range. The post-deployment check of 8.25 for pH 7 and 11.11 for pH 10 and pH mV of -93.3 for pH7 and -257.9 for pH10 were well outside the accepted range. The values collected were higher than typically observed at this site. The values are flagged as <-3> [SPC] (CSM).

The data collected from 03/12/2023 – 00:00 to 04/04/2023 – 10:15 during the March 7th deployment (03/07/2023 – 11:45 to 04/04/2023 – 10:15) were rejected due to sensor diagnostics out of range. The post-deployment checks of 12.93 for pH 7 and 15.92 for pH 10 and the mV for pH7 of -347.8 and -501.1 for pH10 of were well outside the accepted ranges. The readings were higher than typically observed at this site. The values are flagged as <-3> [SPC] (CSM).

The datum collected at 11:45 on 04/09/2023 during the April 4th deployment (04/04/2023 – 10:30 to 04/18/2023 – 10:15) was rejected due to sensor malfunction. The reading was recorded as 0 (zero). Reason for malfunction is unknown; however, the sonde didn't record readings during the next three intervals. The value is flagged as <-3> [SSM] (CSM).

The first reading of the April 18th deployment (04/18/2023 – 10:30 to 05/02/2023 – 09:00) was rejected due to sensor malfunction. The sensor recorded a negative value then stopped recording. The value is flagged as <-3> [SSM] (CSM).

The datum collected at 15:00 on 11/01/2023 during the October 25th deployment (10/25/2023 – 12:45 to 11/13/2023 – 11:45) was suspect due to a dip in pH. There is a more than a 1.0-unit difference between the 15-minute intervals which is not typical for this site. The probe later failed during deployment. The value is flagged as <-3> [SSM] (CSM).

Missing Data (Flag <-2>)

The data collected during the April 18th deployment (04/18/2023 – 10:30 to 05/02/2023 – 09:00) were missing due to sensor malfunction. Reason for malfunction is unknown. The values are flagged as <-2> [SSM] (CSM).

The data collected from 11/02/2023 – 15:30 to 11/13/2023 – 11:45 during the October 25th (10/25/2023 – 12:45 to 11/13/2023 – 11:45) deployment were missing due to sensor malfunction. Reason for malfunction is unknown. The values are flagged as <-2> [SSM] (CSM).

Suspect Data (Flag <1>)

The data collected the January 18th deployment (01/18/2023 – 09:15 to 02/01/2023 – 09:15) were suspect due to sensor diagnostics out of range. The post-deployment checks of 7.03 for pH 7 and 10.02 for pH 10 were within the accepted ranges, but the pH slope of -74.4 and mV of -273.3 for pH7 and -198.9 for pH10 were well outside the accepted ranges. The readings were within the range typically observed at this site. The values are flagged as <1> [SDG] (CSM).

The data collected from 02/01/2023 – 09:30 to 02/03/2023 – 23:45 during the February 1st deployment (02/01/2023 – 09:30 to 02/21/2023 – 13:15) were suspect due to sensor diagnostics out of range. The post-deployment check of 8.25 for pH 7 and 11.11 for pH 10 and pH mV of -93.3 for pH7 and -257.9 for pH10 were well outside the accepted range. The readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected from 03/07/2023 – 11:45 to 03/11/2023 – 23:45 during the March 7th deployment (03/07/2023 – 11:45 to 04/04/2023 – 10:15) were suspect due to post-deployment check and sensor diagnostics out of range at the end of the deployment. The post-deployment checks of 12.93 for pH 7 and 15.92 for pH 10 and the mV for pH7 of -347.8 and -501.1 for pH10 of were well outside the accepted ranges. The readings during this time were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The datum collected at 12:45 on 05/18/2023 during the May 16th deployment (05/16/2023 – 09:15 to 06/01/2023 – 08:45) was marked suspect due to a difference in the 15-minute interval. The reading was recorded as 7.3 which is 0.2 lower than the previous and after reading. Reason for the malfunction is unknown. The value is flagged as <1> (CSM).

Turbidity

Rejected Data (Flag <-3>)

The data collected during the following times were rejected due to a turbidity spike. Although the values were within the sensor specifications, there was a two or greater order of magnitude difference between the 15-minute intervals which is not typical for this site. The values are flagged as <-3> [STS] (CSM).

06/11/2023 – 03:00 (1232)

08/04/2023 – 14:45 (3711)

09/16/2023 – 08:45 (1396)

Suspect Data (Flag <1>)

The data collected from 05/01/2023 – 12:00 to 05/02/2023 – 09:00 during the April 18th deployment (04/18/2023 – 10:30 to 05/02/2023 – 09:00) were suspect due QAQC checks. The post-deployment checks were within accepted ranges and no biofouling was noted. The values gradually increase with a decrease with the deployment of a new sonde. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [GSM] (CCU).

The data collected during the June 14th deployment (06/14/2023 – 07:45 to 06/27/2023 – 10:00) were suspect due to post-calibration out of range. The post-deployment check of 2.9 FNU for turbidity was not within the accepted range of -2 to 2 in deionized water. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

Fishing Creek

All Parameters Blanket Statement for Fishing Creek

Missing Data (Flag <-2>)

No data was collected from 03/20/2023 – 13:45 to 14:00 due to infield maintenance. During this time the deployment tube was removed and replaced with a new tube. The values are flagged as <-2> [GMC] (CSM).

No data was collected from 06/08/2023 – 23:45 to 06/14/2023 – 10:15 during the June 1st deployment (06/01/2023 – 11:45 to 06/14/2023 – 10:15) due to instrument malfunction. There was sufficient battery power and YSI didn't find any errors in the BIN file but the amperage of one or more batteries may have been low. The values are flagged as <-2> [GIM] (CSM).

Temperature

Specific Conductivity/Salinity

DO Percent/mg/L

Suspect Data (Flag <1>)

The data collected from 06/01/2023 – 11:45 to 06/08/2023 – 23:30 during the June 1st deployment (06/01/2023 – 11:45 to 06/14/2023 – 10:15) had no post-calibration was recorded. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <0> (CSM).

Depth

pH

Rejected Data (Flag <-3>)

The data collected during the June 14th deployment (06/14/2023 – 10:30 to 06/27/2023 – 12:45) were rejected due to sensor malfunction. A reading of 11.1 in the pH7 check and 12.06 in the pH10 check, as well as a pH 7 voltage of -262.7 and pH 10 voltage of -318.8 indicated a pH sensor failure. The values are flagged as <-3> [SSM] (CSM).

The data collected during the July 12th deployment (07/20/2023 – 00:00 to 07/28/2023 – 11:30) were rejected due to post-calibration out of range. The post-deployment check of 7.39 for pH 7.0, and 10.38 for pH 10, were outside the accepted range. The data were rejected because the readings were not within the range typically observed at this site. The sensor diagnostics were also out of range. The values are flagged as <-3> [SPC] (CSM).

Suspect Data (Flag <1>)

The data collected during the July 12th deployment (07/12/2023 – 10:00 to 07/19/2023 – 23:45) were suspect due to post-calibration out of range. The post-deployment check of 7.39 for pH 7, and 10.38 for pH 10 were outside of the accepted range. The sensor diagnostics were also out of range. The values are flagged as <1> [SPC] (CSM).

Turbidity

Rejected Data (Flag <-3>)

The data collected during the following times were rejected due to a turbidity spike. Although the values were within the sensor specifications, there was a two or greater order of magnitude difference between the 15-minute intervals which is not typical for this site. The values are flagged as <-3> [STS] (CSM).

03/13/2023 – 01:30 (1104)

05/14/2023 – 17:30 (1388)

08/18/2023 – 21:45 (3915)

10/27/2023 – 11:45 (1487)

Suspect Data (Flag <1>)

The data collected during the June 14th deployment (06/14/2023 – 10:30 to 06/27/2023 – 12:45) were suspect due to post calibration out of range. The value of 2.07 in the 0 FNU check was outside the accepted range, but the value of 127.0 in the 124 check was acceptable. The readings were suspect because they were within the range observed at the site. The values are flagged as <1> [SPC] (CSM).

Grove Plantation

All Parameters Blanket Statement for Grove Plantation

Rejected Data (Flag <-3>)

The datum collected at 04:00 on 01/10/2023 during the December 16th, 2022 deployment (12/06/2022 – 13:45 to 01/10/2023 – 13:15) was rejected due to missing data before and after this single reading. It is assumed an instrument malfunction occurred. The sonde stopped recording data even though there was sufficient battery power. The values are flagged as <-3> [GIM] (CSM).

The data collected at 14:30 on 03/08/2023 during the March 7th, 2023 deployment (03/07/2023 – 15:15 to 04/04/2023 – 13:30) was rejected due to a decrease in depth and temperature as well as increases in dissolved oxygen and pH. It is unknown what caused these changes. The values are flagged as <-3> [GSM] (CCU).

Missing Data (Flag <-2>)

The data collected from 01/07/2023 – 14:30 to 01/10/2023 – 03:45 and from 01/10/2023 – 04:15 to 01/10/2023 – 13:15 during the December 16th, 2022 deployment (12/06/2022 – 13:45 to 01/10/2023 – 13:15) were missing due to instrument malfunction. The sonde stopped recording data even though there was sufficient battery power. The values are flagged as <-2> [GIM] (CSM).

The data collected from 04/07/2023 – 08:15 to 04/18/2023 – 14:30 during the April 4th deployment (04/04/2023 – 13:45 to 04/18/2023 – 14:30) were missing due to sonde malfunction. The sonde stopped recording data even though there was sufficient battery power but not enough amperage. The values are flagged as <-2> [GIM] (CSM).

The data collected from 06/09/2023 – 07:30 to 08:15 during the June 1st deployment (06/01/2023 – 12:15 to 06/09/2023 – 07:15) were missing due to site maintenance. The PVC tube was swapped during this time, and a newly calibrated sonde was deployed after the swap. The values are flagged as <-2> [GMC] (CSM).

No data was collected from 08/10/2023 – 10:30 to 10:45 due to infield maintenance. During this time, staff were troubleshooting a telemetry issue and noticed the cable connection to the sonde was cracked. The cable was removed and the sonde was deployed with a cap. The values are flagged as <-2> [GMC] (CSM).

Temperature

Specific Conductivity/Salinity

DO Percent/mg/L

Suspect Data (Flag <1>)

The data collected from 04/04/2023 – 13:45 to 04/07/2023 – 08:00 during the April 4th deployment (04/04/2023 – 13:45 to 04/18/2023 – 14:30) were suspect due to no post-calibration was recorded. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SDO] (CSM).

Depth/Level

pH

Rejected Data (Flag <-3>)

The first record of the following deployments were rejected due to a pH spike. There is at more than a 0.1-unit difference between the 15-minute intervals which is not typical for this site. The cause for spike in pH is unknown but thought to be attributed to acclimation of the probe. The values are flagged as <-3> [GSM] (CND).

02/01/2023 – 12:45 to 03/07/2023 – 14:45

03/07/2023 – 15:15 to 04/04/2023 – 13:30

05/02/2023 – 12:15 to 05/16/2023 – 13:00

The data collected from 04/04/2023 – 13:45 to 04/07/2023 – 08:00 during the April 4th deployment (04/04/2023 – 13:45 to 04/18/2023 – 14:30) were rejected due decrease in pH values until the sonde stopped collecting data. The values are flagged as <-3> [SSD] (CSM).

The data collected during the September 1st deployment (09/01/2023 – 11:15 to 09/12/2023 – 13:00) were rejected due to post-calibration out of range. The post-deployment check of 6.09 and 9.05 for pH 7 and 10, respectively, were outside the accepted range of pH 7: 6.7 - 7.3 and pH 10: 9.7 - 10.3. The data were rejected because the readings were not within the range typically observed at this site. The values are flagged as <-3> [SPC] (CSM).

Turbidity

Rejected Data (Flag <-3>)

The data collected during the following times were rejected due to a turbidity spike. Although the values were within the sensor specifications, there was a two or greater order of magnitude difference between the 15-minute intervals which is not typical for this site. The values are flagged as <-3> [STS] (CSM).

05/14/2023 – 11:15 (3181)

05/14/2023 – 11:30 (2964)

05/14/2023 – 21:30 (2566)

05/15/2023 – 10:30 (3954)

06/29/2023 – 21:30 (580)

12/26/2023 – 02:45 (562)

12/26/2023 – 03:00 (511)

The data collected from 07/23/2023 – 15:00 to 08/10/2023 – 10:15 during the July 12th deployment (07/12/2023 – 10:30 – 08/10/2023 – 10:15 to) were rejected due to post-calibration out of range. The post-deployment check of 7.09 for turbidity in DI was outside the accepted range of 2.0 NFU. It was noted during post-calibration that the wiper brush did not appear to be working during some portion of the deployment. The data were rejected because the readings indicated that the sensor was fouled. The values are flagged as <-3> [SPC] (CSM).

Suspect Data (Flag <1>)

The data collected during the June 27th deployment (06/27/2023 – 13:30 to 07/12/2023 – 10:15) were suspect due to post-calibration out of range. The post-deployment check of 2.15 for turbidity in DI was outside the accepted range of 2.0 NFU. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected from 07/12/2023 – 10:30 to 07/23/2023 – 14:45 during the July 12th deployment (07/12/2023 – 10:30 to 08/10/2023 – 10:15 to) were suspect due to post-calibration out of range. The post-deployment check of 7.09 for turbidity in DI was outside the accepted range of 2.0 NFU. It was noted during post-calibration that the wiper brush did not appear to be working during some portion of the deployment. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

Jehossee Island

All Parameters Blanket Statement for Jehossee Island

Rejected Data (Flag <-3>)

The data was collected at the wrong level during September 12th deployment (09/16/2023 – 00:00 to 09/26/2023 – 11:45). During the deployment the tube broke at the bottom mounting bolt and the sonde was no longer deployed in the tube. The tube was suspected of having broken on 09/16/2023 but was not discovered until 09/26/2023. The sonde was removed, and no sonde was redeployed until the tube could be replaced. After the suspected break at

09/15/2023 – 23:45, the values are flagged as <-3> [GSM] (CWD). The F_Record column of these rows are flagged as {CSM}.

Missing Data (Flag <-2>)

The data collected from 05/12/2023 – 08:30 to 09:00 were missing due to site maintenance. The PVC tube was swapped during this time, and a newly calibrated sonde was deployed after the swap. The values are flagged as <-2> [GMC] (CSM).

The data collected during following periods of the May 12th deployment (05/12/2023 – 09:15 to 06/01/2023 – 11:00) were missing due to sonde malfunction. The sonde stopped recording data because the SD card malfunctioned, sonde was sent to YSI for repairs. The values are flagged as <-2> [GIM] (CSM).

05/18/2023 – 17:00 and 23:15

05/19/2023 – 20:45 to 06/01/2023 – 11:00

The data collected from 09/26/2023 – 12:00 to 10/11/2023 – 12:15 were missing because no sonde was deployed. The sonde was removed because the deployment tube was damaged. The bottom of the tube broke during the previous deployment, below the second mounting hole. The broken tube was removed, and a new tube was installed on 10/11/2023 before the 12:30 reading. The values are flagged as <-2> [GMC] (CSM).

Suspect Data (Flag <1>)

The data was collected at the wrong level during September 12th deployment (09/16/2023 – 00:00 to 09/26/2023 – 11:45). During the deployment the tube broke at the bottom mounting bolt and the sonde was no longer deployed in the tube. The tube was suspected of having broken on 09/16/2023 but was not discovered until 09/26/2023. The sonde was removed, and no sonde was redeployed until the tube could be replaced. Prior to suspected break at 09/16/2023 – 00:00, the values are flagged as <1> [GSM] (CWD). The F_Record column of these rows are flagged as {CSM}.

Temperature

Specific Conductivity/Salinity

DO Percent/mg/L

Suspect Data (Flag <1>)

The data collected from 05/12/2023 – 09:15 to 05/19/2023 – 20:45 during the May 12th deployment (05/12/2023 – 09:15 to 06/01/2023 – 11:00) were suspect due to no post-calibration was recorded. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SDO] (CSM).

The data collected during the July 27th deployment (07/27/2023 – 12:45 to 09/01/2023 – 10:15) were suspect due to post-calibration out of range. The post-deployment check of 86.7% and 84.5% for dissolved oxygen was outside the accepted range of 90-110%. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

Depth

pH

Suspect Data (Flag <1>)

The data collected the March 7th deployment (3/07/2023 – 14:00 to 04/04/2023 – 12:30) were suspect due to sensor diagnostics out of range. The post-deployment check of 7.46 for pH 7 and pH 7 mV of -59.8 were outside the accepted ranges; the other checks were within the accepted ranges. The readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

Turbidity

Rejected Data (Flag <-3>)

The data collected during the July 27th deployment (07/27/2023 – 12:45 to 09/01/2023 – 10:15) were suspect due to post-calibration out of range. The post-deployment check of 2.01 FNU for turbidity 0 standard was outside the

accepted range of 2 FNU. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected during the following times were rejected due to a turbidity spike. Although the values were within the sensor specifications, there was a two or greater order of magnitude difference between the 15-minute intervals which is not typical for this site. The values are flagged as <-3> [STS] (CSM).

08/01/2023 – 02:45 (1433)

08/30/2023 – 13:30 (2693)

08/31/2023 – 16:00 (1319)

Mosquito Creek

All Parameters Blanket Statement for Mosquito Creek

The data were collected at the wrong depth from 04/14/2023 – 12:45 to 04/17/2023 – 11:15 and 04/17/2023 – 12:00 to 04/18/2023 – 12:00 during the April 14th deployment (04/14/2023 – 12:45 to 05/02/2023 – 10:30). The new tube was installed higher on the signpost than was the previous tube and then repositioned lower but still not at the correct depth. The difference in depth is not considered significant because the S. Edisto River and the creek are well-mixed systems and the sonde was in the same thermocline, as indicated by the water temperature readings. The depth values are flagged as <1> (CWD), and the other parameters are flagged as <0> (CWD); the first record is flagged as [GSM] (CND). Other errors that occurred during the deployment are listed under the appropriate parameter heading or in a blanket statement. The F_Record column of these rows are flagged as {CSM}.

The data were collected at the wrong depth from approximately 10/03/2023 – 00:00 to 12/20/2023 – 08:45 during the September 26th, October 10th, November 13th, and December 12th deployments. The depth data during this time is was on average approximately 0.4 m deeper than previous deployments. It was also noted that the weight used to clean the tube was getting stuck indicating the bolt at the bottom of the tube was gone. The rope at the site is taught during deployment. The difference in depth is not considered significant because the S. Edisto River and the creek are well-mixed systems and the sonde was in the same thermocline, as indicated by the water temperature readings. The depth values are flagged as <1> (CWD), and the other parameters are flagged as <0> (CWD); the first record is flagged as [GSM] (CND). Other errors that occurred during the deployment are listed under the appropriate parameter heading or in a blanket statement. The F_Record column of these rows are flagged as {CSM}.

Rejected Data (Flag <-3>)

The data collected at 04/17/2023 – 11:30 to 11:45 during the May 14th deployment (04/14/2023 – 12:45 to 05/02/2023 – 10:30) were rejected due to sonde was out of water in wet towel. The new PVC tube that was installed on April 14th was removed and vertical position was adjusted to try and correct placement at the wrong depth on the signpost; the same sonde was re-deployed. The values are flagged as <-3> [GMC] (CSM).

The data collected at 04/18/2023 – 12:15 to 12:30 during the May 14th deployment (04/14/2023 – 12:45 to 05/02/2023 – 10:30) were rejected due to sonde was out of water in wet towel. The new PVC tube that was installed on April 14th was removed, adjusted vertically one inch, and reinforced with bands; the same sonde was re-deployed. The values are flagged as <-3> [GMC] (CSM).

Missing Data (Flag <-2>)

No data was collected from 04/14/2023 – 09:15 to 12:30 due to site maintenance. The PVC tube was swapped during this time, and a newly calibrated sonde was deployed after the swap. The values are flagged as <-2> [GMC] (CSM).

No data was collected 12/12/2023 – 13:00 due to site maintenance. The rope and shackle attached to the sonde were replaced at this time. The values are flagged as <-2> [GMC] (CSM).

No data was collected from 12/20/2023 – 09:00 to 12/31/2023 – 23:45 due to concern the sonde tube was broken. The sonde was removed until the tube could be replaced. When the tube was replaced, stop bolts at the bottom of the tube were missing. The values are flagged as <-2> [GMC] (CSM).

Temperature

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

The datum collected at 12:45 on 06/12/2023 during the June 1st deployment (06/01/2023 – 10:30 to 06/14/2023 – 09:00) was rejected due to a dip in salinity (20.2, 12.9, 20.4). The low value of 12.9 psu did not occur during low tide and no rainfall was recorded at the Bennetts Point meteorological station. The value collected was within the range typically observed at this site. The cause for the dip in salinity is unknown but thought to be attributed to a sensor malfunction. The value is flagged as <-3> [GSM] (CCU).

The datum collected at 14:45 on 10/23/2023 during the October 10th deployment (10/10/2023 – 09:15 to 11/13/2023 – 12:00) was rejected due to a dip in salinity (21.6-8.4-22.2). The low value of 8.4 psu occurred during early flood tide and no rainfall was recorded at the Bennetts Point meteorological station. The value collected is not within the range typically observed at this site. The cause for the dip in salinity is unknown but thought to be attributed to a sensor malfunction. The value is flagged as <-3> [GSM] (CCU).

Suspect Data (Flag <1>)

The data collected during the June 14th deployment (06/14/2023 – 09:15 to 06/27/2023 – 11:30) were suspect due to post calibration out of range. A reading of 45.63 in the 50 mS/cm check is outside the accepted range. The data were not rejected because the readings were typical for the site. The values are flagged as <1> [SPC] (CSM).

DO Percent/mg/L

Rejected Data (Flag <-3>)

The DO mg/L data collected at 12:45 on 06/12/2023 during the June 1st deployment (06/01/2023 – 10:30 to 06/14/2023 – 09:00) was rejected due to conductivity potential sensor failure. Specific conductivity values are used to calculate DO mg/L. The value is flagged as <-3> [SCF] (CSM).

The DO mg/L data collected at 14:45 on 10/23/2023 during the October 10th (10/10/2023 – 09:15 to 11/13/2023 – 12:00) was rejected due to conductivity potential sensor failure. Specific conductivity values are used to calculate DO mg/L. The value is flagged as <-3> [SCF] (CSM).

Depth

Rejected Data (Flag <-3>)

The depth data collected at 12:45 on 06/12/2023 during the June 1st deployment (06/01/2023 – 10:30 to 06/14/2023 – 09:00) was rejected due to conductivity potential sensor failure. Specific conductivity values are used to calculate depth. The value is flagged as <-3> [SCF] (CSM).

The depth data collected at 14:45 on 10/23/2023 during the October 10th (10/10/2023 – 09:15 to 11/13/2023 – 12:00) was rejected due to conductivity potential sensor failure. Specific conductivity values are used to calculate depth. The value is flagged as <-3> [SCF] (CSM).

pH

Turbidity

Rejected Data (Flag <-3>)

The data collected during the following times were rejected due to a turbidity spike. Although the values were within the sensor specifications, there was a two or greater order of magnitude difference between the 15-minute intervals which is not typical for this site. The values are flagged as <-3> [STS] (CSM).

03/29/2023 – 23:00 (444)

Suspect Data (Flag <1>)

The data collected during the July 27th deployment (07/27/2023 – 10:00 to 08/10/2023 – 08:45) were suspect due to post-calibration out of range. The post-deployment check of 143.7 FNU for turbidity 124 standard was outside the accepted range of 140 FNU. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected during the August 8th deployment (08/10/2023 – 09:00 to 09/01/2023 – 08:45) were suspect due to post-calibration out of range. The post-deployment check of 3.20 FNU for turbidity 0 standard was outside the accepted range of 2 FNU. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

St. Pierre

All Parameters Blanket Statement for St. Pierre

Missing Data (Flag <-2>)

No data was collected from 02/21/2023 – 15:00 to 15:15 due to infield maintenance. During this time the deployment tube was removed and replaced with a new tube. The values are flagged as <-2> [GMC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

The data collected from 03:00 to 05:45 on 06/08/2023 during the June 1st deployment (06/01/2023 – 09:45 to 06/14/2023 – 08:15) passed QAQC. A rainfall event (25 mm) was recorded at the Bennet's Point meteorological station several hours before low tide when a decrease in specific conductivity/salinity was observed. The values collected were within the range typically observed at this site. The F_record is flagged as {CRE} and specific conductivity/salinity values are flagged as <0> [GSM] (CRE).

The data collected from 14:00 to 15:15 on 06/19/2023 during the June 14th deployment (06/14/2023 – 08:30 to 06/27/2023 – 10:45) passed QAQC. A rainfall event (22 mm) was recorded at the Bennet's Point meteorological station at low tide when a decrease in specific conductivity/salinity was observed. The values collected were within the range typically observed at this site. The F_record is flagged as {CRE} and specific conductivity/salinity values are flagged as <1> [SPC] (CRE).

The data collected from 11:15 to 14:15 on 08/30/2023 during the August 10th deployment (08/10/2023 – 08:00 to 09/12/2023 – 10:15) passed QAQC. A rainfall event (65 mm) was recorded at the Bennet's Point meteorological station at low tide when a decrease in salinity was observed. The values collected were within the range typically observed at this site. The F_record is flagged as {CRE} and specific conductivity/salinity values are flagged as <0> [GSM] (CRE).

The data collected from 01:00 to 03:00 on 09/13/2023 during the September 12th deployment (09/12/2023 – 10:30 to 09/26/2023 – 10:15) passed QAQC. A rainfall event (7.6 mm) was recorded at the Bennet's Point meteorological station; however, heavier rainfall might have occurred at the site. All of the data (except depth) showed some effect including colder temperatures, low salinity, increased dissolved oxygen, increased pH and increased turbidity. Some of the values collected were not within the range typically observed at this site. The values are flagged as <0> [GSM] (CRE) except turbidity which are flagged as <1> [STS] (CRE).

Temperature

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

The data collected at 05:00 on 01/10/2023 –during the December 6th deployment (12/06/2022 – 11:00 to 01/10/2023 – 11:00) was rejected due to a dip in salinity (27.9, 15.2, 27.9). The value (15.2 psu) occurred on the early flood with a very small amount of rain recorded at the Bennetts Point meteorological station. The value collected is outside the range typically observed at this site. The cause for the dip in salinity is unknown but thought to be attributed to a sensor malfunction. the value is flagged as <-3> [GSM] (CCU).

The data collected at 21:00 on 08/24/2023 during the August 10th deployment (08/10/2023 – 08:00 to 09/12/2023 – 10:15) was rejected due to a dip in salinity (27, 6.8, 27). The low value of 6.8 psu occurred during early flood tide and no rainfall was recorded at the Bennetts Point meteorological station. The value collected was not within the range typically observed at this site. The cause for the dip in salinity is unknown but thought to be attributed to a sensor malfunction. The value is flagged as <-3> [GSM] (CCU).

The data collected at 22:30 on 08/29/2023 during the August 10th deployment (08/10/2023 – 08:00 to 09/12/2023 – 10:15) was suspect due to a dip in salinity (32, 10.6, 32). The low value of 10.6 psu occurred during mid ebb tide and there was no rain recorded at the Bennet's Point meteorological station. The value collected was within the range typically observed at this site. The cause for the dips in salinity is unknown but thought to be attributed to a sensor malfunction. The values are flagged as <-3> [GSM] (CCU).

Suspect Data (Flag <1>)

The data collected during the December 6th deployment (12/06/2022 – 11:00 to 01/10/2023 – 00:45) were suspect due to post-calibration out of range. The post-deployment check of 46.89 mS/cm for specific conductivity is outside the accepted range of 47 - 53 mS/cm. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The datum collected at 02:00 on 01/28/2023 during the January 10th deployment (01/10/2023 – 11:00 to 02/01/2023 – 10:00) was suspect due to a dip in salinity. The low value of 19.1 psu occurred during ebb tide and there was no rain recorded at the Bennet's Point meteorological station. The value collected was within the range typically observed at this site. The cause for the dips in salinity is unknown but thought to be attributed to a sensor malfunction. The values are flagged as <1> [GSM] (CCU).

The data collected during the June 14th deployment (06/14/2023 – 08:30 to 06/27/2023 – 10:45) were suspect due to post calibration out of range. The post-deployment check of 45.41 mS/cm for specific conductivity is outside the accepted range of 47 - 53 mS/cm. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The datum collected at 20:00 on 10/31/2023 during the October 10th deployment (10/10/2023 – 08:30 to 11/13/2023 – 10:45) was suspect due to a dip in salinity. The low value of 27.5 psu did not occur during low tide and no rainfall was recorded at the Bennetts Point meteorological station. The value collected is within the range typically observed at this site. The cause for the dip in salinity is unknown but thought to be attributed to a sensor malfunction. the value is flagged as <1> [GSM] (CCU).

DO Percent/mg/L

Rejected Data (Flag <-3>)

The DO mg/L collected at 05:00 on 01/10/2023 during the December 6th deployment (12/06/2022 – 11:00 to 01/10/2023 – 11:00) was rejected due to conductivity sensor malfunction. Value was rejected because specific conductivity is used to calculate DO mg/L. The value collected is within the range typically observed at this site. The post-deployment checks were within the accepted ranges. The value is flagged as <-3> [SCF] (CSM).

The DO mg/L collected at 21:00 on 08/24/2023 during the August 10th deployment (08/10/2023 – 08:00 to 09/12/2023 – 10:15) was rejected due to conductivity sensor malfunction. Value was rejected because specific conductivity is used to calculate DO mg/L. The value collected is within the range typically observed at this site. The post-deployment checks were within the accepted ranges. The value is flagged as <-3> [SCF] (CSM).

The datum collected at 22:30 on 08/29/2023 during the August 10th deployment (08/10/2023 – 08:00 to 09/12/2023 – 10:15) was rejected due to conductivity sensor malfunction. Value was rejected because specific conductivity is used to calculate DO mg/L. The value collected is within the range typically observed at this site. The post-deployment checks were within the accepted ranges. The value is flagged as <-3> [SCF] (CSM).

Depth

Rejected Data (Flag <-3>)

The datum collected at 05:00 on 01/10/2023 during the December 6th deployment (12/06/2022 – 11:00 to 01/10/2023 – 11:00) was rejected due to conductivity sensor malfunction. Value was rejected because specific conductivity is used to calculate depth. The value collected is within the range typically observed at this site. The post-deployment checks were within the accepted ranges. The value is flagged as <-3> [SCF] (CSM).

The datum collected at 21:00 on 08/24/2023 –during the August 10th deployment (08/10/2023 – 08:00 to 09/12/2023 – 10:15) was rejected due to conductivity sensor malfunction. Value was rejected because specific conductivity is used to calculate depth. The value collected is within the range typically observed at this site. The post-deployment checks were within the accepted ranges. The value is flagged as <-3> [SCF] (CSM).

The datum collected at 22:30 on 08/29/2023 during the August 10th deployment (08/10/2023 – 08:00 to 09/12/2023 – 10:15) was rejected due to conductivity sensor malfunction. Value was rejected because specific conductivity is used to calculate depth. The value collected is within the range typically observed at this site. The post-deployment checks were within the accepted ranges. The value is flagged as <-3> [SCF] (CSM).

pH

Rejected Data (Flag <-3>)

The data collected from 04/27/2023 – 00:00 to 05/02/2023 – 09:45 during the April 18th deployment (04/18/2023 – 11:00 to 05/02/2023 – 09:45) were rejected due to post-deployment check was out of range and the values drifted down at the end of the deployment. The pH 10 check value of 9.57 was outside of the accepted range. The values are flagged as <-3> [SPC] (CSM).

The data collected during the June 6th deployment (06/01/2023 – 09:45 to 06/14/2023 – 08:15) were rejected due to QAQC checks. The pH 10 post-deployment check was the acceptable upper threshold of 10.30. The maximum pH values during this deployment were 8.4 which is not within the normal range for this site. The values are flagged as <-3> [SQR] (CSM).

Suspect Data (Flag <1>)

The data collected from 04/18/2023 – 11:00 to 04/26/2023 – 23:45 during the April 18th deployment (04/18/2023 – 11:00 to 05/02/2023 – 09:45) were considered suspect due to post-deployment check was out of range. The pH 10 check value of 9.57 was outside of the accepted range. The values are flagged as <1> [SPC] (CSM).

The data collected during the May 2nd deployment (05/02/2023 – 10:00 to 05/16/2023 – 09:45) were considered suspect due to the maximum pH values were slightly higher over the deployment. The cyclical pattern was normal for the site. The values are flagged as <1> [GSM] (CCU).

The first record of the December 12th deployment (12/12/2023 – 12:00 to 01/11/2024 – 12:00) was suspect due to a dip in pH when the sonde was deployed. There is a 0.4 unit difference between the 15-minute intervals which is not typical; however, it is thought to be attributed to acclimation of the probe. The post-deployment checks and sensor diagnostics were not within the accepted ranges. The values are flagged as <1> [GSM] (CND).

Turbidity

Rejected Data (Flag <-3>)

The data collected during the following times were rejected due to a turbidity spike. Although the values were within the sensor specifications, there was a two or greater order of magnitude difference between the 15-minute intervals which is not typical for this site. The values are flagged as <-3> [STS] (CSM).

07/26/2023 – 07:15 (466)

Suspect Data (Flag <1>)

The data collected during the June 14th deployment (06/14/2023 – 08:30 – 06/27/2023 – 10:45) were suspect due to post-calibration out of range. The post-deployment check of 2.01 for turbidity in DI was outside the accepted range of +/-2.0 FNU. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected during the July 27th deployment (07/27/2023 – 10:45 – 08/10/2023 – 07:45) were suspect due to post-calibration out of range. The post-deployment check of 2.45 for turbidity in DI was outside the accepted range of +/-2.0 FNU. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

Fort Johnson

All Parameters Blanket Statement for Fort Johnson

The probes were fouled upon return to the laboratory during the June 26th deployment (06/26/2023 – 12:45 to 07/13/2023 – 15:15). The wiper brush was present; however, it is suspected that the brush did not function properly. The F_Record column is flagged as {CSM}.

Rejected Data (Flag <-3>)

The data collected from 07/12/2023 – 14:15 to 14:45 during the June 26th deployment (06/26/2023 – 12:45 to 07/13/2023 – 15:15) were rejected due to instrument malfunction. The sonde stopped recording data from 13:15 to 14:00 and then recorded unusual data before returning to normal data collection. The values are flagged as <-3> [GIM] (CSM).

Missing Data (Flag <-2>)

The data collected during the March 6th deployment (03/06/2023 – 13:30 to 04/10/2023 – 14:15) were missing due to instrument malfunction. The sonde stopped recording data when the sonde was deployed even though there was sufficient battery power. The values are flagged as <-2> [GIM] (CSM).

The data collected from 07/12/2023 – 13:15 to 14:00 during the June 26th deployment (06/26/2023 – 12:45 to 07/13/2023 – 15:15) were missing due to instrument malfunction. The sonde stopped recording data then recorded incorrect data from 14:15 to 14:45 before returning to normal data collection. The values are flagged as <-2> [GIM] (CSM).

Temperature

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

The first record of the January 31st deployment (01/31/2023 – 13:30 to 03/06/2023 – 13:15) was rejected due spikes in specific conductivity/salinity, depth and turbidity spike. The cause for spikes is unknown but thought to be attributed to acclimation of the probe or malfunctioning of the instrument. The values are flagged as <-3> [GSM] (CND).

The datum collected at 19:30 on 07/31/2023 during the July 13th deployment (07/13/2023 – 15:30 to 08/11/2023 – 11:00) was rejected due to a dip in salinity (35, 6.3, 35). The value collected is not within the range typically observed at this site. The cause for the dip in salinity is unknown but thought to be attributed to a sensor malfunction. The value is flagged as <-3> [GSM] (CCU).

DO Percent/mg/L

Rejected Data (Flag <-3>)

The first record of the January 31st deployment (01/31/2023 – 13:30 to 03/06/2023 – 13:15) was rejected due to spike in specific conductivity/salinity. The cause for the spike is unknown but thought to be attributed to acclimation of the probe or malfunctioning of the instrument. Value was rejected because specific conductivity is used to calculate DO mg/L. The value collected is within the range typically observed at this site. The post-deployment checks were within the accepted ranges. The value is flagged as <-3> [SCF] (CND).

The DO mg/L collected at 19:30 on 07/31/2023 during the July 13th deployment (07/13/2023 – 15:30 to 08/11/2023 – 11:00) was rejected due to conductivity sensor malfunction. Value was rejected because specific conductivity is used to calculate DO mg/L. The value collected is within the range typically observed at this site. The post-deployment checks were within the accepted ranges. The value is flagged as <-3> [SCF] (CSM).

Depth

Rejected Data (Flag <-3>)

The first record of the January 31st deployment (01/31/2023 – 13:30 to 03/06/2023 – 13:15) was rejected due to spike in specific conductivity/salinity. There also was a spike in depth; the cause for the spikes is unknown but thought to be attributed to acclimation of the probe or malfunctioning of the instrument. The values are flagged as <-3> [SCF] (CND).

The datum collected at 19:30 on 07/31/2023 during the July 13th deployment (07/13/2023 – 15:30 to 08/11/2023 – 11:00) was rejected due to conductivity sensor malfunction. Value was rejected because specific conductivity is used to calculate depth. The value collected is within the range typically observed at this site. The post-deployment checks were within the accepted ranges. The value is flagged as <-3> [SCF] (CSM).

pH

Rejected Data (Flag <-3>)

The data collected during the May 23rd deployment (05/23/2023 – 13:00 to 06/08/2023 – 09:15) were rejected due to post-deployment check out of range. The pH 7 and pH 10 check values of 7.38 and 10.37, respectively, were outside of the accepted range; the millivolts and slope values were within the accepted range. The values were rejected because they were not within the range expected for the site, and they do not correlate with dissolved oxygen. The values are flagged as <-3> [SPC] (CSM).

The data collected during the June 26th deployment (06/26/2023 – 12:45 to 07/13/2023 – 15:15) were rejected due to sensor failure. The pH sensor readings were negative or null for the entire deployment. The values are flagged as <-3> [SSM] (CSM).

Suspect Data (Flag <1>)

The data collected during the July 13th deployment (07/13/2023 – 15:30 to 08/11/2023 – 11:00) were suspect due to post-calibration out of range. The post-deployment check of 7.31 and 9.60 for pH 7 and 10, respectively, were outside the accepted range of pH 7: 6.7 - 7.3 and pH 10: 9.7 - 10.3. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected during the October 13th deployment (10/13/2023 – 09:00 to 11/09/2023 – 13:30) were suspect due to sensor diagnostics out of range. The post-deployment checks of 7.17 for pH 7 and 10.10 for pH 10 were within the accepted ranges, but the pH slope of 139 and mV of -34.0 for pH7 and -173.0 for pH10 were outside the accepted ranges. The readings were within the range typically observed at this site. The values are flagged as <1> [SDG] (CSM).

Turbidity

Rejected Data (Flag <-3>)

The first record of the January 31st deployment (01/31/2023 – 13:30 to 03/06/2023 – 13:15) was rejected due spikes in specific conductivity/salinity, depth and turbidity spike. The cause for spikes is unknown but thought to be attributed to acclimation of the probe or malfunctioning of the instrument. The values are flagged as <-3> [GSM] (CND).

The data collected during the following times were rejected due to a turbidity spike. Although the values were within the sensor specifications, there was a two or greater order of magnitude difference between the 15-minute intervals which is not typical for this site. The values are flagged as <-3> [STS] (CSM).

05/17/2023 – 22:30 (2545)	05/17/2023 – 22:45 (1182)	07/02/2023 – 09:45 (2642)
07/04/2023 – 09:45 (1746)	07/23/2023 – 16:15 (588)	07/23/2023 – 17:30 (341)
07/25/2023 – 19:45 (481)	07/30/2023 – 18:30 (2853)	07/30/2023 – 21:00 (1663)
07/30/2023 – 21:30 (2405)	07/30/2023 – 21:45 (2472)	07/31/2023 – 12:00 (1384)
08/01/2023 – 00:00 (1517)	08/03/2023 – 00:45 (2033)	08/03/2023 – 23:30 (1313)
08/04/2023 – 21:45 (1495)	08/04/2023 – 23:30 (1191)	08/05/2023 – 19:30 (1219)
08/05/2023 – 21:00 (1219)	08/06/2023 – 02:45 (1057)	08/06/2023 – 03:00 (2054)
08/06/2023 – 03:45 (1816)	08/09/2023 – 10:00 (547)	08/10/2023 – 09:15 (2158)
08/20/2023 – 08:45 (1662)	09/05/2023 – 07:45 (693)	09/07/2023 – 02:00 (834)

09/07/2023 – 19:15 (647)

09/08/2023 – 07:00 (3803)

10/29/2023 – 11:00 (1304)

Suspect Data (Flag <1>)

The data collected during the June 8th deployment (06/08/2023 – 09:30 to 06/26/2023 – 12:30) were suspect due to post-calibration out of range. The post-deployment check of 2.5 FNU for turbidity was not within the accepted range of -2 to 2 in deionized water. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected during the June 26th deployment (06/26/2023 – 12:45 to 07/13/2023 – 15:15) were suspect due to post-calibration out of range. The post-deployment checks of 2.45 and 160.1 FNU for turbidity were not within the accepted range of -2 to 2 in deionized water and 100 to 140 FNU in 124 standard. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected during the August 11th deployment (08/11/2023 – 11:15 to 06/26/2023 – 12:30) were suspect due to post-calibration out of range. The post-deployment check of 2.58 FNU for turbidity was not within the accepted range of -2 to 2 in deionized water. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

Chlorophyll

Suspect Data (Flag <1>)

The data collected during the June 26th deployment (06/26/2023 – 12:45 to 07/13/2023 – 15:15) were suspect due to post-calibration out of range (although no ACE thresholds have been formally set). The post-deployment 0.0 and standard checks of 1.74 and 44.86 mg/L for chlorophyll were high (0.0 DI) and low (65.8 standard), respectively. The data were not rejected because the readings were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).