

I. Data Set and Research Descriptors

1) Principal investigator(s) and contact persons –

Addresses:

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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. Nicole King, Saundra Upchurch, and Denise Sanger 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 sites were established in the South Edisto River proper at Jehossee Island and Grove Plantation.

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

The secondary stations at Jehossee Island and Grove Plantation are used to track changes in the saltwater demarcation line. These two stations extend our coverage of the salinity gradient in the South Edisto River. 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 –

A single YSI sonde is attached to a deployment mount at each monitoring station in order to ensure that the sensors are positioned approximately 0.5 m (1.64 ft) from the creek bottom during a deployment. The deployment mount consists of a PVC pipe that is attached vertically to a stable structure. To facilitate water flow across the sensors, approximately two-inch diameter holes are drilled into the PVC pipes. In 2017-2018, additional holes were drilled into the new or refurbished tubes before they were swapped with existing tube on deployment mount. In 2019, the tubes were also painted with a copper-based antifouling paint on the bottom 1 m. (See Section 14 for more details on the history of deployment mounts at the monitoring stations.)

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.

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.

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. 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 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 MgCO_3 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. The ROX DO sensors on the YSI 6600 and EXO2 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. Starting in 2019, the 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 a plastic mesh around the sensor guard.

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) also are recorded.

When the data loggers are retrieved, they are taken to the laboratory for cleaning, post-deployment checks and servicing, in accordance with guidelines set by CDMO and ACE Basin Reserve. Post-deployment checks of all the parameters are done before cleaning the sensors. Prior to April of 2019, sonde 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 recorded during post-deployment checks of data loggers. These diagnostic values are strong indicators of the individual sensor performance, and they are used to determine the accuracy of the data. The data are downloaded, and the dataset is reviewed to determine if any equipment malfunctions occurred during deployment that need immediate attention.

5) Site location and character –

ACE Basin National Estuarine Research Reserve is one of the largest undeveloped estuaries on the East Coast. The study area encompasses the 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
acechqwq	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 2020, the mean depth at the station was 2.66 m (8.9 ft), and the mean salinity was 27.50 practical salinity units (psu).

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

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

This monitoring station is in a tributary of Fishing Creek, approximately 2 km (1.08 nautical miles) from the mouth of the creek and is located approximately 5 m (16.41 ft) from the northern bank of the creek. The tributary flows through the eastern half of Jehossee Island, a Wildlife Management Area (WMA) protected by the USFWS, and Fishing Creek forms the northeast border of the island. The station is surrounded by extensive *Spartina cynosuroides* marsh and vast mud flats. The upland area is characterized by slash pine, live oak, and cabbage palmetto. In 2020, the mean depth at the station was 2.45 m (8.0 ft), and the mean salinity was 6.3 psu.

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

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

This monitoring station is in Mosquito Creek (a tributary of both the South Edisto and Ashepoo rivers), approximately 2.51 km (1.36 nautical miles) from the Ashepoo River and 12 km (6.48 nautical miles) from the South Edisto River, and it is approximately 5 m (16.41 ft) from the southern bank of the creek. In 2020, the mean depth at the station was 4.04 m (13.3 ft), and the mean salinity was 13.3 psu.

The Mosquito Creek station is designated as a "treatment" site because of the land use practices in the surrounding area. Agriculture fields and impounded wetlands are found upstream of the monitoring station. Approximately fifteen docks constructed of creosote, concrete, Wolmanized or CCA treated wood; a public boat landing; a commercial seafood business with commercial shrimp boats and a fueling dock are located approximately 1.00 km (0.54 nautical miles) downstream of the monitoring station. The major contributor of nonpoint source pollution to the monitoring station is surface runoff from the impoundments and agricultural lands that contain high levels of nutrients and, at times, herbicides and pesticides. Impoundment trunks open and drain into the creek increasing the

nutrient load and possibly introducing herbicides and pesticides. Vegetation in the area includes salt marsh dominated by *Spartina alterniflora* and *Juncus roemerianus*. Upland fringe areas consist of cabbage palmetto, live oaks and pine trees.

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

This monitoring station is in a small tributary of St. Pierre Creek, approximately 0.25 km (0.13 nautical miles) from the mouth of the creek, and it is approximately 5 m (16.41 ft) from the northern bank of the creek. The tributary flows through the southern portion of Bailey Island, and the creek forms the eastern border of the island. The monitoring station is surrounded by a wide expanse of *Spartina alterniflora* marsh. Extensive mud flats and oyster reefs fringe the banks. Maritime forest communities comprised of species such as wax myrtles (*Morella cerifera*), live oaks (*Quercus virginiana*), and palmettos dominate the upland areas. In 2020, the mean depth at the station was 1.95 m (6.5 ft), and the mean salinity was 26.4 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.

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 2020, the average depth at the station was 3.44 m (11.3 ft), and the mean salinity was 0.1 psu.

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 2020, the average depth at the station was 4.77 m (15.8 ft), and the mean salinity was 2.0 psu. Note: these averages are based four months of data (January-March and December) because the station was out of service.

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 2020, the average depth at the station was 1.75 m (5.9 ft), and the mean salinity was 24.7 psu.

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 Sullivans 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
12/09/2020 – 09:45	01/12/2021 – 11:00*	EXO2
01/12/2021 – 11:30	02/10/2021 – 13:15	EXO2
02/10/2021 – 13:30	03/04/2021 – 11:45	EXO2
03/04/2021 – 12:00	03/25/2021 – 11:30	EXO2
03/25/2021 – 11:45	04/07/2021 – 11:00	EXO2
04/07/2021 – 11:15	04/20/2021 – 09:30	EXO2
04/20/2021 – 09:45	05/06/2020 – 08:45*	EXO2
05/06/2021 – 11:45	05/20/2021 – 10:30	EXO2
05/20/2021 – 10:45	06/07/2021 – 10:30	EXO2
06/07/2021 – 11:00	06/23/2021 – 09:45	EXO2

06/23/2021 – 10:00	07/07/2021 – 09:45*	EXO2
07/07/2021 – 10:15	07/21/2021 – 08:30	EXO2
07/21/2021 – 08:45	08/03/2021 – 10:00*	EXO2
08/03/2021 – 10:30	08/17/2021 – 09:45	EXO2
08/17/2021 – 10:00	09/01/2021 – 10:00	EXO2
09/01/2021 – 10:15	09/14/2021 – 11:30	EXO2
09/14/2021 – 11:45	09/28/2021 – 08:15	EXO2
09/28/2021 – 08:30	10/13/2021 – 08:00	EXO2
10/13/2021 – 08:15	11/01/2021 – 08:30	EXO2
11/01/2021 – 08:45	12/01/2021 – 08:45	EXO2
12/01/2021 – 09:00	01/13/2022 – 11:15	EXO2

Fishing Creek

BEGAN	ENDED	SONDE
12/10/2020 – 09:15	01/12/2021 – 09:30	EXO2
01/12/2021 – 09:45	02/09/2021 – 12:00	EXO2
02/09/2021 – 12:15	03/24/2021 – 09:45	EXO2
03/24/2021 – 10:00	04/06/2021 – 09:30	EXO2
04/06/2021 – 09:45	04/19/2021 – 10:30	EXO2
04/19/2021 – 10:45	05/05/2020 – 09:15	EXO2
05/05/2021 – 09:30	05/20/2021 – 13:15	EXO2
05/20/2021 – 13:30	06/08/2021 – 10:45*	EXO2
06/08/2021 – 11:30	06/23/2021 – 14:15	EXO2
06/23/2021 – 14:30	07/06/2021 – 10:45	EXO2
07/06/2021 – 11:00	07/20/2021 – 10:15	EXO2
07/20/2021 – 10:30	08/03/2021 – 09:30	EXO2
08/03/2021 – 09:45	08/20/2021 – 10:15	EXO2
08/20/2021 – 10:30	09/02/2021 – 09:45	EXO2
09/02/2021 – 10:00	09/15/2021 – 10:30	EXO2
09/15/2021 – 10:45	09/28/2021 – 11:00	EXO2
09/28/2021 – 11:15	10/14/2021 – 08:15	EXO2
10/14/2021 – 08:30	11/01/2021 – 11:15	EXO2
11/01/2021 – 11:30	12/01/2021 – 11:00	EXO2
12/01/2021 – 11:15	01/12/2022 – 10:00	EXO2

Grove Plantation

BEGAN	ENDED	SONDE
12/10/2020 – 09:45	01/12/2021 – 13:00	EXO2
01/12/2021 – 13:15	02/09/2021 – 12:30	EXO2
02/09/2021 – 12:45	03/04/2021 – 14:00	EXO2
03/04/2021 – 14:15	03/24/2021 – 10:30	EXO2
03/24/2021 – 10:45	04/06/2021 – 10:00	EXO2
04/06/2021 – 10:15	04/19/2021 – 11:30	EXO2
04/19/2021 – 11:45	05/05/2020 – 09:30*	EXO2
05/05/2021 – 10:00	05/20/2020 – 13:45	EXO2
05/20/2021 – 14:00	06/07/2021 – 13:00	EXO2
06/07/2021 – 13:15	06/23/2021 – 13:00	EXO2
06/23/2021 – 13:15	07/06/2021 – 11:15	EXO2
07/06/2021 – 11:30	07/20/2021 – 10:45	EXO2
07/20/2021 – 11:00	08/03/2021 – 10:00	EXO2
08/03/2021 – 10:15	08/20/2021 – 10:45	EXO2
08/20/2021 – 11:00	09/02/2021 – 10:15	EXO2
09/02/2021 – 10:30	09/15/2021 – 11:00	EXO2
09/15/2021 – 11:15	09/28/2021 – 11:30	EXO2

09/28/2021 – 11:45	10/14/2021 – 08:45	EXO2
10/14/2021 – 09:00	11/01/2021 – 11:45	EXO2
11/01/2021 – 12:00	12/01/2021 – 11:30	EXO2
12/01/2021 – 11:45	01/12/2022 – 10:30	EXO2

Jehossee Island

BEGAN	ENDED	SONDE
12/11/2020 – 12:45	01/12/2021 – 10:00	6600EDS/V2
01/12/2021 – 10:15	02/09/2021 – 11:30	6600EDS/V2
02/09/2021 – 11:45	03/04/2021 – 13:00	6600EDS/V2
03/04/2021 – 13:15	03/24/2021 – 09:15	6600EDS/V2
03/24/2021 – 09:30	04/06/2021 – 09:15	6600EDS/V2
04/06/2021 – 09:30	04/19/2021 – 11:00	6600EDS/V2
04/19/2021 – 11:15	05/05/2021 – 08:45	6600EDS/V2
05/05/2021 – 09:00	05/20/2021 – 12:45	6600EDS/V2
05/20/2021 – 13:00	06/07/2021 – 11:45	6600EDS/V2
06/07/2021 – 12:00	06/23/2021 – 12:15*	6600EDS/V2
06/23/2021 – 13:45	07/06/2021 – 10:15	6600EDS/V2
07/06/2021 – 10:30	07/20/2021 – 09:45	6600EDS/V2
07/20/2021 – 10:00	08/04/2021 – 10:45*	6600EDS/V2
08/04/2021 – 11:30	08/20/2021 – 10:00	6600EDS/V2
08/20/2021 – 10:15	09/02/2021 – 09:15	6600EDS/V2
09/02/2021 – 09:30	09/15/2021 – 10:00	6600EDS/V2
09/15/2021 – 10:15	09/28/2021 – 10:30	6600EDS/V2
09/28/2021 – 10:45	10/14/2021 – 07:45	6600EDS/V2
10/14/2021 – 08:00	11/01/2021 – 10:45	6600EDS/V2
11/01/2021 – 11:00	12/01/2021 – 10:30	6600EDS/V2
12/01/2021 – 10:45	01/12/2022 – 09:30	6600EDS/V2

Mosquito Creek

	BEGAN	ENDED	SONDE
	12/10/2020 – 08:30	01/12/2021 – 11:30	EXO2
	01/12/2021 – 11:45	02/09/2021 – 10:45	EXO2
NO DATA	02/09/2021 – 11:00	03/24/2021 – 08:30	EXO2
	03/24/2021 – 08:45	04/06/2021 – 08:30	EXO2
	04/06/2021 – 08:45	04/23/2021 – 07:30	EXO2
	04/23/2021 – 07:45	05/05/2021 – 08:00	EXO2
	05/05/2021 – 08:15	05/20/2021 – 12:00	EXO2
	05/20/2021 – 12:15	05/26/2021 – 13:00*	EXO2
	05/26/2021 – 14:45	06/07/2021 – 10:45	EXO2
	06/07/2021 – 11:00	06/23/2021 – 11:15	EXO2
	06/23/2021 – 11:30	07/06/2021 – 09:30	EXO2
	07/06/2021 – 09:45	07/20/2021 – 09:00	EXO2
	07/20/2021 – 09:15	08/03/2021 – 08:30	EXO2
	08/03/2021 – 08:45	08/20/2021 – 09:30	EXO2
	08/20/2021 – 09:45	09/01/2021 – 09:15	EXO2
	09/01/2021 – 09:30	09/15/2021 – 09:15	EXO2
	09/15/2021 – 09:30	09/28/2021 – 09:45	EXO2
	09/28/2021 – 10:00	10/14/2021 – 07:00	EXO2
	10/14/2021 – 07:15	11/01/2021 – 10:00	EXO2
	11/01/2021 – 10:15	12/01/2021 – 10:00	EXO2
	12/01/2021 – 10:15	01/12/2022 – 08:45	EXO2

St. Pierre

BEGAN	ENDED	SONDE
12/09/2020 – 09:00	01/12/2021 – 10:30	EXO2
01/12/2021 – 10:45	02/09/2021 – 10:00	EXO2
02/09/2021 – 10:15	03/04/2021 – 11:00	EXO2
03/04/2021 – 11:15	03/25/2021 – 12:15	EXO2
03/25/2021 – 12:30	04/07/2021 – 11:45	EXO2
04/07/2021 – 12:00	04/20/2021 – 10:15	EXO2
04/20/2021 – 10:30	05/06/2021 – 12:15	EXO2
05/06/2021 – 12:30	05/20/2021 – 11:15	EXO2
05/20/2021 – 11:30	06/08/2021 – 12:30*	EXO2
06/08/2021 – 14:15	06/23/2021 – 10:30	EXO2
06/23/2021 – 10:45	07/06/2021 – 08:45	EXO2
07/06/2021 – 09:00	07/20/2021 – 08:15	EXO2
07/20/2021 – 08:30	08/03/2021 – 07:45	EXO2
08/03/2021 – 08:00	08/20/2021 – 09:00	EXO2
08/20/2021 – 09:15	09/01/2021 – 08:45	EXO2
09/01/2021 – 09:00	09/15/2021 – 08:30	EXO2
09/15/2021 – 08:45	09/28/2021 – 09:00	EXO2
09/28/2021 – 09:15	10/13/2021 – 07:15	EXO2
10/13/2021 – 07:30	11/01/2021 – 09:15	EXO2
11/01/2021 – 09:30	12/01/2021 – 09:15	EXO2
12/01/2021 – 09:30	01/12/2022 – 07:45	EXO2

Fort Johnson

BEGAN	ENDED	SONDE
12/17/2020 – 14:15	01/21/2021 – 15:00	EXO2
01/21/2021 – 15:15	02/18/2021 – 13:45	EXO2
02/18/2021 – 14:00	03/25/2021 – 07:30	EXO2
03/25/2021 – 07:45	04/29/2021 – 13:30	EXO2
04/29/2021 – 14:00	06/01/2021 – 15:15	EXO2
06/01/2020 – 15:30	06/02/2021 – 15:45	EXO2
06/02/2021 – 16:00	07/15/2021 – 08:45	EXO2
07/15/2021 – 09:00	07/30/2021 – 08:30*	EXO2
07/30/2021 – 09:15	08/11/2021 – 09:00	EXO2
08/11/2021 – 09:15	08/27/2021 – 11:30	EXO2
08/27/2021 – 11:45	09/10/2021 – 10:00	EXO2
09/10/2021 – 10:15	09/29/2021 – 08:00	EXO2
09/29/2021 – 08:15	10/22/2021 – 09:30	EXO2
10/22/2021 – 09:45	11/30/2021 – 10:00*	EXO2
11/30/2021 – 11:00	01/19/2022 – 12:00	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 2021.

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 EXO2 data sondes and 6600 EDS/V2 data sondes in 2021: 6600 sondes were used at the JI monitoring station. EXO2 sondes were used at EI, FC, FJ, GP, MC and SP. The EXO2 data sondes were configured the same, and the 6600 data sondes were configured the same. Optical DO sensors were installed at all monitoring stations.

YSI 6600EDS data sonde:

Parameter: Temperature

Units: Celsius (C)

Sensor Type: Thermistor

Model#: 6560

Range: -5 to 50 C

Accuracy: +/- 0.15

Resolution: 0.01 C

Parameter: Conductivity

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

Sensor Type: 4-electrode cell with autoranging

Model#: 6560

Range: 0 to 100 mS/cm

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

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

Parameter: Salinity

Units: parts per thousand (ppt)

Sensor Type: Calculated from conductivity and temperature

Range: 0 to 70 ppt

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

Resolution: 0.01 ppt

Parameter: Dissolved Oxygen % saturation

Units: percent air saturation (%)

Sensor Type: Rapid Pulse – Clark type, polarographic

Model#: 6562

Range: 0 to 500% air saturation

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

Resolution: 0.1% air saturation

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

Units: milligrams/Liter (mg/L)

Sensor Type: Rapid Pulse – Clark type, polarographic

Model#: 6562

Range: 0 to 50 mg/L

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

20 to 50 mg/L: +/- 6% of the reading

Resolution: 0.01 mg/L

Parameter: Dissolved Oxygen % saturation

Units: percent air saturation (%)

Sensor Type: Optical probe w/ mechanical cleaning

Model#: 6150 ROX

Range: 0 to 500% air saturation

Accuracy: 0-200% air saturation: +/- 1% of the reading or 1% air saturation, whichever is greater 200-500% air saturation: +/- 15% or reading

Resolution: 0.1% air saturation

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

Units: milligrams/Liter (mg/L)

Sensor Type: Optical probe w/ mechanical cleaning

Model#: 6150 ROX

Range: 0 to 50 mg/L

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

20 to 50 mg/L: +/- 15% of the reading

Resolution: 0.01 mg/L

Parameter: Non-vented Level – Shallow (Depth)

Units: feet or meters (ft or m)

Sensor Type: Stainless steel strain gauge

Range: 0 to 30 ft (9.1 m)

Accuracy: +/- 0.06 ft (0.018 m)

Resolution: 0.001 ft (0.001 m)

Parameter: pH – bulb probe

Units: pH units

Sensor Type: Glass combination electrode

Model#: 6561 or 6561FG

Range: 0 to 14 units

Accuracy: +/- 0.2 units

Resolution: 0.01 units

Parameter: Turbidity

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

YSI EXO Sonde:

Parameter: Temperature
Units: Celsius (C)
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: Temperature
Units: Celsius (C)
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: +/- 1% of the reading or 1% air saturation, whichever is greater 200-500% air saturation: +/- 5% or 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: +/- 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: pH
Units: pH units
Sensor Type: Glass combination electrode
Model#: 599701(guarded) or 599702(wiped)
Range: 0 to 14 units
Accuracy: +/- 0.01 units within +/- 10° of calibration temperature, +/- 0.02 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
Resolution: 0.1 ug/L chl a, 0.1% FS

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

Depth Qualifier: The NERR System-Wide Monitoring Program utilizes YSI data sondes that can be equipped with either vented or non-vented depth/level sensors. Readings for both vented and non-vented sensors are automatically compensated for water density change due to variations in temperature and salinity; but for all non-vented depth measurements, changes in atmospheric pressure between calibrations appear as changes in water

depth. The error is equal to approximately 1.02 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: $((1013-BP)*0.0102) + \text{Depth/Level} = \text{cDepth/cLevel}$.

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 –

[Instructions/Remove: This section details the secondary QAQC Code definitions used in combination with the flags above. Include the following excerpt.]

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)	Depth (m)	pH (7)	pH (10)	Turb (FNU)	Turb (FNU)
12/09/2020	50.18	99.9	99.9	0.261	7.24	10.27	1.30	125.32
01/12/2021	51.47	100.5	100.6	0.070	7.08	10.10	-0.04	124.36
02/10/2021	49.49	101.0	100.9	0.067	7.17	10.19	0.06	122.20
03/04/2021	ND	ND	ND	0.073	7.00	10.05	0.45	125.55
03/25/2021	49.82	100.6	100.6	0.051	7.15	10.08	-0.05	124.79
04/07/2021	49.74	101.1	101.1	0.093	7.09	10.12	0.00	121.22
04/20/2021	48.55	100.0	100.5	0.091	7.09	10.05	0.30	123.36
05/06/2021	48.39	101.1	101.1	0.228	7.08	10.05	0.42	123.19
05/20/2021	50.33	101.4	101.4	0.033	7.08	10.12	-0.05	124.19
06/07/2021	50.31	99.6	99.6	0.105	7.11	10.11	0.03	122.35
06/23/2021	49.44	101.0	101.0	0.090	7.13	10.13	0.63	122.50
07/07/2021	49.92	98.6	98.4	0.075	6.99	10.06	0.16	124.55
07/21/2021	50.33	99.0	98.5	0.073	7.10	10.12	0.04	125.58
08/03/2021	50.49	101.7	101.9	0.093	7.07	10.06	0.08	124.36
08/17/2021	49.76	100.1	99.7	0.059	7.03	10.06	-0.20	125.41
09/01/2021	49.43	99.7	100.0	0.038	7.06	10.11	-0.02	123.49
09/14/2021	49.30	100.4	100.1	0.055	7.05	10.04	0.05	123.01

09/28/2021	48.87	99.6	99.6	0.020	7.08	10.09	0.88	122.07
10/13/2021	49.83	100.1	100.0	0.132	7.03	10.07	0.26	127.95
11/01/2021	49.95	99.7	100.0	0.093	7.06	10.10	0.07	123.08
12/01/2021	49.32	101.6	101.6	-0.019	7.19	10.14	0.10	123.66

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)
12/10/2020	50.17	100.2	100.2	0.070	7.13	10.15	0.66	125.65
01/12/2021	50.85	100.9	101.2	0.082	7.03	10.02	0.11	123.86
02/09/2021	49.24	99.2	99.2	0.678	7.15	10.21	0.47	122.25
03/24/2021	49.56	100.7	100.7	0.075	7.14	10.11	-0.39	129.36
04/06/2021	50.03	99.5	99.6	0.089	7.07	10.09	0.68	122.34
04/19/2021	49.56	99.7	99.7	0.119	7.14	10.07	-0.11	125.41
05/05/2021	48.29	100.5	100.4	0.250	7.10	10.02	1.55	123.38
05/20/2021	50.66	101.8	101.8	-0.010	7.06	10.07	-0.04	123.83
06/08/2021	50.18	99.1	99.0	0.116	7.15	10.15	0.56	122.03
06/23/2021	49.49	101.0	99.0	0.111	6.99	10.02	0.27	122.34
07/06/2021	49.85	99.5	99.2	0.078	7.10	10.10	0.45	124.18
07/20/2021	50.22	98.1	97.3	0.085	7.03	10.03	0.35	126.14
08/03/2021	50.30	99.7	99.6	0.030	7.10	10.09	-0.01	123.94
08/20/2021	49.88	99.6	99.6	0.079	7.00	10.02	0.01	123.91
09/01/2021	49.23	100.0	99.6	0.074	7.09	10.10	0.06	122.89
09/15/2021	49.40	100.9	100.8	0.050	7.08	10.07	0.09	123.20
09/28/2021	49.26	99.6	99.5	0.046	7.09	10.10	-0.06	121.43
10/14/2021	50.14	100.4	100.2	0.150	7.03	10.10	0.05	123.21
11/01/2021	49.75	99.8	99.6	0.080	7.12	10.13	0.10	123.49
12/01/2021	49.36	108.7	108.1	0.043	7.09	10.09	-0.08	131.92

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)
12/10/2020	51.40	102.9	102.9	0.043	7.20	10.16	0.20	125.00
01/12/2021	49.74	101.1	101.3	0.059	7.08	10.10	0.19	124.09
02/09/2021	49.44	99.9	99.8	0.065	7.13	10.09	0.07	121.78
03/04/2021	49.47	101.4	101.4	0.066	7.05	10.12	0.13	124.93
03/24/2021	49.40	100.8	100.8	0.048	7.08	10.07	-0.11	123.70
04/06/2021	50.10	100.2	100.4	0.077	7.05	10.08	-0.06	120.89
04/19/2021	49.19	98.9	98.1	0.104	7.08	10.04	0.19	121.61
05/05/2021	48.82	102.7	102.7	0.270	7.06	10.05	1.58	122.70
05/20/2021	50.52	101.7	101.8	0.014	7.11	10.12	0.28	123.49
06/07/2021	50.52	99.6	99.6	0.098	7.01	10.04	0.08	122.51
06/23/2021	49.49	102.1	101.4	0.110	7.01	10.08	0.73	122.80
07/06/2021	50.22	99.8	99.4	0.065	7.03	10.07	-0.05	123.93
07/20/2021	50.08	97.6	97.0	0.074	7.13	10.13	0.04	125.85
08/03/2021	50.33	100.3	99.9	0.006	7.04	10.07	-0.01	126.46
08/20/2021	49.90	97.8	97.8	0.042	7.12	10.11	0.02	121.98
09/02/2021	49.61	101.2	100.8	0.077	7.07	10.08	-0.04	122.61
09/15/2021	49.12	100.0	99.9	0.049	7.13	10.09	0.16	123.12
09/28/2021	49.35	100.1	100.1	0.026	7.05	10.07	-0.06	122.36

10/14/2021	50.50	100.2	100.3	0.131	7.09	10.12	-0.25	123.29
11/01/2021	49.89	100.7	100.4	0.071	7.04	10.05	0.13	123.81
12/01/2021	49.97	100.8	101.0	0.002	7.08	10.04	-0.02	123.32

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)
12/11/2020	50.29	100.8	100.8	0.018	7.10	9.79	6.0	401.9
01/12/2021	48.98	100.1	100.4	0.023	7.04	10.09	0.2	126.6
02/10/2021	49.86	99.7	99.7	0.047	7.25	10.34	0.6	122.5
03/04/2021	49.11	100.1	99.8	0.038	7.13	10.23	0.5	124.8
03/24/2021	49.38	98.1	98.1	0.025	7.11	10.09	0.2	124.9
04/06/2021	48.86	100.4	100.2	0.111	6.95	10.01	1.3	138.9
04/19/2021	49.05	100.3	99.4	0.058	7.03	10.04	-1.5	130.9
05/05/2021	48.79	ND	ND	0.183	7.08	10.07	2.9	124.5
05/20/2021	50.66	101.5	101.4	-0.050	7.13	10.17	0.5	126.6
06/07/2021	50.71	99.8	99.6	0.036	6.86	9.85	2.3	124.9
06/23/2021	50.18	97.8	97.7	0.077	7.13	10.07	-0.4	125.5
07/06/2021	49.50	100.0	99.3	0.080	6.89	9.96	0.3	129.8
07/20/2021	49.52	99.3	99.3	0.082	7.11	10.15	0.4	127.3
08/04/2021	50.31	99.5	99.0	0.021	6.81	9.80	0.1	127.3
08/20/2021	49.23	99.7	99.8	0.054	7.18	10.23	-0.1	129.6
09/02/2021	48.78	100.3	99.6	0.070	6.99	10.05	0.4	127.2
09/15/2021	48.54	100.4	100.0	0.045	7.06	10.07	0.5	123.9
09/28/2021	48.90	100.0	99.8	0.016	6.95	10.03	0.2	126.9
10/14/2021	49.53	100.4	100.3	0.121	7.03	10.16	0.2	127.2
11/01/2021	49.86	100.7	99.7	ND	6.91	9.96	0.2	124.3
12/01/2021	48.56	101.7	101.8	-0.033	7.33	10.50	-0.3	124.0

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)
12/09/2020	50.48	99.8	99.8	0.055	7.07	10.10	-1.01	125.71
01/12/2021	51.13	101.6	101.9	0.062	7.07	10.08	0.32	124.48
02/09/2021	49.40	100.3	100.4	0.058	7.14	10.12	0.86	118.34
03/24/2021	49.76	101.3	101.3	0.040	7.04	10.0	-0.35	124.0
04/06/2021	50.10	100.9	100.9	0.092	7.12	10.11	-0.08	120.84
04/23/2020	49.21	99.4	99.3	-0.044	7.16	9.96	0.27	125.04
05/05/2021	49.74	81.8	82.2	0.270	7.03	9.97	1.18	116.84
05/20/2021	48.83	101.9	102.0	-0.055	7.09	10.09	1.07	117.77
05/26/2021	51.62	99.9	99.9	0.108	7.14	10.11	-0.11	124.43
06/07/2021	49.46	99.1	99.1	0.069	7.13	10.13	0.07	122.28
06/23/2021	49.98	100.1	100.7	0.147	7.04	10.03	0.04	123.71
07/06/2021	49.98	99.5	99.2	0.079	7.02	10.06	0.19	123.03
07/20/2021	50.00	98.4	97.8	0.083	7.08	10.10	0.47	125.26
08/03/2021	50.19	100.0	99.6	0.029	7.05	10.08	0.01	124.20
08/20/2021	49.37	98.6	99.2	0.053	7.09	10.12	0.05	126.40
09/01/2021	49.23	99.9	99.5	0.079	7.07	10.06	0.09	123.98
09/15/2021	49.21	99.9	99.8	0.054	7.06	10.08	0.09	122.18
09/28/2021	49.30	99.4	99.4	0.038	7.09	10.09	0.16	122.28

10/14/2021	50.38	100.2	100.0	0.128	7.07	10.14	0.27	123.16
11/01/2021	50.09	100.4	100.0	0.063	7.00	10.04	0.18	123.31
12/01/2021	49.60	101.9	101.4	ND	7.11	10.01	-0.10	122.76

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)
12/08/2020	50.49	99.8	99.8	0.055	7.07	10.10	-0.11	125.71
01/12/2021	49.60	100.6	100.9	0.079	7.06	10.07	0.47	125.84
02/09/2021	49.45	100.3	100.2	0.040	7.19	10.17	0.13	121.29
03/04/2021	49.31	99.9	99.8	0.071	7.13	10.19	-0.25	127.50
03/25/2021	49.46	100.8	100.7	0.038	7.09	10.06	0.01	122.88
04/07/2020	49.30	103.4	103.3	0.090	7.05	10.06	0.40	122.71
04/20/2021	48.40	100.3	100.4	0.102	7.10	10.07	-0.05	123.14
05/06/2021	40.47	101.1	101.0	0.306	8.00	8.00	10.98	110.00
05/20/2021	50.30	101.6	101.7	0.016	7.14	10.05	-0.05	123.04
06/08/2021	22.29	100.3	100.3	0.108	7.13	10.09	0.35	122.13
06/23/2021	50.02	102.0	100.9	0.118	6.98	10.03	0.83	123.09
07/07/2021	49.77	99.3	98.9	0.067	7.01	10.10	0.29	125.40
07/20/2021	50.19	98.7	98.1	0.072	7.05	10.07	0.10	124.60
08/03/2021	50.10	100.4	100.0	0.033	7.07	10.13	0.09	124.88
08/20/2021	49.19	99.3	99.2	0.056	7.04	10.08	0.22	125.41
09/01/2021	48.73	100.2	99.9	0.071	7.10	10.12	0.15	123.61
09/15/2021	49.16	99.9	100.2	0.054	7.08	10.09	0.19	122.65
09/28/2021	48.25	99.4	99.4	0.035	7.08	10.11	0.14	122.66
10/13/2021	50.28	100.7	100.6	0.133	7.05	10.13	0.06	123.70
11/01/2021	49.99	100.4	100.4	0.081	7.01	10.06	-0.07	123.72
12/01/2021	49.47	103.0	100.7	0.020	7.10	10.08	0.22	123.05

Fort Johnson

Deployment Date (m/d/y)	Post-Deployment Checks								Chl (mg/L) /std
	SpCond (ms/cm)	DO 1 (100% sat)	DO 2 (100% sat)	Depth (m)	pH (7)	pH (10)	Turb (FNU)	Turb (FNU)	
12/17/2020	50.33	97.0	97.0	0.027	7.04	10.13	0.47	125.97	67.7/68.2
01/21/2021	49.96	102.6	102.7	0.050	7.17	10.11	-0.04	121.85	82.0/66.9
02/18/2021	49.53	101.4	101.5	0.073	7.12	10.12	0.46	124.45	70.1/67.8
03/25/2020	49.93	101.1	109.1	0.044	7.25	10.25	-0.30	123.63	70.1/65.9
04/29/2021	38.93	87.4	87.9	0.082	7.22	9.96	1.80	117.40	66.5/71.7
06/01/2021	49.83	100.4	100.5	0.043	7.00	10.01	0.10	123.69	ND
06/02/2021	49.66	100.8	101.0	0.095	7.29	9.95	0.12	123.53	70.0/66.9
07/15/2021	49.69	104.6	104.7	0.034	7.13	10.11	0.01	127.58	67.3/65.4
07/30/2021	50.64	100.1	100.2	0.106	7.00	10.03	0.19	123.41	68.8/67.0
08/11/2021	50.04	101.3	101.5	0.094	7.07	10.08	0.11	123.48	67.2/66.8
08/27/2021	50.25	102.7	102.8	0.068	7.09	10.12	0.10	123.49	71.9/69.7
09/10/2021	50.18	101.1	101.7	0.057	7.16	10.16	0.03	123.10	67.7/70.6
09/30/2021	49.06	99.2	99.4	0.055	7.16	10.10	0.02	124.54	65.2/67.9
10/22/2021	50.06	98.2	97.2	0.067	7.19	10.14	0.61	122.76	64.6/68.3
11/29/2021	49.46	101.1	ND	0.101	7.07	10.06	0.07	124.19	26.0/69.1

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).

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**.

Fishing Creek:

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

2010 – Fishing Creek sign post 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 new tube with antifouling paint near bottom 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**.

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**.

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**.

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 6600 sondes 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**.

Jehossee Island – St. Helena Sound estuary:

2013 – Jehossee Island water quality station was installed on **August 19** – PVC tube attached to USFWS dock.
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 on **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**.

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

Wiper Brush Malfunctioning Coding

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

Missing Data 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 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

The significant weather event listed in the table below is in a report by South Carolina Climate Center. The outer bands of Tropical Storm (TS) Elsa reached the state in late on July 7, 2021, the storm's center entered the state during the early morning of July 8th and exited by 11:00 AM that day. At least three inches of rain fell along the coast as TS Elsa passed over the state. The peak wind gust (mph) of 49 mph was recorded by the Fripp Nearshore Buoy at 4:08 am (EDT). A storm surge peaked at near two feet along the coast; the storm surge was produced by the water being pushed toward the coast by the force of the winds caused by TS Elsa.

The storm surge associated with TS Elsa reached the coast during an ebbing tide and prevented the water from fully exiting the estuary. This phenomenon was observed at all the sites

Significant Weather Event	Date/Time Started	Date/Time Ended	Max Wind Speed
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Tropical Storm Elsa	late evening on July 7	July 8 around 11 pm EDT	
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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).

Flood river stage level

01/09/2021 – 04:15 to 01/15/2021 16:00	02/07/2021 – 06:00 to 02/10/2021 – 06:15
02/15/2021 – 08:15 to 03/10/2021 – 19:45	

Drought river stage level

04/19/2021 – 11:30	04/19/2021 – 12:15 to 05/03/2021 – 21:00
05/15/2021 – 15:30 to 06/15/2021 – 09:30	06/24/2021 – 08:15 to 07/08/2021 – 18:15
09/08/2021 – 00:30 to 19:15	09/09/2021 – 01:15 to 09:15
09/13/2021 – 15:00 to 09/20/2021 – 22:45	10/05/2021 – 01:45 to 10/10/2021 – 17:15

Effect of Significant Rain Events on Water Quality

Water quality at the SWMP sites is also influenced by rain events during low tides. Rain creates a fresher layer of water at the water surface and depending on the depth of this layer at low tide, the salinity at the station may be depressed by more than 2 psu during a 15-minute interval.

A dip of salinity and an increase in depth was observed at most sites during ebb tide to low tide on July 8th when at least three inches of rain fell along the coast as a result of Tropical Storm Elsa.

Edisto Island

All Parameters Blanket Statement for Edisto Island

The data were collected at the wrong depth during the July 7th deployment (07/07/2021 – 10:15 to 07/21/2021 – 08:30). During tube cleaning on July 7th the tube brush fell off and became stuck in the tube. The sonde was then deployed on top of the brush. The tube brush was recovered on July 21st before the start of the next 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). 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 date time recorded in the raw data file was ahead by 12 hours during the December 1st deployment (12/01/2021 – 09:00 to 01/13/2022 – 11:15). The EXO2 date time was set to PM instead of AM which resulted in the first reading at 12/01/2021 21:00 instead of 09:00. The date time was changed to the correct date and time in the datafile. The F_Record column of these rows are flagged as {CSM}.

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

The data collected from 09:00 to 11:30 on 05/06/2021 were missing due to maintenance. The deployment tube was replaced. The values are flagged as <-2> [GMC] (CSM).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

The data collected from 03/20/2021 – 20:00 to 03/25/2021 – 11:30 during the March 4th deployment (03/04/2021 – 12:00 to 03/25/2021 – 11:30) were missing due to sensor failure. This is an EXO2 sonde, so rejected the values of all parameters but turbidity during this period because temperature values are used to calculate them. The values are flagged as <-2> [STF] (CSM).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

The data collected during the following times were rejected due a sudden drop in values. The post-deployment check was within the accepted range, but the drop did not occur at or near low tide or during a rain event. The reason for the decrease is unknown but we suspect it was a temporary instrument malfunction, possibly due to blockage of cell contacts by debris. The data values were rejected because they were outside the range typically observed at this site. The values are flagged as <-3> [GSM] (CCU).

03/16/2021 – 18:45 (13.6 psu)

08/31/2021 – 17:00 (12.5 psu)

Missing Data (Flag <-2>)

The data collected from 03/20/2021 – 20:00 to 03/25/2021 – 11:30 during the March 4th deployment (03/04/2021 – 12:00 to 03/25/2021 – 11:30) were missing due to sensor failure. This is an EXO2 sonde, so rejected the values of all parameters but turbidity during this period because temperature values are used to calculate them. The values are flagged as <-2> [STF] (CSM).

Suspect Data (Flag <1>)

The data collected on 01/22/2021 – 14:00 during the January 12th deployment (01/12/2021 – 11:30 to 02/10/2021 – 13:15) were suspect. The low salinity value (18.5 psu) occurred during high tide with a 11.2 mm rainfall event. The values are flagged as <1> [GSM] (CRE).

The data collected during the following periods were suspect. The low salinity values occurred near low tide on a falling or rising tide, but no rainfall was recorded at the Bennetts Point meteorological station. The values are flagged as <1> [GSM] (CCU).

01/22/2021 – 14:00 (18.5 psu)

04/11/2021 – 12:15 (22.5 psu)

05/18/2021 – 17:00 (25.3 psu)

09/12/2021 – 20:45 (20.9 psu)

09/19/2021 – 03:45 (19.9 psu)

10/17/2021 – 15:30 (25.5 psu)

10/24/2021 – 07:00 (23.6 psu)

12/21/2021 – 00:15 (20.9 psu)

Passed Initial QAQC Checks (Flag <0>)

The data collected on 06/20/2021 – 22:45 during the June 7th deployment (06/07/2021 – 10:45 to 06/23/2021 – 09:45) were suspect. The lower salinity value (26.3 psu) occurred at low tide in association with a rain event. The values are flagged as <0> [GSM] (CRE).

DO Percent/mg/L

Rejected Data (Flag <-3>)

The DO mg/L data collected during the following times were rejected due to conductivity sensor failure. The specific conductivity values used to calculate DO mg/L were rejected due to a sudden drop in specific conductivity/salinity with no associated rain event or low tide. The values collected were within the range typically observed at this site. The post-deployment checks were within the accepted range. The values are flagged as <-3> [SCF] (CSM).

03/16/2021 – 18:45

08/31/2021 – 17:00

The data collected from 03/20/2021 – 20:00 to 03/25/2021 – 11:30 during the March 4th deployment (03/04/2021 – 12:00 to 03/25/2021 – 11:30) were rejected due to temperature sensor failure. Temperature values are used to calculate these values. The values are flagged as <-3> [STF] (CSM).

The data collected at the beginning of the June 7th deployment (06/07/2021 – 10:45 to 06/23/2021 – 09:45) were rejected due to the sonde did not appear to be at depth when the first reading was collected. The DO readings were higher than the previous and next records. The value is flagged as <-3> [GSM] (CND).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

The data collected during the following times were rejected due to conductivity sensor failure. The specific conductivity values used to calculate depth were rejected due to a sudden drop in specific conductivity/salinity with no associated rain event or low tide. The values collected were within the range typically observed at this site. The post-deployment checks were within the accepted range. The values are flagged as <-3> [SCF] (CSM).

03/16/2021 – 18:45

08/31/2021 – 17:00

The data collected from 03/20/2021 – 20:00 to 03/25/2021 – 11:30 during the March 4th deployment (03/04/2021 – 12:00 to 03/25/2021 – 11:30) were rejected due to temperature sensor failure. Temperature values are used to calculate these values. The values are flagged as <-3> [STF] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Corrected Data (Flag <5>)

The data collected during the April 20th deployment (04/20/2021 – 09:45 to 05/06/2021 – 08:45) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.061 m but based on barometric pressure, the correct depth offset was -0.026 m. In order to correct depth, 0.087 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 6th deployment (05/06/2021 – 11:45 to 05/20/2021 – 10:30) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.080 m but based on barometric pressure, the correct depth offset was 0.023 m. In order to correct depth, 0.057 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 20th deployment (05/20/2021 – 10:45 to 06/07/2021 – 10:30) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.061m but based on barometric pressure, the correct depth offset was 0.144 m. In order to correct depth, 0.083 m was added to each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 7th deployment (06/07/2021 – 10:45 to 06/23/2021 – 09:45) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.080 m but based on barometric pressure, the correct depth offset was 0.079 m. In order to correct depth, 0.001 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 23rd deployment (06/23/2021 – 10:00 to 07/07/2021 – 09:45) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.061 m but based on barometric pressure, the correct depth offset was 0.030 m. In order to correct depth, 0.031 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

pH

Rejected Data (Flag <-3>)

The data collected from 03/20/2021 – 20:00 to 03/25/2021 – 11:30 during the March 4th deployment (03/04/2021 – 12:00 to 03/25/2021 – 11:30) were rejected due to temperature sensor failure. Temperature values are used to calculate these values. The values are flagged as <-3> [STF] (CSM).

The first record collected at the beginning of the June 7th deployment (06/07/2021 – 10:45 to 06/23/2021 – 09:45) was rejected due to dip in reading. The cause in the dip by a new pH sensor is unknown but thought to be attributed to acclimation of the probe and the sonde did not appear to be at depth. The post-deployment checks and sensor diagnostics were within the acceptable ranges. The value is flagged as <-3> [GSM] (CND).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

The data collected from 03/20/2021 – 20:00 to 03/25/2021 – 11:30 during the March 4th deployment (03/04/2021 – 12:00 to 03/25/2021 – 11:30) were rejected due to temperature sensor failure. Temperature values are used to calculate these values. The values are flagged as <-3> [STF] (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 adjacent 15-minute intervals which is not typical for this site. The values are flagged as <-3> [STS] (CSM).

05/18/2021 – 17:00 (755)	05/19/2021 – 18:15 (912)	08/08/2021 – 23:15 (2637)
08/09/2021 – 11:00 (1885)	08/10/2021 – 20:00 (1344)	08/12/2021 – 01:15 (2003)
08/13/2021 – 03:45 (1689)	08/15/2021 – 07:45 (353)	08/20/2021 – 20:45 (1411)
08/21/2021 – 21:15 (1186)	08/25/2021 – 00:00 (1419)	08/25/2021 – 16:00 (1976)
08/26/2021 – 01:30 (1839)	08/26/2021 – 13:45 (3676)	08/26/2021 – 16:15 (729)
08/26/2021 – 17:15 (615)	08/27/2021 – 01:15 (1392)	08/28/2021 – 06:00 (300)
09/01/2021 – 12:00 (1640)	09/09/2021 – 01:30 (1656)	09/10/2021 – 14:00 (2400)
09/21/2021 – 05:15 (1784)	09/22/2021 – 03:15 (1523)	09/23/2021 – 13:30 (1274)
10/01/2021 – 04:30 (567)	10/03/2021 – 04:15 (794)	10/09/2021 – 08:45 (1752)
10/11/2021 – 19:45 (1287)	10/18/2021 – 15:15 (1263)	10/19/2021 – 13:00 (1134)
10/22/2021 – 16:15 (874)	10/24/2021 – 11:00 (601)	10/29/2021 – 08:15 (1055)
11/01/2021 – 01:15 (1008)	11/03/2021 – 01:15 (453)	11/30/2021 – 11:15 (919)

The datum collected at the beginning of the June 7th deployment (06/07/2021 – 10:45 to 06/23/2021 – 09:45) was rejected due to the sonde did not appear to be at depth when the first reading was collected. The turbidity reading is within the surrounding values. The value is flagged as <-3> [GSM] (CND).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Fishing Creek

All Parameters Blanket Statement for Fishing Creek

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

The data collected from 06/08/2021 – 11:00 to 11:15 on were missing due to infield maintenance. The old tube was replaced with a new tube. The values are flagged as <-2> [GMC] (CSM).

The data collected from 08/23/2021 – 02:45 to 03:15 during the August 20th deployment (08/20/2021 – 10:30 to 09/02/2021 – 09:45) were missing due to instrument malfunction. The central wiper malfunctioned resulting in non-sequential data and missing records. The inserted records were removed from the file prior to being uploaded. The malfunction was only temporary, and the sonde continued collecting data following the malfunction. The cause for the malfunction is unknown. The missing records are flagged and coded as <-2> [GIM] (CSM).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

The data collected during the times were rejected due the sudden drop in salinity. The low salinity values occurred near low tide on a falling tide and the post-deployment checks were within the accepted range; the data values were rejected because they were outside the range typically observed at this site. The values are flagged as <-3> [GSM] (CCU).

6/07/2021 – 22:30 (3.0 psu)

10/30/2021 – 09:15 (1.8 psu)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

The DO mg/L data collected during the following times were rejected due to conductivity sensor failure. The specific conductivity values used to calculate DO mg/L were rejected due to a sudden drop in specific conductivity/salinity with no associated rain event or low tide. The values collected were within the range typically observed at this site. The post-deployment checks were within the accepted range. The values are flagged as <-3> [SCF] (CSM).

6/07/2021 – 22:30

10/30/2021 – 09:15

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

The data collected during the following times were rejected due to conductivity sensor failure. The specific conductivity values used to calculate depth were rejected due to a sudden drop in specific conductivity/salinity with no associated rain event or low tide. The values collected were within the range typically observed at this site. The post-deployment checks were within the accepted range. The values are flagged as <-3> [SCF] (CSM).

6/07/2021 – 22:30

10/30/2021 – 09:15

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the February 9th deployment (02/09/2021 – 12:15 to 03/24/2021 – 09:45) were suspect due to post-calibration value was -0.678 m for depth which is outside an accepted range. 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).

Passed Initial QAQC Checks (Flag <0>)

Corrected Data (Flag <5>)

The data collected during the April 19th deployment (04/19/2021 – 10:45 to 05/05/2021 – 09:15) were corrected due to the wrong depth offset used for calibration. The depth offset used was -0.058 m but based on barometric pressure, the correct depth offset was -0.032 m. In order to correct depth, 0.026 m was added to each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 5th deployment (05/05/2021 – 09:30 to 05/20/2021 – 13:15) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.092 m but based on barometric pressure, the correct depth offset was 0.014 m. In order to correct depth, 0.078 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 20th deployment (05/20/2021 – 13:30 to 06/08/2021 – 10:45) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.044 m but based on barometric pressure, the correct depth offset was 0.148 m. In order to correct depth, 0.104 m was added to each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 8th deployment (06/08/2021 – 11:30 to 06/23/2021 – 14:15) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.092 m but based on barometric pressure, the correct depth offset was 0.08 m. In order to correct depth, 0.012 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 23rd deployment (06/23/2021 – 14:30 to 07/06/2021 – 10:45) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.044 m but based on barometric pressure, the correct depth offset was 0.026 m. In order to correct depth, 0.018 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

pH

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The first record of the following two deployments were marked suspect due to a pH spike. There is a 0.2-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 value is flagged as <-3> [GSM] (CND).

02/09/2021 – 12:15 to 03/24/2021 – 09:45

03/24/2021 – 10:00 to 04/06/2021 – 09:30

Passed Initial QAQC Checks (Flag <0>)

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 adjacent 15-minute intervals which is not typical for this site. The values are flagged as <-3> [STS] (CSM).

07/06/2021 – 08:00 (2241)

07/26/2021 – 17:00 (2594)

07/27/2021 – 17:00 (1563)

08/31/2021 – 06:00 (2356)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Grove Plantation

All Parameters Blanket Statement for Grove Plantation

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

The data collected from 5/27/2021 – 13:00 to 13:30 were missing due to in-field maintenance. The old tube was replaced with a new tube. The values are flagged as <-2> [GMC] (CSM).

Suspect Data (Flag <1>)

The first reading after the new tube was installed at 05/27/2021 – 13:45 during the May 20th deployment (05/20/2021 – 14:00 to 06/07/2021 – 13:00) were suspect due to in-field maintenance/cleaning. The same sonde was deployed before and after the old tube was replaced with a new tube. The readings were within the range observed at this site during this time of year. The values are flagged as <1> [GSM] (CMC).

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

The first DO mg/L and percent saturation record during the March 4th deployment (03/04/2021 – 14:15 to 04/06/2021 – 10:00) was rejected due to a spike in DO. The cause for the spike by a new DO sensor is unknown but thought to be attributed to acclimation of the probe. The post-deployment checks and sensor diagnostics were within the acceptable ranges. The first value is flagged as <-3> [GSM] (CND).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Corrected Data (Flag <5>)

The data collected during the April 19th deployment (04/19/2021 – 11:45 to 05/05/2021 – 09:30) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.054 m but based on barometric pressure, the correct offset was -0.032. In order to correct depth, 0.086 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 5th deployment (05/05/2021 – 10:00 to 05/20/2021 – 13:45) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.092 m but based on barometric pressure, the correct depth offset was 0.01 m. In order to correct depth, 0.082 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 20th deployment (05/20/2021 – 14:00 to 06/07/2021 – 13:00) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.054 m but based on barometric pressure, the correct depth offset was 0.148 m. In order to correct depth, 0.094 m was added to each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 7th deployment (06/07/2021 – 13:15 to 06/23/2021 – 13:00) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.092 m but based on barometric pressure, the correct depth offset was 0.079 m. In order to correct depth, 0.013 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 23rd deployment (06/23/2021 – 13:15 to 07/06/2021 – 11:15) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.054 m but based on barometric pressure, the correct depth offset was 0.022 m. In order to correct depth, 0.032 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

pH

Rejected Data (Flag <-3>)

The first two records during the following deployments were rejected due to spikes in pH. The cause for the spike by a new pH sensor is unknown but thought to be attributed to acclimation of the probe. The post-deployment checks and sensor diagnostics were within the acceptable ranges. The first two values are flagged as <-3> [GSM] (CND) and <-3> [GSM] (CCU), respectively, for the following deployments.

01/12/2021 – 13:15 to 02/09/2021 – 12:30

11/01/2021 – 12:00 to 12/01/2021 – 11:30

The first pH record during the March 4th deployment (03/04/2021 – 14:15 to 04/06/2021 – 10:00) was rejected due to a spike in pH. The cause for the spike by a new pH sensor is unknown but thought to be attributed to acclimation of the probe. The post-deployment checks and sensor diagnostics were within the acceptable ranges. The first value is flagged as <-3> [GSM] (CND).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

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

01/01/2021 – 02:45 (305)

01/03/2021 – 15:00 (1067)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Jehossee Island

All Parameters Blanket Statement for Jehossee Island

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

The data collected from 05/12/2021 – 11:00 to 05/20/2021 – 12:45 during the May 5th deployment (05/05/2021 – 09:00 to 05/20/2021 – 10:45) were missing due to low battery. The voltage dropped below 5.7. The values are flagged as <-2> [GPF] (CSM).

The data collected from 06/23/2021 – 12:30 to 13:30 were missing due to the brush falling off in the tube during swap. Staff returned to the site at low tide to retrieve the brush. The values are flagged as <-2> [GMC] (CSM).

The data collected from 08/04/2021 – 11:00 to 11:15 were missing due to in-field maintenance. The sonde was removed and the outside of the deployment tube was scraped clean of fouling. The values are flagged as <-2> [GMC] (CSM).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

The total deployment time allowed for YSI 6600 sondes for December 11th, 2020 deployment (12/11/2020 – 12:45 to 01/12/2021 – 10:00) was exceeded by two days from 01/11/2021 – 00:00 to 01/12/2021 – 10:00. The data appear to be within normal ranges and the post calibrations were acceptable. The f_record is flagged as {CSM}.

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

The data collected from 02/09/2021 – 12:00 to 12:15 during the February 9th deployment (02/09/2021 – 11:45 to 03/04/2021 – 13:00) were rejected due to sensor malfunction. The sensor recorded 0 values for these readings. The post-deployment and sensor diagnostics checks were acceptable. The reason for the temporary malfunction is unknown. The values are flagged as <-3> [SSM] (CSM).

Missing Data (Flag <-2>)

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 drops coincided with drops in pH. Therefore, they were not rejected. The values are flagged as <1> [GSM] (CCU).

05/05/2021 – 05:00

05/30/2021 – 13:00

09/18/2021 – 07:30

09/20/2021 – 22:00

09/21/2021 – 22:30

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Corrected Data (Flag <5>)

The data collected during the April 19th deployment (04/19/2021 – 11:15 to 05/05/2021 – 08:45) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.000 m but based on barometric pressure, the correct offset was -0.030. In order to correct depth, 0.030 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected from 05/05/2021 – 09:00 to 05/12/2021 – 10:45 during the May 5th deployment (05/05/2021 – 09:00 to 05/20/2021 – 12:45) were corrected due to the wrong depth offset used for calibration. The depth offset

used was 0.000 m but based on barometric pressure, the correct depth offset was -0.005 m. In order to correct depth, 0.005 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 20th deployment (05/20/2021 – 13:00 to 06/07/2021 – 11:45) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.000 m but based on barometric pressure, the correct depth offset was 0.147 m. In order to correct depth, 0.147 m was added to each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 7th deployment (06/07/2021 – 12:00 to 06/23/2021 – 12:15) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.000 m but based on barometric pressure, the correct depth offset was 0.065 m. In order to correct depth, 0.065 m was added to each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 23rd deployment (06/23/2021 – 13:45 to 07/06/2021 – 10:15) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.000 m but based on barometric pressure, the correct depth offset was 0.005 m. In order to correct depth, 0.005 m was added to each recorded value. The values are flagged as <5> [SIC] (CSM).

pH

Rejected Data (Flag <-3>)

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

02/09/2021 – 11:45 to 03/04/2021 – 13:00	03/24/2021 – 09:30 to 04/16/2021 – 09:15
07/20/2021 – 10:00 to 08/04/2021 – 10:45	08/04/2021 – 11:30 to 08/20/2021 – 10:00
08/20/2021 – 10:15 to 09/02/2021 – 09:15	09/15/2021 – 10:15 to 09/28/2021 – 10:30
10/14/2021 – 08:00 to 11/01/2021 – 10:45	

The first record collected at the beginning of the April 19th deployment (04/19/2021 – 11:15 to 05/05/2021 – 08:45) was rejected due to dip in reading. The cause in the dip by a new pH sensor is unknown but thought to be attributed to acclimation of the probe. The post-deployment checks and sensor diagnostics were within the acceptable ranges. The value is flagged as <-3> [GSM] (CND).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected from 01/01/2021 – 00:00 to 01/12/2021 – 10:00 during the December 11th, 2020 deployment (12/11/2020 – 12:45 to 01/12/2021 – 10:00) were suspect due to sensor diagnostics out of range. The post-deployment voltage for pH 10 was outside the accepted range, and the pH slope fell below the accepted value of 155. The values collected are within the range typically observed at this site. The values are flagged as <1> [SDG] (CSM).

The data collected during the February 9th deployment (02/09/2021 – 11:45 to 03/04/2021 – 13:00) were suspect due to post calibration out of range. The post-deployment check of 10.34 for pH 10 was outside the accepted range; the values of the other checks were acceptable. The values collected were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected during the times were suspect due the sudden drop in values. The drops coincided with drops in DO. Therefore, they were not rejected. The values are flagged as <1> [GSM] (CCU).

05/05/2021 – 05:00	09/20/2021 – 22:00	09/21/2021 – 22:30
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The data collected during the December 1st deployment (12/01/2021 – 10:45 to 01/12/2022 – 09:30) were suspect due to post calibration out of range. The post-deployment check of 7.33 for pH 7, 10.34 for pH 10, and 145.8 for

pH slope was outside the accepted range; the values of the other checks were acceptable. The values collected were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

The data collected from 01/01/2021 – 00:00 to 01/12/2021 – 10:00 during the December 11th, 2020 deployment (12/11/2020 – 12:45 to 01/12/2021 – 10:00) were rejected due to post calibration out of range and values not typical of site. The post-deployment check in the 0 and 126 NTU standards were outside the accepted ranges (6 and 401.9 NTU, respectively). The values collected are higher than typically observed at this site. The values are flagged as <-3> [SPC] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the April 19th deployment (04/19/2021 – 11:15 to 05/05/2021 – 08:45) were suspect due to post calibration out of range. The post-deployment check of 150.9 NTU in the 126 NTU standard is outside the accepted range of 100 - 140 NTU. The values are within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected from 05/05/2021 – 09:00 to 05/12/2021 – 10:45 during the May 5th deployment (05/05/2021 – 09:00 to 05/20/2021 – 12:45) were suspect due to post calibration out of range. The post-deployment checks in the 0 NTU standard was 2.9 which is outside the accepted range of 0 +/- 2 NTU. The wiper brush on turbidity sensor fell off during deployment. The values collected are within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected during the June 7th deployment (06/07/2021 – 12:00 to 06/23/2021 – 12:15) were suspect due to post calibration out of range. The post-deployment checks in the 0 NTU standard was 2.3 which is outside the accepted range of 0 +/- 2 NTU. The values collected are within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Mosquito Creek

All Parameters Blanket Statement for Mosquito Creek

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

The data collected from 02/09/2021 – 11:00 to 03/24/2021 – 08:30 during the February 9th deployment (02/09/2021 – 11:00 to 03/24/2021 – 08:30) were missing due to operator error. The sonde was not set to log. The values are flagged as <-2> (CSM).

The data collected from 05/26/2021 – 13:15 to 14:30 were missing due to maintenance. The deployment tube was replaced. The values are flagged as <-2> [GMC] (CSM).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the May 5th deployment (05/05/2021 – 08:15 to 05/20/2021 – 12:00) were suspect due to post calibration out of range. The post-deployment DO checks of 81.8 and 82.2 % air saturation were outside the accepted range of 90 - 110%. The wiper brush fell off during the deployment. The data were not rejected because they were within the expected ranges observed at this site. The check values after cleaning were within the acceptable range. The downward drift in the readings started at 15:00 on May 12th, but the readings were ranges expected at the site. However, the final DO mg/L reading was lower than the paired in-situ reading and 1.6 mg/L lower than the first reading of the next deployment. The values are flagged as <1> [SPC] (CSM).

The DO mg/l and percent saturation data collected from 09/15/2021 – 09:00 to 09:15 during the September 1st deployment (09/01/2021 – 09:30 to 09/15/2021 – 09:15) were rejected due to a sudden drop in the DO for the last two readings of the deployment were lower than the first reading of the next deployment and paired in-situ readings. The paired readings were similar to the next deployment values. The cause of the drop is unknown. The values are flagged as <-3> [GSM] (CCU).

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Corrected Data (Flag <5>)

The data collected during the April 23rd deployment (04/23/2021 – 07:45 to 05/05/2021 – 08:00) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.000 m but based on barometric pressure, the correct depth offset was 0.076 m. In order to correct depth, 0.076 m was added to each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 5th deployment (05/05/2021 – 08:15 to 05/20/2021 – 12:00) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.092 m but based on barometric

pressure, the correct depth offset was 0.004 m. In order to correct depth, 0.088 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 20th deployment (05/20/2021 – 12:15 to 05/26/2021 – 13:00) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.046 m but based on barometric pressure, the correct depth offset was 0.15 m. In order to correct depth, 0.104 m was added to each recorded value. The values are flagged as <5. [SIC] (CSM).

The data collected during the May 26th deployment (05/26/2021 – 14:45 to 06/07/2021 – 10:45) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.0 m but based on barometric pressure, the correct depth offset was 0.105 m. In order to correct depth, 0.105 m was added to each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 7th deployment (06/07/2021 – 11:00 to 06/23/2021 – 11:15) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.000 m but based on barometric pressure, the correct depth offset was 0.080 m. In order to correct depth, 0.080 m was added to each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 23rd deployment (06/23/2021 – 11:30 to 07/06/2021 – 09:30) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.092 m but based on barometric pressure, the correct depth offset was 0.019 m. In order to correct depth, 0.073 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

pH

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

The data collected during the following times were rejected due to a turbidity spike. Although the values are within the sensor specifications, there is 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).

04/24/2021 – 21:30 (1183)	05/16/2021 – 06:30 (2200)	05/19/2021 – 09:45 (1695)
05/23/2021 – 07:15 (3421)	05/25/2021 – 22:00 (1347)	06/01/2021 – 01:45 (1835)
11/04/2021 – 01:15 (1187)	11/19/2021 – 16:00 (424)	

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The turbidity data collected during the May 5th deployment (05/05/2021 – 08:15 to 05/20/2021 – 12:00) were suspect due to increased values. During the deployment the values were overall slightly higher than the previous data; however, the values drop several hours before a swap to a new deployment which might indicate it was not from biofouling. The wiper brush fell off during the deployment. The values were still within the range typically observed at this site. The post-deployment checks were within the accepted ranges. The values are flagged as <1> [SWM] (CSM).

Passed Initial QAQC Checks (Flag <0>)

St. Pierre

All Parameters Blanket Statement for St. Pierre

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

The data collected from 06/08/2021 – 12:45 to 14:00 were missing due to in-field maintenance. The deployment tube was replaced. The values are flagged as <-2> [GMC] (CSM).

Suspect Data (Flag <1>)

The data collected at 14:15 on 11/14/2021 and 08:00 on 11/16/2021 during the November 1st deployment (11/01/2021 – 09:30 to 12/01/2021 – 09:15) were suspect due to being recovered from telemetry. The records were missing from the files downloaded from the sonde. The cause for the missing records is unknown but thought to be attributed to a central wiper malfunction where the sleep cycle was out of sync with the other sensors resulting in multiple internal files for the deployment. The values are flagged as <1> [GIT] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

The data collected from 05/18/2021 – 12:30 to 05/20/2021 – 11:15 during the May 6th deployment (05/06/2021 – 12:30 to 05/20/2021 – 11:15) were rejected due to biofouling. The wiper brush fell off during the deployment. The post deployment check of 40.47 mS/cm was outside the acceptable range. The readings started drifting downward due to biofouling of crusting organisms that covered a portion of the electrodes. After removing the organisms, the reading was within 0.5 mS/cm of calibration standard. The values are flagged as <-3> [SPC] (CSM).

The data collected during the following times during the following times were rejected due to cause unknown. The reason for the decrease is unknown but we suspect it was due to a temporary sensor malfunction, possibly due to blockage of cell contacts by debris. The values are flagged as <-3> [GSM] (CCU).

06/01/2021 – 19:45 (14.2 psu)	06/02/2021 – 17:30 (7.6 psu)	09/02/2021 – 04:30 (10.4 psu)
12/31/2021 – 13:30 (7.7 psu)		

The data collected from 06/10/2021 – 00:00 to 06/23/2021 – 10:30 during the June 8th deployment (06/08/2021 – 14:15 to 06/23/2021 – 10:30) were rejected due to conductivity sensor failure. the post-deployment check of 22.29 mS/cm was well outside the accepted range of 47 - 53 mS/cm. During the post-deployment check the values were slow to respond in the calibration solution. When the sensor was removed it was discovered that one of the pins was loose and broke off in the lab. The values collected during this time are erratic and outside the range typically observed at this site. The values are flagged as <-3> [SPC] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the following times were suspect due to cause unknown. Values did not occur at or near low tide or during a rain event. The reason for the decrease is unknown but we suspect it was either debris blocking the cell electrode or a temporary malfunction of the sonde and/or sensor. The values were not rejected because they were within the range typically observed at this site. The values are flagged as <1> [GSM] (CCU).

04/29/2021 – 11:45 (23.5 psu)	04/29/2021 – 22:15 (22.9 psu)
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06/02/2021 – 01:45 (25.9 psu)

06/02/2021 – 08:00 (24.8 psu)

The data collected from 05/06/2021 – 12:30 to 05/18/2021 – 12:15 during the May 6th deployment (05/06/2021 – 12:30 to 05/20/2021 – 11:15) were suspect due to post calibration out of range. The wiper brush fell off during the deployment. The post-deployment check of 40.47 mS/cm was outside the acceptable range of 47 - 53 mS/cm. After removing the fouling organisms, the reading was within 0.5 mS/cm of calibration standard. The readings were not rejected because they were within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected from 06/08/2021 – 14:15 to 06/09/2021 – 23:45 during most of the June 8th deployment (06/08/2021 – 14:15 to 06/23/2021 – 10:30) were suspect due to post calibration out of range. The post deployment check of 22.29 mS/cm was well outside the acceptable range of 47 - 53 mS/cm. During the post-deployment check the values were slow to respond in the calibration solution. When the sensor was removed it was discovered that one of the pins was loose and broke off in the lab. The values collected during this time are within the range typically observed at this site. The values are flagged as <1> [SPC] (CSM).

The data collected from 10/10/2021 – 23:00 to 10/13/2021 – 07:15 during the September 28th deployment (09/28/2021 – 09:15 to 10/13/2021 – 07:15) were suspect due to potential sensor drift. During the period, the peak values drifted below the values that are typically observed at this site; however, the paired hand held reading was 21.8 psu and the sonde reading was 21.1 psu with the next reading ~28 psu. The cause for the drift was attributed to biofouling – fish eggs and algae were on sensor. The salinity pattern was similar to what is normally observed at the site. The values are flagged as <1> [SSD] (CSM).

Passed Initial QAQC Checks (Flag <0>)

The data collected during the following times were not suspect. The depressed salinity values were due to a rain even at or near low tide. The values are flagged as <0> [GSM] (CRE).

03/18/2021 – 15:00 to 16:45

04/24/2021 – 21:45 to 04/25/2021 – 00:00

The data collected on 03/19/2021 – 02:45 to 20:15 during the March 4th deployment (03/04/2021 – 11:15 to 03/25/2021 – 12:15) were not suspect. The altered salinity pattern was likely due to increased input of freshwater to the S. Edisto River; similar depressed values were observed at other sites in the river. The values are flagged as <0> [GSM] (CWE).

DO Percent/mg/L

Rejected Data (Flag <-3>)

The DO mg/L data collected from 05/18/2021 – 12:30 to 05/20/2021 – 11:15 during the May 6th deployment (05/06/2021 – 12:30 to 05/20/2021 – 11:15) were rejected due to conductivity sensor failure. The wiper brush fell off during the deployment. The specific conductivity values used to calculate DO mg/L were rejected due to sensor out of range. The post-deployment check of 40.47 mS/cm was outside the acceptable range. The readings started drifting downward due to biofouling of crusting organisms that covered a portion of the electrodes. After removing the organisms, the reading was within 0.5 mS/cm of calibration standard. The values collected are within the range typically observed at this site. The values are flagged as <-3> [SCF] (CSM).

The DO mg/L data collected during the following times during the following times were rejected due conductivity sensor failure. The specific conductivity values to calculate DO mg/L were rejected due a decrease in values that are outside the range typically observed at this site. The reason for the decrease is unknown but we suspect it was due to a temporary sensor malfunction, possibly due to blockage or cell contacts by debris. The values collected are within the range typically observed at this site. The values are flagged as <-3> [SCF] (CSM).

06/01/2021 – 19:45

06/02/2021 – 17:30

09/02/2021 – 04:30

12/31/2021 – 13:30

The DO mg/L data collected from 06/10/2021 – 00:00 to 06/23/2021 – 10:30 during the June 8th deployment (06/08/2021 – 14:15 to 06/23/2021 – 10:30) were rejected due to conductivity sensor failure. The specific conductivity values used to calculate DO mg/L were rejected due to sensor out of range. The post-deployment

check of 22.29 mS/cm was well outside the accepted range of 47 - 53 mS/cm. During the post-deployment check the values were slow to respond in the calibration solution. When the sensor was removed it was discovered that one of the pins was loose and broke off in the lab. The values collected are within the range typically observed at this site. The values are flagged as <-3> [SCF] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

The data collected during the following times were rejected due to sensor malfunction. The recorded depth values during these times were 0.00 which is not typical for this site, nor are they in line with surrounding data. The cause for the sudden 0.00 values is unknown but thought to be attributed to a sensor malfunction. The values are flagged as <-3> [SSM] (CSM).

04/12/2021 – 19:00	04/13/2021 – 04:45	04/15/2021 – 07:15	04/17/2021 – 18:15
04/18/2021 – 22:45			

The data collected from 05/18/2021 – 12:30 to 05/20/2021 – 11:15 during the May 6th deployment (05/06/2021 – 12:30 to 05/20/2021 – 11:15) were rejected due to conductivity sensor failure. The wiper brush fell off during the deployment. The specific conductivity values used to calculate depth were rejected due to sensor out of range. The post-deployment check of 40.47 mS/cm was outside the acceptable range. The readings started drifting downward due to biofouling of crusting organisms that covered a portion of the electrodes. After removing the organisms, the reading was within 0.5 mS/cm of calibration standard. The values collected are within the range typically observed at this site. The depth data was corrected as identified below. The values are flagged as <-3> [SCF] (CSM).

The data collected at the following times during the following date/times were rejected due conductivity sensor failure. The specific conductivity values to calculate depth were rejected due a decrease in values that are outside the range typically observed at this site. The reason for the decrease is unknown but we suspect it was due to a temporary sensor malfunction, possibly due to blockage or cell contacts by debris. The values collected are within the range typically observed at this site. The values are flagged as <-3> [SCF] (CSM).

06/01/2021 – 19:45	06/02/2021 – 17:30	09/02/2021 – 04:30
12/31/2021 – 13:30		

The data collected from 06/10/2021 – 00:00 to 06/23/2021 – 10:30 during the June 8th deployment (06/08/2021 – 14:15 to 06/23/2021 – 10:30) were rejected due to conductivity sensor failure. The conductivity values used to calculate depth were rejected due to sensor out of range. The post-deployment check of 22.29 mS/cm was well outside the accepted range of 47 - 53 mS/cm. During the post-deployment check the values were slow to respond in the calibration solution. When the sensor was removed it was discovered that one of the pins was loose and broke off in the lab. The values collected are within the range typically observed at this site. The depth data was corrected as identified below. The values are flagged as <-3> [SCF] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Corrected Data (Flag <5>)

The data collected during the April 20th deployment (04/20/2021 – 10:30 to 05/06/2021 – 12:15) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.064 m but based on barometric

pressure, the correct depth offset was -0.028 m. In order to correct depth, 0.092 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 6th deployment (05/06/2021 – 12:30 to 05/20/2021 – 11:15) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.084 m but based on barometric pressure, the correct depth offset was 0.019 m. In order to correct depth, 0.065 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the May 20th deployment (05/20/2021 – 11:30 to 06/08/2021 – 12:30) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.064 m but based on barometric pressure, the correct depth offset was 0.148 m. In order to correct depth, 0.084 m was added to each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected from 06/08/2021 – 14:15 to 06/09/2021 – 23:45 during the June 8th deployment (06/08/2021 – 14:15 to 06/23/2021 – 10:30) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.084 m but based on barometric pressure, the correct depth offset was 0.082 m. In order to correct depth, 0.002 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 23rd deployment (06/23/2021 – 10:45 to 07/06/2021 – 08:45) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.061 m but based on barometric pressure, the correct depth offset was 0.030 m. In order to correct depth, 0.031 m was subtracted from each recorded value. The values are flagged as <5> [SIC] (CSM).

pH

Rejected Data (Flag <-3>)

The data collected from 05/18/2021 – 12:30 to 05/20/2021 – 11:15 during the May 6th deployment (05/06/2021 – 12:30 to 05/20/2021 – 11:15) were rejected due to post calibration out of range. The wiper brush fell off during the deployment. The post deployment pH checks of 8.0 (pH7) and 8.0 (pH10) and a pH slope of -0.1 were outside the acceptable range. The readings were outside the range typically observed at this site. The values are flagged as <-3> [SPC] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected from 05/06/2021 – 12:30 to 05/18/2021 – 12:15 during the majority of the May 6th deployment (05/06/2021 – 12:30 to 05/20/2021 – 11:15) were suspect due to post calibration out of range. The wiper brush fell off during the deployment. The post deployment pH checks of 8.0 (pH7) and 8.0 (pH10) and a pH slope of -0.1 were outside the acceptable ranges of 6.7 - 7.3, 9.7 - 10.3 and -180 +/- 50 respectively. The readings were within the expected ranges observed at this site. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Turbidity

Rejected Data (Flag <-3>)

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

01/29/2021 – 15:15 (1754) 08/13/2021 – 23:30 (1176) 09/04/2021 – 16:15 (1909)
12/13/2021 – 15:15 (1157)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the May 6th deployment (05/06/2021 – 12:30 to 05/20/2021 – 11:15) were suspect due to post calibration out of range. The post deployment turbidity checks of 10.98 in the zero standard was outside the acceptable range. The readings were within the expected ranges observed at this site. The wiper brush fell off during the deployment. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Fort Johnson

All Parameters Blanket Statement for Fort Johnson

Rejected Data (Flag <-3>)

The data collected on 08/02/2021 – 09:45 during the July 7th deployment (07/30/2021 – 09:15 to 08/11/2021 – 09:00) were rejected due to sensor out of water. The depth was zero and the other readings were typical of out of water events. The sonde may have been tampered with. The values are flagged as <-3> [GOW] (CSM).

Missing Data (Flag <-2>)

All data collected from 06/01/2021 – 15:30 to 06/02/2021 – 14:30 during the June 1st deployment (06/01/2021 – 15:30 to 06/02/2021 – 15:45) were missing due to instrument malfunction. The readings were not stored by sonde into the BIN file, and the values that were transmitted to CDMO website were similar to the readings taken in an aerated water bath. The sonde logged the final five readings in the BIN file and transmitted the values to the correct columns at CDMO. The values are flagged as <-2> [GIM] (CSM).

The data collected on 11/30/2021 – 10:15 to 10:45 are missing due to infield maintenance. The outside and inside of the deployment tube was scrapped after removing it from the piling. The same tube was replaced after cleaning. The values are flagged as <-2> [GMC] (CSM).

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Temperature

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Specific Conductivity/Salinity

Rejected Data (Flag <-3>)

The data collected at the following times during the following date/times were rejected due to cause unknown. The reason for the decrease is unknown but we suspect it was due to a temporary sensor malfunction, possibly due to blockage of cell contacts by debris. The value collected is outside the range typically observed at this site. The value is flagged as <-3> [GSM] (CCU).

04/10/2021 – 15:00 (13.6 psu)

11/11/2021 – 05:15 (6.3 psu)

The data collected from 05/29/2021 – 00:00 to 06/01/2021 – 15:15 during the April 29th deployment (04/29/2021 – 14:00 to 06/01/2021 – 15:15) were rejected due to post calibration out of range. The post deployment check of 38.93 mS/cm was outside the acceptable range, and the readings started drifted downward during the rest of the deployment. The sensor electrodes were covered by crusting organisms, and the data were not within the expected ranges observed at this site. The wiper fell off during deployment. The values are flagged as <-3> [SPC] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected from 04/29/2021 – 14:00 to 05/28/2021 – 23:45 during the April 29th deployment (04/29/2021 – 14:00 to 06/01/2021 – 15:15) were suspect due to post calibration out of range. The post deployment check of 38.93 mS/cm was outside the acceptable range; the wiper brush fell off during the deployment, allowing crusting organisms to settle on the electrodes. The data were not rejected because the readings were within the range expected at the site. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

DO Percent/mg/L

Rejected Data (Flag <-3>)

The DO mg/L data collected during the following date/times was rejected due to conductivity sensor failure. The specific conductivity value used to calculate DO mg/L was rejected due to a decrease in value. The reason for the decrease is unknown but we suspect it was due to a temporary sensor malfunction, possibly due to blockage of cell contacts by debris. The value collected is within the range typically observed at this site. The value is flagged as <-3> [SCF] (CSM).

04/10/2021 – 15:00

11/11/2021 – 05:15

The DO mg/L and percent saturation data collected from 05/26/2021 – 00:00 to 06/01/2021 – 15:15 during the April 29th deployment (04/29/2021 – 14:00 to 06/01/2021 – 15:15) were rejected due to post calibration out of range. The readings started to drift downward during this period. The wiper brush fell off during the deployment, and a crusting organisms were able to cover a portion of DO optics. After several days the conductivity sensor also failed. There was no permanent damage to the sensor because the readings after cleaning was near 100% air saturation in the aerated water bath. The values are flagged as <-3> [SPC] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The DO mg/L and percent saturation data collected from 04/29/2021 – 14:00 to 05/25/2021 – 23:45 during the April 29th deployment (04/29/2021 – 14:00 to 06/01/2021 – 15:15) were suspect due to post calibration out of range. The post deployment check of 38.93 mS/cm was outside the acceptable range; the wiper brush fell off during the deployment, allowing crusting organisms to settle on the electrodes. The data were not rejected because the readings were within the range expected at the site. The values are flagged as <1> [SPC] (CSM).

Passed Initial QAQC Checks (Flag <0>)

Depth

Rejected Data (Flag <-3>)

The data collected during the following date/times was rejected due to conductivity sensor failure. The specific conductivity value used to calculate depth was rejected due to a decrease in value. The reason for the decrease is unknown but we suspect it was due to a temporary sensor malfunction, possibly due to blockage of cell contacts by debris. The value collected is within the range typically observed at this site. The value is flagged as <-3> [SCF] (CSM).

04/10/2021 – 15:00

11/11/2021 – 05:15

The data collected from 05/29/2021 – 00:00 to 06/01/2021 – 15:15 during the April 29th deployment (04/29/2021 – 14:00 to 06/01/2021 – 15:15) were rejected due to post conductivity sensor failure. The specific conductivity values used to calculate depth were rejected due to post calibration out of range. The specific conductivity post-deployment check of 38.93 mS/cm was outside the acceptable range, and the readings started drifted downward during the rest of the deployment. The sensor electrodes were covered by crusting organisms, and the data were not within the expected ranges observed at this site. The values collected during this time were within the range typically observed at this site. The depth values were corrected as described below. The values are flagged as <-3> [SCF] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Corrected Data (Flag <5>)

The data collected from 04/29/2021 – 14:00 to 05/28/2021 – 23:45 during the April 29th deployment (04/29/2021 – 14:00 to 06/01/2021 – 15:15) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.056 m but based on barometric pressure, the correct depth offset was 0.053 m. In order to correct depth, 0.003 m was subtracted from the recorded values. The values are flagged as <5> [SIC] (CSM).

The data collected from 14:45 to 15:45 during the June 1st deployment (06/01/2021 – 15:30 to 06/02/2021 – 15:45) were corrected due to wrong depth offset used for calibration. The depth offset used was 0.00 m but based on barometric pressure, the correct depth offset was 0.110 m. In order to correct depth, 0.11 m was added to the recorded values. The values are flagged as <5> [SIC] (CSM).

The data collected during the June 2nd deployment (06/02/2021 – 16:00 to 07/15/2021 – 08:45) were corrected due to the wrong depth offset used for calibration. The depth offset used was 0.056 m but based on barometric pressure, the correct depth offset was 0.068 m. In order to correct depth, 0.012 m was added to the recorded values. The values are flagged as <5> [SIC] (CSM).

pH

Rejected Data (Flag <-3>)

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected during the June 6th deployment (06/02/2021 – 16:00 to 07/15/2021 – 08:45) were suspect due to sensor diagnostics out of range. The post-deployment pH slope (147.6) fell below the accepted value of 155. The values collected are within the range typically observed at this site. The values are flagged as <1> [SDG] (CSM).

Passed Initial QAQC Checks (Flag <0>)

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).

01/08/2021 01:00 to 01:30 (929, 599, 1108)	05/16/2021 – 16:00 (2752)	05/20/2021 – 22:00 (902)
05/25/2021 – 23:30 (3273)	05/27/2021 – 02:15 (2666)	07/03/2021 – 18:00 (914)
07/07/2021 – 10:45 (446)	07/17/2021 – 20:45 (771)	10/27/2021 – 07:00 (3949)
10/28/2021 – 08:15 (3797)	11/02/2021 – 18:30 (1277)	11/03/2021 – 15:45 (2093)
11/04/2021 – 12:00 (1944)	11/28/2021 – 10:00 (679)	

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

Passed Initial QAQC Checks (Flag <0>)

Chlorophyll

Rejected Data (Flag <-3>)

The chlorophyll data collected from 05/18/2021 – 00:00 to 06/01/2021 – 15:15 during the April 29th deployment (04/29/2021 – 14:00 to 06/01/2021 – 15:15) were rejected due to the readings were higher than normal. The wiper brush fell off during the deployment, and significant fouling of a number of probes occurred. The post-deployment readings were lower than the standard (66.4 and 71.7, respectively). The values are flagged as <-3> [SSD] (CSM).

Missing Data (Flag <-2>)

Suspect Data (Flag <1>)

The data collected from 01/17/2021 – 00:00 to 01/21/2021 – 15:00 during the December 17th deployment (12/17/2020 – 14:15 to 01/21/2021 – 15:00) were suspect due to rise in chlorophyll values. Chlorophyll and turbidity levels generally have similar patterns. During this period, the turbidity dropped but the chlorophyll remained high, and the sonde swap resulted in a 16.4 to 7.5 change in values. The values are flagged as <1> [SSD] (CSM).

Passed Initial QAQC Checks (Flag <0>)