

ACE Basin (ACE) National Estuarine Research Reserve Water Quality
Metadata
January-December 2003
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I. Data Set & Research Descriptors

1. Principal investigator & contact persons:

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2. Entry verification:

The data are directly downloaded from the Model 6600EDS sonde to comma-delimited files (*.csv) and PC6000 files (*.dat). The comma-delimited files are imported into Excel 98 where they are formatted and processed by macros that are supplied by the Centralized Data Management Office (CDMO). Various macros are designed to: 1) check data files for missing data points, 2) fill all cells that do not contain data with periods (.), 3) convert the data columns to the CDMO-approved formats for time, date and numeric variables, 4) find all data that are out of acceptable range for the data logger's sensors and output the anomalous data to an output file (*.dat), and 5) save the files as Excel worksheets (*.xls). Periods were later removed for data dissemination purposes and left blank.

The anomalous data are evaluated to determine whether to flag or delete the suspect data. Data are flagged if the values are: 1) outside the range expected for the site, 2) outside the range of measurements established for the

sensors, 3) outside the range of accuracy established for the sensors, or 4) outside the range established for good water quality conditions (i.e., dissolved oxygen <28%). Data are deleted if the anomalies are attributed to: 1) a sensor malfunction, 2) exposure of sensors during low tides, or 3) fouling of sensors by aquatic organisms, debris, or sediment. Sensor malfunctions are detected if the voltage reading of the sensor is outside the range established for the sensor or the sensor will not calibrate. Fouling of sensors is detected by comparing in-situ sensor readings with measurements (see Research Methods section). In addition, sensor readings that differ significantly (>10%) from standard solution (i.e., conductivity) suggest that the sensor was fouled during deployment. After corrections are made to the Excel worksheet (*.xls), the files are exported as tab-delimited files (*.txt) to the CDMO. Sandra Upchurch and Amy Whitaker Dukes are responsible for these tasks.

3. Research Objectives:

The ACE Basin water quality-monitoring program began on March 3, 1995 at two tributaries off Big Bay and St. Pierre creeks (see Site Location and Character section for description of sites). The water quality deployment sites were constructed prior to the first deployment (see Research Methods section). Initially, the YSI electronic data loggers, at Big Bay and St. Pierre Creeks, were programmed to measure the water temperature, specific conductance, dissolved oxygen, water level, and pH at 15-minute intervals (the sampling interval was changed to 30 minutes prior to the August 11, 1995 deployment period). Starting April 11, 1996 deployment period, turbidity monitoring was added to the program. In 2002, the SWMP program expanded the spatial coverage of the monitoring program to include two additional data logger deployment sites. In October of 2002, water quality data loggers were deployed in Fishing Creek and Mosquito Creek.

Based on discussions with local Coastal Zone Management (CZM) personnel and our knowledge of land use within the Reserve, the South Edisto River drainage basin appears well suited for studying contrasting hydrographic conditions and land use patterns. One NERR water quality monitoring station has

been established near Edisto Beach within a tributary of Big Bay Creek. Surrounded by residential and commercial development and subject to nonpoint

source pollution, this station is designated as the "treatment" site. The

second NERR water quality monitoring station has been situated near Bailey

Island, within a tributary of St. Pierre Creek. Urban development in the immediate area of this station has been sparse to date so this station will

serve as the "control" site. Similar to the two initial monitoring stations,

the new sites contrast hydrographic conditions, land use patterns in the ACE.

The third NERR water quality-monitoring station is located within a tributary of

Fishing Creek on Jehossee Island, and both the South Edisto and North Edisto

Rivers influence the creek. The island is owned and operated by the U.S. Fish

and Wildlife Service and serves as a wildlife refuge for native and migrating

birds and many of South Carolina's endangered species. This station will serve

as a second "control" site. The fourth NERR water quality monitoring station is

situated in Mosquito Creek, a tributary of the Ashepoo River. Surrounded by

rural development and agriculture, Mosquito Creek is subject to increased nutrient loading and possibly herbicides and pesticides. This station will

serve as a second "treatment" site.

In July 1997, the Reserve staff initiated nutrient studies. The objective

of the study is to ascertain the annual and tidal fluctuations in nutrient

levels near our two data logger sites. Nutrient levels are measured during a

complete tidal cycle each month, and the samples are analyzed for ammonia,

nitrite-nitrate, and ortho-phosphate concentrations. In February of 2002,

nutrient collection and analysis was established and became apart of the SWMP

protocol. Nutrients and Chlorophyll-a samples are collected monthly at all four

deployment sites, and a diel (24-hour sampling) is conducted monthly at St.

Pierre Creek.

4. Research Methods

Each data logger is deployed at each permanent monitoring station, three

in the South Edisto River watershed and one in the Ashepoo watershed. Each deployment mount is cleaned and maintained on a monthly basis. The monitoring station at Big Bay Creek was constructed in 1995, and consisted of a PVC pipe mounted vertically on a pole. This monitoring station was replaced in October of 2001 because of its old age, high potential for fouling to the data, and growth of oysters on the mount. The new mount consisted of two 5-foot PVC pipes mounted vertically on two overlapping 12-foot galvanized poles. The new mount design allowed for easy access to the YSI data sondes. To facilitate water flow across the sensors, approximately one-inch diameter holes were drilled into the PVC pipes. The pipes are also positioned to ensure that the sensors are approximately 0.5 meters from the creek bottom. The Big Bay monitoring station was moved to a new location on July 1, 2003 because the embankment near the data sonde collapsed in to the creek, making the creek nearly impassable by boat, even at high tide. Large amounts of sedimentation began to build in the creek in April of 2003. This phenomena caused a steady decline in water depth, which caused the data sonde to experience more "out of the water" periods. The increased sediment loading was probably responsible for the turbidity probe failure, two broken pH probe bulbs, and two punctured DO membranes that occurred within three deployments. The mount at the new site consists of a stainless steel triangular-shaped cage, which rests on the creek bottom supporting the data sonde in PVC pipe approximately 0.5 meters from the creek bottom. To facilitate water flow across the sensors, approximately one-inch diameter holes were drilled into the PVC pipes.

In 1997, the St. Pierre Creek station was modified: the PVC pipe is mounted horizontally in a pyramid-shaped cage (2.5 ft long x 1.5 ft high) tethered to the original 12-foot galvanized pole. Later that year, we began to put the data loggers in 1/8-inch mesh net bags before placing them in the PVC pipe to reduce damage by crabs and fish. In April of 2000, the St. Pierre station was moved and modified. The station was moved to the other side of the creek, and the pyramid-shaped cage was deployed vertically at the base of the

pole. In September of 2001, the St. Pierre deployment mount was replaced with three 5-foot PVC pipes mounted vertically on two overlapping 12-foot galvanized poles. To facilitate water flow across the sensors, approximately one-inch diameter holes were drilled into the PVC pipes. The Fishing Creek monitoring station was constructed in October of 2002, and is a non-fixed deployment mount. It consists of a 5-gallon bucket cut in half and filled with concrete, which serves to anchor. The entire mount is lifted off the creek bottom in order to retrieve and deploy YSI data loggers. Changes in depth between individual deployments may be experienced because this deployment mount is non-fixed/ PVC pipe is attached horizontally, with floats fastened at either end, to the bucket with a one-foot lead line through a stainless steel eyebolt set in the concrete. When the data logger is deployed, it floats horizontally approximately 0.5 meters from the creek bottom. In October of 2002, the Mosquito Creek monitoring station was constructed using three overlapping 12-foot galvanized poles with three 5-foot PVC pipes mounted vertically. To facilitate water flow across the sensors, approximately two-inch diameter holes were drilled into the PVC pipes. The deployment mount is secured by u-brackets to a bridge for extra support. During the summer, the data loggers are left at the sites for one to two weeks, and the sampling period is extended up to one month during the cooler months.

At the end of the sampling period, the data loggers are brought back to the laboratory for cleaning, post calibration, and servicing, by methods outlined in the YSI Operating and Service Manual. After cleaning the data loggers, the dissolved oxygen (DO) membrane is replaced and is allowed to stretch for 24 hours before calibration begins. The pH, conductivity, depth, and turbidity sensors are calibrated, using the following standards: pH 7 and 10, conductivity standard of 58.64mS/cm, depth in the air, and turbidity standards of 0 and 123 NTU, respectively for the 6136 turbidity probe. The water level sensor is zeroed in air, and the chlorophyll is zeroed in distilled water. The DO sensor is calibrated in air-saturated water. In addition to the procedures outlined in the CDMO manual, we conduct a DO membrane

integrity test prior to deployment to determine if the membrane was damaged during calibration.

Several quality assurance checks are used to determine if the sensor readings drifted significantly during deployment. In-situ measurements of dissolved oxygen, expressed in mg/L, salinity, pH, and water temperature are taken during deployment and retrieval of the data sondes. Water samples are collected at the same depth as the sensors. Water temperature, salinity, and pH are measured directly with a thermistor, refractometer and pH meter, respectively, and dissolved oxygen level is determined by the Winkler titration. As of November 2001, second sets of in-situ measurements are recorded using an YSI 600 XL data sonde with an YSI 650 Multi-Parameter Display System (MDS).

Post-deployment measurements of all the parameters except turbidity are taken before cleaning the data loggers. Turbidity is post calibrated after the sonde has been cleaned to insure the accuracy of the standard. Sensors are immersed in the appropriate standard solutions (i.e., pH) and readings are recorded. A DO membrane integrity test also is conducted to determine if the membrane was damaged during deployment. The results of these checks are used to evaluate the validity of the data (see Post Deployment Information section).

5. Site Locations 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 150,000 acres of diverse estuarine wetlands providing preserved habitats for fish and wildlife. Three sampling sites are in separate tributaries of the South Edisto River and one is in a tributary of the Ashepoo River. Each site averages a year round tidal range of approximately 2.0 m (6.5 feet), with a maximum of 2.48 m (8.2 feet) and a minimum of 1.45 m (4.8 feet). The bottom habitat at each of the four sites consists of mud intermixed with dead shell hash. The descriptions of the sites are as follows:

Station A - GPS coordinates: 32.4897N and -80.3202W (January thru June 2003):

This site is in a tributary off the tidal marsh Big Bay Creek. The site was moved in late June 2003 to Big Bay Creek proper and the GPS coordinates of the new site is 32.4941N and -80.3241W (July thru December 2003)

Surrounded by residential and commercial development and subject to nonpoint source pollution, the Big Bay station is designated as a "treatment"

site. Pollution sources include houses bordering the creek, many of them with

little setbacks from the bordering *Spartina* marsh; forty docks in the area

constructed of creosote, concrete and Wolmanized pilings; boat dockage and

heavy boat traffic through the creek; a paved road and three boat ramps off the

creek; a marina with 75 slips, CCA treated bulkheads and fueling areas located

about 0.5 miles downstream; two commercial seafood docks with 8-10 commercial

shrimp boats; and three restaurants. The creek is closed to shellfish harvesting

because of the human development in the vicinity. Vegetation in the area includes salt marsh dominated by *Spartina alterniflora* with isolated areas of

Salicornia. Upland fringe areas consist of cabbage palmetto, live oak and cedars. Reefs of American oyster (*Crassostrea virginica*) fringe the creek banks.

In 2003, the yearly average creek depth at a late ebb tide was 2.0 m (6.6 feet)

and the salinity at a late ebb tide was 24.5 parts per thousand (ppt).

Station B - GPS coordinates: 32.5233N and -80.3568W

The St. Pierre station is in a tributary of St. Pierre Creek. It 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, live oaks, and palmettos dominate the upland areas.

This station is designated as a "control" site, because development in the

immediate area is sparse, and the creek is subject to relatively light boat

traffic. In 2003, the yearly average creek depth at a late ebb tide was 2.1 m

(6.9 feet) and the salinity at a late ebb tide was 22.5 parts per thousand

(ppt).

Station C - GPS coordinates: 32.6358 N and -80.3655W

The Fishing Creek station is in Fishing Creek proper. Located within the boundaries of Jehossee Island, a protected Wildlife Management Area, this site is surrounded by extensive *Spartina cynosuroides* marsh and vast mud flats. The upland areas of Jehossee Island consist of long leaf pines, live oaks, and contain managed drainage impoundments. Once considered working rice fields, these impoundments are well-managed wetlands filled with thriving brackish marshes and not subject to pesticides and herbicides. Relatively subject to light boat traffic (i.e. commercial crab harvesters) and sparse development, this station is designated as a "control" site. In 2003, the yearly average creek depth at a late ebb tide was 1.9 m (6.3 feet) and the salinity at a late ebb tide was 1.9 parts per thousand (ppt).

Station D - GPS coordinates: 32.5558 N and -80.4380W

The Mosquito Creek station is in Mosquito Creek proper. Surrounded by intermediate rural, residential and agricultural development, and subject to nonpoint source pollution, this station is designated as a "treatment" site. Several impoundment trunks open and drain into the creek increasing the nutrient load and possibly introducing herbicides and pesticides. Other pollution sources include several houses bordering the creek, ten docks constructed of creosote, concrete and Wolmanized pilings; medium boat traffic through the creek; one boat ramps off the creek; a commercial seafood and fueling area is located about 0.5 miles downstream, with three commercial shrimp boats. 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. In 2003, the yearly average creek depth at a late ebb tide was 3.5 m (11.5 feet) and the salinity at a late ebb tide was 3.5 parts per thousand (ppt).

The following discussions of trends in water quality at Big Bay and St. Pierre monitoring stations are based on data collected from March 1995 through December 1997. During this period, water temperature at both monitoring sites

exhibited a seasonal pattern with lowest values occurring in December-January.

The lowest monthly water temperature observed was 8.9 oC, which occurred in

February 1996 at St. Pierre Creek; whereas maximum temperatures occurred in

July and August with the highest monthly water temperature 38.9 oC occurring in

July 1995 at Big Bay Creek. Diurnal variation in temperature was evident with

warmest temperatures occurring from 1300 hr to 1800 hr at both sites.

Salinity

also exhibited seasonal variability during the same period, with lowest values

occurring in March at Big Bay and St. Pierre creeks. Another period of low

average monthly salinity occurred at Big Bay Creek in December 1997.

Average

annual salinity for both sites was in the polyhaline regime, with a mean of 29.4

% at Big Bay Creek and 26.3% at St. Pierre Creek; however, for all years, salinity ranged from 0.3-41.7 ‰ at Big Bay and from 0-41.7‰ at St. Pierre Creek.

Local precipitation and evaporation conditions are most likely the major contributors to monthly variability in salinity. Analysis of the data indicates

that tidal stage strongly influences salinity. As expected, highest values of

salinity occurred on the flood tide.

It appears that tidal stage also influences pH. Spectral analysis revealed

a periodicity for pH and water depth with a sinusoidal period at ~ 12 hrs.,

representing tidal periodicity. Time series plots of pH indicated variability

of ~1 standard unit (su) on a daily basis. The pH at both sites was very similar, ranging from 5.3-8.4; however, the preponderance of measurements were

>7 at both sites. The pH observed at the two monitoring sites appears to be

attributable to natural conditions. Marked variations in pH can also occur

diurnally due to changes in primary production and respiration.

Dissolved oxygen concentrations appeared to track depth for part of the

cycle, with lowest values occurring on low tides. Afternoon and evening values

were not as low as early morning values, suggesting a diurnal component.

Dissolved oxygen values at the two monitoring sites were generally high throughout the year with averages of 83.6% saturation and 6.6 mg/l for

Big Bay

Creek and 78.5% saturation and 6.3 mg/l for St. Pierre Creek, with highest

values in winter and lowest in summer. Hypoxic events (<28% air saturation) were observed in every season, but summer was clearly the season with the greatest percent of time when DO was <28%. Whereas, supersaturation (>100% air saturation) occurred primarily in the winter, with values exceeding 120% at both creeks. There are a few differences among the sites such as, hypoxic conditions occur more frequently at St. Pierre Creek.

Unlike the other parameters monitored at Big Bay and St. Pierre creeks, there appears to be no distinct seasonal trend in turbidity; however, monthly variability appeared greater at the St. Pierre site. This may be due to fluctuations in the amount of detritus being washed from the extensive salt marsh and upland sites that surround St. Pierre Creek.

It appears that metal leachates from the pilings, even the new ones, in reasonably tidal flushed areas, along Big Bay Creek have negligible ecological effects, according to the 1994 study by Weis and Weis. Their findings indicated that concentrations of the metals (Cr, Cu, and As) in sediments adjacent to pilings along Big Bay Creek were generally not significantly elevated, and there were no consistent differences in the benthic communities between the Big Bay and St. Pierre monitoring sites.

However, the highest values of PAHs encountered (299.0 ng/g) during a study by Drs. Geoff Scott and Tom Mathews from 1993-1995 were in the South Edisto watershed at Big Bay Creek; this station also had detectable levels of PCBs, concentrations as well. Whereas, the concentrations in St. Pierre Creek were below the level of detection for persistent pesticides and for PCBs. At most 34 sites, contaminant levels were below the level of detection for persistent pesticides and for PCBs, suggesting that the ACE is a relatively pristine system.

Fishing Creek and Mosquito Creek data collection began in October of 2002, and with the limited data collected, accurate discussions of trends in water quality at these monitoring stations are not feasible.

6. Data collection period:

BEGAN

ENDED

Big Bay Site

12/12/02 - 11:00:00	01/14/03 - 08:30:00
01/14/03 - 09:00:00	02/13/03 - 09:30:00
02/13/03 - 10:00:00	03/13/03 - 07:30:00
03/13/03 - 08:00:00	04/14/03 - 09:30:00
04/14/03 - 10:00:00	05/13/03 - 09:00:00
05/13/03 - 09:30:00	06/05/03 - 10:00:00
06/05/03 - 10:30:00	06/26/03 - 07:00:00
06/26/03 - 07:30:00	07/23/03 - 07:30:00
07/23/03 - 08:00:00	08/04/03 - 11:30:00
08/04/03 - 12:00:00	08/21/03 - 07:00:00

09:30:00. No data was recorded from 08/21/03 at 07:30:00 to 09/08/03 at

09/08/03 - 10:00:00	09/23/03 - 09:30:00
09/23/03 - 10:00:00	10/06/03 - 11:30:00
10/06/03 - 12:00:00	10/21/03 - 08:30:00
10/21/03 - 09:00:00	11/20/03 - 08:30:00
11/20/03 - 09:00:00	12/19/03 - 08:30:00
No data was recorded 12/19/03 at 09:00:00.	
12/19/03 - 09:30:00	01/19/04 - 10:30:00

St. Pierre Site

12/12/02 - 10:00:00	01/14/03 - 09:00:00
01/14/03 - 09:30:00	02/13/03 - 08:30:00
02/13/03 - 09:00:00	03/13/03 - 08:00:00
03/13/03 - 08:30:00	04/14/03 - 10:30:00
04/14/03 - 11:00:00	05/13/03 - 09:30:00
05/13/03 - 10:00:00	06/05/03 - 09:00:00
06/05/03 - 09:30:00	06/23/03 - 08:30:00
06/23/03 - 09:00:00	07/23/03 - 08:00:00
07/23/03 - 08:30:00	08/04/03 - 10:30:00
08/04/03 - 11:00:00	09/08/03 - 08:30:00
09/08/03 - 09:00:00	09/23/03 - 10:00:00
09/23/03 - 10:30:00	10/06/03 - 09:30:00
10/06/03 - 10:00:00	10/21/03 - 09:00:00
10/21/03 - 09:30:00	11/20/03 - 09:00:00
11/20/03 - 09:30:00	12/19/03 - 09:30:00
12/19/03 - 10:00:00	01/19/04 - 11:00:00

Fishing Creek

12/16/02 - 12:00:00	01/14/03 - 10:30:00
01/14/03 - 11:00:00	02/13/03 - 10:30:00
02/13/03 - 11:00:00	03/13/03 - 09:00:00
03/13/03 - 09:30:00	04/14/03 - 12:00:00
04/14/03 - 12:30:00	05/13/03 - 12:00:00
No data was recorded on 05/13/03 at 12:30:00.	
05/13/03 - 13:00:00	06/11/03 - 10:30:00
06/11/03 - 11:00:00	06/23/03 - 09:30:00
06/23/03 - 10:00:00	07/23/03 - 09:30:00
07/23/03 - 10:00:00	08/04/03 - 08:00:00
08/04/03 - 08:30:00	08/21/03 - 09:00:00
No data were recorded on 08/21/03 at 09:30:00.	
08/21/03 - 10:00:00	09/08/03 - 11:00:00
09/08/03 - 11:30:00	09/23/03 - 11:30:00
09/23/03 - 12:00:00	10/06/03 - 08:30:00

10/06/03 - 09:00:00	10/21/03 - 10:30:00
10/21/03 - 11:00:00	11/20/03 - 10:30:00
11/20/03 - 11:00:00	12/19/03 - 11:00:00
12/19/03 - 11:30:00	01/19/04 - 12:00:00

Mosquito Creek

12/16/02 - 12:30:00	01/14/03 - 11:30:00
01/14/03 - 12:00:00	02/13/03 - 12:00:00
02/13/03 - 12:30:00	03/13/03 - 10:30:00
03/13/03 - 11:00:00	04/14/03 - 11:30:00
04/14/03 - 12:00:00	05/13/03 - 10:00:00
05/13/03 - 10:30:00	06/12/03 - 10:00:00
06/12/03 - 10:30:00	06/23/03 - 10:00:00
06/23/03 - 10:30:00	07/23/03 - 08:30:00
07/23/03 - 09:00:00	08/05/03 - 10:00:00
No data were recorded on 08/05/03 at 10:30:00.	
08/05/03 - 11:00:00	08/21/03 - 09:30:00
08/21/03 - 10:00:00	09/09/03 - 11:00:00
09/09/03 - 11:30:00	09/23/03 - 14:00:00
09/23/03 - 14:30:00	10/06/03 - 13:30:00
10/06/03 - 14:00:00	10/21/03 - 10:00:00
10/21/03 - 10:30:00	11/21/03 - 10:30:00
11/21/03 - 11:00:00	12/19/03 - 11:00:00
12/19/03 - 11:30:00	01/19/04 - 12:30:00

7. Distribution

According to the Ocean and Coastal Resource Management Data Dissemination Policy for the NERRS System-wide Monitoring Program, is as follows.

"NOAA/ERD retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The PI retains the right to be fully credited for having collected and processed the data. Following academic courtesy standards, the PI and NERR site where the data were collected will be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. Manuscripts resulting from the NOAA/OCRM supported research that are produced for publication in open literature, including refereed scientific journals. Will acknowledge that the research was conducted under an award from the Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration. The data set enclosed within this package/transmission is only as good as the quality assurance and quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to

the Recipient or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data."

NERR water quality data and metadata can be obtained from the Research

Coordinator at the individual NERR site (please see Section 1 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 <http://cdmo.baruch.sc.edu>. Data are available in text tab-delimited format, Microsoft Excel spreadsheet format and comma-delimited format.

8. Associated researchers and projects:

Dr. Charles Wenner of SCDNR/Marine Resources Research Institute received

funding through the National Marine Fisheries Service in January of 2001 to

continue an ongoing survey of red drum (*Sciaenops ocellatus*) in the South Edisto

and Combahee River basins, by electrofishing in tidal freshwater and low salinity brackish water. Although red drum are the target species, all species identified to species, measured and weighed.

The ACE Basin NERR received funding from the U.S. Environmental Protection

Agency to establish a National Atmospheric Deposition Program site in the Reserve. Sampling efforts began on January 1, 2002 and will continue for five

years. Weekly precipitation samples are collected and analyzed for atmospheric

pollutants. The precipitation collector is located on Bear Island, a Wildlife

Management Area inside the NERR.

In August of 2003, the Reserve participated in a beta test of the new YSI

flat glass pH probe, Model #6561FG. The ACE Basin was one of five estuarine

sites, selected by Mike Lizotte at ENDECO/YSI, to collect pH data using this new

probe. The new probes design has two significant advantages to the current pH

probe, Model #6561. First, when used in conjunction with the YSI 6600EDS data

sonde, the probes glass face is cleaned much more efficiently, and second,

the glass on the face of the probe is thicker, which eliminates most mechanisms

for breakage. YSI will offer this new pH probe in June of 2004.

The ACE Basin participated in the NOAA funded, NERR Invasive Decapod Pilot

project. Sampling efforts began in August of 2002 and continued through June of 2003. Utilizing the established NERR systems, four northwestern NERR sites and five southeastern NERR sites were selected to participate in the pilot project. The project was designed to understand which crabs have invaded which sites. Identical crab collectors were deployed at the participating Reserves, and all crabs found in collectors were identified, measured, and counted. The sex and general condition of crabs (reproductive status, molt stage, obvious parasites, etc.) were noted as well.

Dr. Clark Alexander of Skidaway Institute and ACE Basin Reserve staff conducted a spatial distribution of salinity in each of the rivers of the ACE Basin in September of 2002 and April 2003.

Information about other studies conducted in the ACE Basin may be obtained from the Research Coordinator.

II. Physical Structure Descriptors

9. Variable sequence, range of measurements, units, resolution, and accuracy:

YSI 6000/6600 datalogger

Variable	Range of Measurements	Resolution	
Accuracy			
Date	1-12, 1-31, 00-99 (Mo,Day,Yr)	1 mo, 1 day, 1 yr	NA
Time	0-24, 0-60, 0-60 (Hr,Min,Sec)	1 hr, 1 min, 1 s	NA
Temp	-5 to 45 (c)	0.01 C	+/-
0.15C			
Sp COND	0-100 (mS/cm)	0.01mS/cm	+/-0.5%
Of			
reading + 0.001mS/Cm			
Salinity	0-70 Parts per thousand (ppt)	0.01 ppt	+/- 1%
of			
Reading or 0.1 ppt, (whichever is greater)			
DO	0-200 (% air saturation)	0.1% @air sat	+/-2%
@air			
Saturation			
DO	200-500 (% air saturation	0.1% @ air sat	+/- 6%
@			
Saturation			
DO	0-20 (mg/l)	0.01 mg/l	+/-
0.2mg/l			
DO	20-50 (mg/l)	0.01 mg/l	+/-
0.6mg/l			
Depth (shallow)	0-9.1 (m)	0.001m	+/-
0.018m			

PH	2-14 units	0.01 units	+/-
0.2units			
Turb	0-1000 NTU	0.1 NTU	+/- 5%
of			
Reading or 2 NTU (whichever is greater)			
CHLOROPHYLL	0-400 ug/L	N/A	N/A

As of March 16, 1999, our data loggers now have the capability to record turbidity readings greater than 1000 NTU.
Data columns are separated by tabs. Each file contains a two line column header at the top of the page which identifies measurements and units for each column.

Probe Identification:	Standards for Calibration:
Turbidity 6136 Probe	Advanced Polymer System Inc.
	123 NTU
pH 116031 Probe	Micro Essential Laboratory Inc.
Hydrion Buffer 7.00 and 10.00	
pH 6561FG Probe	Micro Essential Laboratory Inc.
	Hydrion Buffer 7.00 and
10.00	
Specific Conductivity 6030 Probe	J.T. Baker, Potassium Chloride
Crystal	
	58.64 mS/cm
Chlorophyll 99L Probe	Rhodamine B
	0.05 grams in 500 milliliters of
DI	
water	

10. Coded variable indicator and variable code definitions:

SP = St. Pierre
BB = Big Bay
FC = Fishing Creek
MC = Mosquito Creek

11. Data anomalies:

January 1-31, 2003 Sampling Period

Big Bay

a) During the following periods, data were deleted because the datalogger went dry.

01/01/03	00:00:00-01:00:00	
01/02/03	00:00:00-02:00:00;	14:30:00
01/03/03	01:30:00-02:00:00;	14:30:00-15:30:00
01/04/03	02:00:00-04:00:00	
01/17/03	00:30:00-01:30:00;	12:30:00-13:30:00
01/18/03	00:30:00-02:00:00	
01/19/03	01:00:00-03:00:00;	14:00:00-15:30:00
01/20/03	01:30:00-04:00:00;	14:30:00-16:30:00
01/21/03	02:30:00-05:00:00;	15:00:00-17:00:00
01/22/03	03:30:00-05:00:00	
01/24/03	06:00:00-07:30:00;	18:30:00-19:00:00

01/26/03 21:00:00
01/27/03 09:30:00
01/28/03 22:30:00-23:30:00
01/29/03 23:00:00-23:30:00
01/30/03 00:00:00-00:30:00
01/31/03 00:00:00-01:30:00

b) During the following periods, salinity, specific conductivity, dissolved oxygen concentration (DO), and depth readings were deleted. Specific conductivity readings were deleted because the conductivity probe was partially exposed, and the depth readings were deleted because the depth sensor went dry. Salinity and DO readings were deleted because these values are calculated based on specific conductivity reading.

01/02/03 14:00:00
01/06/03 17:00:00
01/24/03 18:00:00
01/26/03 20:30:00; 21:30:00
01/29/03 11:30:00-12:00:00
01/31/03 13:30:00

c) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

01/01/03 01:30:00; 13:00:00-14:30:00; 23:30:00
01/02/03 02:30:00; 13:00:00-13:30:00; 15:00:00
01/03/03 00:30:00-01:00:00; 02:30:00; 14:00:00; 16:00:00
01/04/03 01:30:00; 15:00:00
01/05/03 16:00:00-16:30:00
01/06/03 03:30:00-04:30:00; 16:00:00-16:30:00; 17:30:00
01/08/03 05:00:00-06:30:00; 17:00:00-18:30:00
01/09/03 05:30:00-07:00:00; 18:00:00-19:30:00
01/10/03 20:00:00-20:30:00

d) During the following periods, the turbidity spiked ranging from 1005 NTU to 1928 NTU.

01/03/03 20:00:00
01/04/03 07:30:00; 13:30:00
01/05/03 01:00:00; 16:00:00; 21:00:00; 23:00:00
01/06/03 14:30:00; 18:00:00
01/07/03 16:30:00; 18:30:00; 23:00:00
01/08/03 01:00:00; 02:00:00
01/09/03 04:30:00; 10:30:00; 15:30:00; 21:30:00; 23:30:00
01/10/03 01:00:00; 07:00:00; 09:00:00; 11:00:00; 13:00:00;
15:00:00;
17:00:00
01/11/03 03:30:00; 05:30:00; 10:30:00; 12:00:00; 15:00:00;
17:00:00;
19:00:00; 22:00:00

01/12/03 00:00:00; 03:00:00; 04:00:00; 09:30:00; 12:00:00;
17:30:00;
19:30:00; 21:30:00
01/13/03 00:00:00; 02:30:00; 04:00:00; 05:30:00; 10:00:00-
10:30:00;
12:30:00; 14:30:00; 16:00:00; 18:00:00; 22:30:00; 23:30:00
01/14/03 00:30:00; 01:30:00; 02:30:00; 05:30:00; 08:30:00

St. Pierre

a) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings

indicate the data logger was submerged during these periods.

01/01/03 00:00:00-01:00:00
01/02/03 00:00:00-01:30:00; 14:00:00-14:30:00
01/03/03 01:30:00-02:00:00; 14:30:00-15:30:00
01/04/03 02:00:00; 03:30:00

b) During the following periods, data were deleted because the datalogger went dry.

01/04/03 02:30:00-03:00:00
01/19/03 01:30:00-02:30:00
01/20/03 02:30:00-03:30:00; 15:30:00-16:00:00
01/21/03 03:00:00-04:00:00

c) During the following periods, salinity, specific conductivity, dissolved oxygen concentration (DO), and depth readings were deleted. Specific conductivity readings were deleted because the conductivity probe was partially exposed, and the depth readings were deleted because the depth sensor went dry. Salinity and DO readings were deleted because these values are calculated based on specific conductivity reading.

01/04/03 05:00:00-06:00:00
01/07/03 07:00:00-08:30:00
01/08/03 08:30:00-09:30:00

Fishing Creek

a) During the following periods, the turbidity spiked ranging from 1401 NTU to 2163 NTU.

01/01/03 06:00:00
01/05/03 00:30:00
01/18/03 13:30:00
01/21/03 00:30:00
01/28/03 16:30:00; 19:30:00
01/30/03 14:30:00

Mosquito Creek

c) At 01:30:00 on January 6, the turbidity spiked (1526 NTU).

February 1-28, 2003 Sampling Period

Big Bay

a) During the following periods, data were deleted because the datalogger went dry.

02/01/03 01:00:00-01:30:00
02/02/03 01:30:00-02:30:00; 14:30:00-15:00:00
02/03/03 02:30:00-03:30:00; 15:00:00-16:00:00
02/04/03 15:30:00-17:00:00
02/05/03 03:30:00-04:30:00; 16:30:00-17:00:00
02/14/03 23:00:00-23:30:00
02/15/03 00:00:00-00:30:00; 12:30:00-13:00:00
02/16/03 00:00:00-02:00:00
02/18/03 02:00:00-03:30:00
02/19/03 03:00:00-04:00:00
02/20/03 16:30:00-17:00:00
02/23/03 07:00:00-09:00:00; 18:30:00-19:30:00

b) During the following periods, salinity, specific conductivity, dissolved oxygen concentration (DO), and depth readings were deleted. Specific conductivity readings were deleted because the conductivity probe was partially exposed, and the depth readings were deleted because the depth sensor went dry. Salinity and DO readings were deleted because these values are calculated based on specific conductivity reading.

02/01/03 02:00:00; 14:00:00-14:30:00
02/17/03 02:00:00-02:30:00
02/18/03 15:30:00
02/19/03 16:30:00
02/20/03 04:30:00

c) During the following periods, dissolved oxygen (DO) readings are suspect because readings are above 120% air saturation.

02/08/03 15:30:00
02/11/03 18:00:00
02/14/03 11:30:00-13:30:00
02/15/03 12:00:00; 13:30:00-14:30:00
02/19/03 16:00:00-17:00:00
02/23/03 16:00:00-17:30:00
02/24/03 17:00:00-18:00:00
02/28/03 13:00:00-13:30:00

d) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

02/15/03 13:30:00; 23:30:00
02/17/03 01:00:00-01:30:00; 14:30:00-15:00:00
02/21/03 05:30:00; 17:00:00-18:00:00
02/22/03 17:30:00-19:00:00
02/23/03 06:30:00; 09:30:00; 18:00:00
02/27/03 23:30:00

02/28/03 00:00:00

St. Pierre

a) During the following periods, data were deleted because the datalogger went dry.

02/16/03 01:00:00

b) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

02/17/03 02:00:00

02/23/03 07:00:00-09:00:00

c) During the following periods, salinity, specific conductivity, dissolved oxygen concentration (DO), and depth readings were deleted. Specific conductivity readings were deleted because the conductivity probe was partially exposed, and the depth readings were deleted because the depth sensor went dry. Salinity and DO readings were deleted because these values are calculated based on specific conductivity reading.

02/18/03 02:30:00

Fishing Creek

a) At 09:30:00 on February 17 and 12:00:00 on February 23, the turbidity spiked (1484, 1518 NTU) respectively.

Mosquito Creek

No anomalous data.

March 1-31, 2003 Sampling Period

Big Bay

a) During the following periods, dissolved oxygen (DO) readings are

suspect because readings are above 120% air saturation.

03/02/03 15:00:00-15:30:00

03/03/03 14:00:00-16:00:00

03/05/03 15:30:00-16:30:00

03/08/03 16:00:00-17:30:00

03/10/03 16:00:00-17:00:00

03/11/03 16:30:00-17:00:00

03/12/03 17:00:00-18:00:00

b) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

03/02/03 01:00:00-01:30:00; 13:30:00-14:30:00

03/03/03 01:00:00-03:00:00

03/05/03 14:30:00-16:30:00

03/06/03 03:30:00-04:00:00; 15:00:00; 17:00:00

03/16/03 12:30:00
 03/17/03 00:00:00-00:30:00; 01:30:00; 13:30:00-14:00:00
 03/18/03 01:00:00-02:30:00; 14:00:00-15:00:00
 03/19/03 02:30:00-03:00:00; 15:30:00
 03/20/03 16:00:00-16:30:00
 03/21/03 04:30:00-05:30:00; 15:30:00-16:00:00; 17:00:00-17:30:00
 03/22/03 05:00:00-06:00:00; 16:00:00-18:00:00
 03/23/03 05:30:00-06:30:00; 17:30:00-18:00:00
 03/30/03 00:00:00-00:30:00; 11:30:00-13:30:00

c) During the following periods, data were deleted because the datalogger went dry.

03/06/03 16:00:00-16:30:00

d) During the following periods, salinity, specific conductivity, dissolved oxygen concentration (DO), and depth readings were deleted. Specific conductivity readings were deleted because the conductivity probe was partially exposed, and the depth readings were deleted because the depth sensor went dry. Salinity and DO readings were deleted because these values are calculated based on specific conductivity reading.

03/06/03 15:30:00

03/17/03 01:00:00

03/21/03 16:30:00

e) During the following periods, the salinity and specific conductivity readings are not within the normal polyhaline/euhaline salinity range, 18 and 40 ppt. The data sonde frequently recorded salinities below 18 ppt as a result of the large freshwater discharge from the South Edisto River. From March to August of 2003, the river was experiencing flood conditions, which caused the river stage to rise above 10 feet. The average height of the South Edisto River in March was 13.8 feet.

03/07/03 14:00:00-17:00:00

03/08/03 03:00:00-05:30:00

03/14/03 23:00:00-23:30:00

03/22/03 20:00:00

03/23/03 09:00:00; 20:30:00-21:30:00

03/24/03 10:00:00; 16:30:00; 21:30:00-22:30:00

03/25/03 10:30:00-11:30:00; 17:00:00-17:30:00; 23:00:00-23:30:00

03/26/03 00:00:00; 06:30:00-13:00:00; 18:00:00-23:30:00

03/27/03 00:00:00-01:30:00; 08:00:00-13:00:00

03/28/03 00:30:00-01:30:00

03/29/03 02:00:00-02:30:00; 14:30:00 - 15:00:00

03/30/03 03:00:00-03:30:00; 15:30:00-16:30:00; 22:00:00-23:30:00

03/31/03 00:00:00-05:30:00; 10:00:00-17:00:00; 22:30:00

f) At 04:30:00 on March 17 and 18:00:00 on March 30, the turbidity spiked (1216, 1348 NTU) respectively.

St. Pierre

a) During the following periods, the salinity and specific conductivity readings are not within the normal polyhaline/euhaline salinity range, 18 and 40 ppt. The data sonde frequently recorded salinities below 18 ppt as a result of the large freshwater discharge from the South Edisto River. From March to August of 2003, the river was experiencing flood conditions, which caused the river stage to rise above 10 feet. The average height of the South Edisto River in March was 13.8 feet.

03/06/03	18:00:00-18:30:00
03/07/03	13:00:00; 14:00:00-17:00:00; 19:00:00-19:30:00
03/08/03	02:30:00-04:30:00; 16:30:00-17:00:00
03/13/03	21:00:00
03/14/03	22:30:00-23:30:00
03/17/03	03:00:00-03:30:00
03/18/03	04:00:00-04:30:00
03/20/03	18:00:00-18:30:00
03/21/03	06:30:00-07:30:00; 18:00:00-19:30:00
03/22/03	07:00:00-08:30:00; 14:30:00-21:00:00
03/23/03	03:30:00-10:00:00; 14:30:00-21:30:00
03/24/03	04:30:00-11:00:00; 15:00:00-22:30:00
03/25/03	05:00:00-12:00:00; 16:00:00-23:30:00
03/26/03	00:00:00; 05:30:00-13:30:00; 17:00:00-23:30:00
03/27/03	00:00:00-01:00:00; 07:00:00-14:00:00; 19:00:00-23:30:00
03/28/03	00:00:00-02:00:00; 09:00:00-14:30:00; 20:30:00-23:30:00
03/29/03	00:00:00-02:30:00; 09:30:00-15:30:00; 21:00:00-23:30:00
03/30/03	00:00:00-04:00:00; 09:30:00-17:30:00; 21:00:00-23:30:00
03/31/03	00:00:00-06:00:00; 09:30:00-17:30:00; 22:00:00-23:30:00

b) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

03/06/03	16:00:00-16:30:00
03/18/03	01:30:00-02:00:00

c) During the following period, dissolved oxygen (DO) reading is below 28% air saturation, and it occurred during a slack low tide.

03/30/03	00:30:00
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Fishing Creek

a) During the following periods, the turbidity spiked ranging from 1011 NTU to 1676 NTU.

03/08/03	01:00:00; 13:30:00
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03/12/03 21:00:00
03/16/03 19:00:00
03/20/03 20:30:00
03/26/03 08:30:00

Mosquito Creek

- a) No anomalous data.

April 1-30, 2003 Sampling Period

Big Bay

- a) During the following periods, data were deleted because the datalogger went dry.

04/02/03 02:00:00-02:30:00; 13:30:00-15:00:00

04/03/03 02:30:00-03:30:00; 14:00:00-15:30:00

- b) During the following periods, salinity, specific conductivity, dissolved oxygen concentration (DO), and depth readings were deleted.

Specific

conductivity

readings were deleted because the conductivity probe was partially exposed, and

the depth readings were deleted because the depth sensor went dry.

Salinity and

DO readings were deleted because these values are calculated based on specific

conductivity reading.

04/02/03 03:00:00

04/03/03 02:00:00

- c) During the following periods, the salinity and specific conductivity

readings are not within the normal polyhaline/euhaline salinity range, 18 and 40

ppt. The data sonde frequently recorded salinities below 18 ppt as a result of

the large freshwater discharge from the South Edisto River. From March to

August of 2003, the river was experiencing flood conditions, which caused the

river stage to rise above 10 feet. The average height of the South Edisto River

in April was 10.8 feet.

04/01/03 00:00:00-01:30:00; 04:00:00-04:30:00; 16:30:00-17:00:00

04/02/03 05:00:00-06:00:00; 10:30:00-12:00:00; 16:30:00-18:00:00;
23:30:00

04/03/03 00:00:00-01:30:00; 05:00:00-07:00:00; 11:00:00-13:30:00;
16:30:00-

18:30:00

04/04/03 00:00:00-03:30:00; 05:00:00-07:00:00; 12:00:00-15:00:00;
17:30:00-

18:30:00

04/05/03 06:30:00-07:30:00; 12:30:00-13:30:00; 17:30:00-19:30:00

04/06/03 01:30:00-03:30:00; 07:00:00

04/08/03 03:30:00-06:00:00; 17:00:00-20:30:00

04/09/03 05:00:00-08:30:00; 18:00:00-19:30:00

04/15/03 03:00:00; 15:30:00

04/16/03 16:00:00

04/17/03 17:00:00

04/19/03 18:30:00

04/20/03 19:30:00

04/22/03 21:30:00

04/23/03 22:30:00-23:00:00

04/25/03 11:00:00-11:30:00; 19:00:00-22:30:00

04/26/03 10:30:00-12:30:00; 21:00:00-23:30:00

d) During the following periods, the depth readings are negative. The depth

data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

04/03/03 16:00:00

04/04/03 02:30:00-04:00:00; 14:30:00-16:00:00

04/05/03 03:30:00; 15:30:00-16:00:00

e) During the following periods, dissolved oxygen (DO) readings are

suspect because readings are above 120% air saturation.

04/05/03 15:30:00-16:00:00

f) During the following periods, dissolved oxygen (DO) readings are

suspect because the DO membrane punctured late in the deployment. Refer to

section 14, Other Remarks, for a more detailed description for the following

suspect and deleted data.

04/14/03 10:00:00 THRU 04/30/03 23:30:00

g) At 11:00:00 on April 26, the turbidity spiked (1656 NTU).

St. Pierre

a) During the following periods, the salinity and specific conductivity readings are not within the normal polyhaline/euhaline salinity range, 18 and 40

ppt. The data sonde frequently recorded salinities below 18 ppt as a result of

the large freshwater discharge from the South Edisto River. From March to

August of 2003, the river was experiencing flood conditions, which caused the

river stage to rise above 10 feet. The average height of the South Edisto River

in April was 10.8 feet.

04/01/03 00:00:00-06:00:00; 10:00:00-18:30:00; 22:30:00-23:30:00

04/02/03 00:00:00-23:30:00

04/03/03 00:00:00-23:30:00

04/04/03 00:00:00-20:30:00

04/05/03 00:00:00-09:00:00; 12:00:00-20:30:00

04/06/03 00:30:00-09:00:00; 12:00:00-19:30:00

04/07/03 04:00:00-07:30:00; 08:30:00; 14:00:00-20:30:00

04/08/03 02:30:00-10:00:00; 14:30:00-22:00:00

04/09/03 03:30:00-11:00:00; 15:30:00-23:00:00

04/10/03 06:30:00-07:30:00; 19:00:00-20:30:00; 23:30:00

04/13/03 00:30:00-01:30:00; 13:00:00-14:30:00; 22:00:00
 04/14/03 01:00:00-03:00:00; 09:30:00-10:30:00; 13:00:00-15:30:00;
 22:30:00-
 23:30:00
 04/15/03 00:00:00-04:00:00; 10:30:00-16:00:00
 04/16/03 02:30:00-05:00:00; 11:30:00-17:00:00
 04/17/03 03:30:00-05:30:00; 13:00:00-18:00:00
 04/18/03 04:30:00-06:30:00; 13:30:00-18:30:00
 04/19/03 05:30:00-07:30:00; 14:00:00-19:30:00
 04/20/03 07:00:00-08:30:00; 15:00:00-20:00:00
 04/21/03 08:00:00-09:00:00; 19:30:00-21:00:00
 04/22/03 05:30:00-10:30:00; 16:00:00-22:30:00
 04/23/03 05:00:00-11:00:00; 17:30:00-23:00:00
 04/24/03 06:30:00-12:00:00; 18:30:00-23:30:00
 04/25/03 00:00:00; 08:00:00-13:00:00; 19:00:00-23:30:00
 04/26/03 00:00:00-01:00:00; 08:00:00-14:30:00; 20:00:00-23:30:00
 04/27/03 00:00:00-02:30:00; 08:30:00-14:30:00; 22:00:00-23:30:00
 04/28/03 00:00:00-03:00:00; 10:30:00-15:00:00
 04/29/03 02:30:00-03:00:00; 14:00:00-15:30:00
 04/30/03 04:00:00; 15:00:00-16:00:00

b) At 02:30:00 on April 13, the turbidity spiked (2171 NTU).

Fishing Creek

a) During the following periods, the turbidity spiked ranging from 1121 NTU to 1757 NTU.

04/07/03 17:30:00
 04/08/03 03:30:00; 21:00:00
 04/18/03 15:00:00
 04/19/03 04:30:00
 04/25/03 21:00:00
 04/26/03 11:30:00
 04/27/03 04:00:00; 09:30:00

b) During the following period, dissolved oxygen (DO) reading is below

28% air saturation, and it occurred during a slack low tide.

04/26/03 11:30:00

Mosquito Creek

a) During the following period, dissolved oxygen (DO) reading is below

28% air saturation, and it occurred during a slack low tide.

04/27/03 12:00:00

May 1-31, 2003 Sampling Period

Big Bay

a) During the following periods, data were deleted because the datalogger went dry.

05/12/03 09:30:00-11:00:00; 22:30:00-23:30:00
 05/13/03 10:30:00-11:30:00
 05/14/03 11:30:00-12:30:00
 05/15/03 13:30:00
 05/16/03 13:30:00-14:30:00
 05/17/03 14:30:00-15:00:00

b) During the following periods, salinity, specific conductivity, dissolved oxygen concentration (DO), and depth readings were deleted. Specific conductivity readings were deleted because the conductivity probe was partially exposed, and the depth readings were deleted because the depth sensor went dry. Salinity and DO readings were deleted because these values are calculated based on specific conductivity reading.

05/12/03 22:00:00

05/14/03 00:30:00

05/15/03 13:00:00

05/16/03 13:00:00

c) During the following periods, dissolved oxygen (DO) readings are suspect because readings are above 120% air saturation.

05/13/03 12:00:00

d) At 11:00:00 on May 18, the turbidity spiked (1825 NTU).

e) During the following periods, the salinity and specific conductivity readings are not within normal polyhaline/euhaline salinity range (18 and 40

ppt) for this site. The low readings were possibly due to low tides and rainfall events.

05/23/03 04:30:00-08:00:00

f) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

05/29/03 12:30:00

05/30/03 01:30:00

05/31/03 13:30:00-14:00:00

Refer to section 14, Other Remarks, for a more detailed description for the following suspect and deleted data.

g) During the following periods, dissolved oxygen, DO% readings and DO concentrations are suspect because the DO membrane punctured late in the deployment.

05/01/03 00:00:00 THRU 05/05/03 23:30:00

h) During the following periods, the temperature, salinity and specific conductivity readings are suspect.

05/06/03 00:00:00 THRU 05/13/03 09:00:00

i) During the following periods, dissolved oxygen, DO% readings and DO concentrations are deleted because of a puncture in the membrane.

05/06/03 00:00:00 THRU 05/13/03 09:00:00

j) During the following periods, the pH readings were suspect due to a

broken bulb on the probe.

05/06/03	00:00:00	THRU	05/09/03	14:00:00
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k) During the following periods of the deployment turbidity deleted, wiper stopped functioning.

05/06/03	00:00:00	THRU	05/13/03	09:00:00
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l) During the following periods, the pH readings were deleted due to a broken bulb on the probe.

05/09/03	14:30:00	THRU	05/13/03	09:00:00
05/14/03	08:00:00	THRU	05/31/03	23:30:00

St. Pierre

a) During the following periods, the salinity and specific conductivity readings are not within the normal polyhaline/euhaline salinity range, 18 and 40 ppt. The data sonde frequently recorded salinities below 18 ppt as a result of the large freshwater discharge from the South Edisto River. From March to August of 2003, the river was experiencing flood conditions, which caused the river stage to rise above 10 feet. The average height of the South Edisto River in May was 8.5 feet.

05/01/03	04:00:00-04:30:00;	15:00:00-16:30:00
05/02/03	16:00:00-17:00:00	
05/03/03	05:00:00-06:00:00;	16:00:00-17:30:00
05/04/03	05:00:00-06:00:00;	17:00:00-18:00:00
05/06/03	20:00:00	
05/07/03	02:00:00-09:00:00;	14:30:00-21:00:00
05/08/03	03:30:00-09:30:00;	15:30:00-22:00:00
05/09/03	04:00:00-10:30:00;	17:00:00-22:30:00
05/10/03	06:00:00-07:30:00;	09:30:00-11:00:00; 22:30:00-23:30:00
05/23/03	04:30:00-06:00:00	
05/27/03	02:30:00;	14:00:00-14:30:00
05/28/03	02:30:00-03:00:00;	14:30:00-15:00:00
05/29/03	15:00:00-15:30:00	
05/30/03	04:00:00-05:00:00;	15:00:00-16:00:00
05/31/03	16:00:00-17:30:00	

b) During the following periods, dissolved oxygen (DO) readings are below 28% air saturation, and they occurred during late ebb and early flood tides.

05/06/03	05:30:00
05/10/03	08:00:00
05/12/03	23:00:00
05/15/03	01:00:00
05/16/03	03:00:00
05/17/03	04:30:00
05/18/03	05:00:00-05:30:00
05/22/03	07:30:00
05/29/03	00:00:00-02:00:00; 12:30:00

05/30/03 01:00:00-03:00:00
05/31/03 01:30:00-03:30:00

Fishing Creek

a) During the following periods, the turbidity spiked ranging from 1050 NTU to 1850 NTU.

05/08/03 23:00:00
05/12/03 22:30:00
05/18/03 07:00:00
05/30/03 00:00:00

b) During the following period, dissolved oxygen (DO) reading is below

28% air saturation, and it occurred during a late ebb tide.
05/12/03 22:30:00

Mosquito Creek

a) During the following periods, dissolved oxygen (DO) readings are below 28% air saturation, and they occurred at low slack tide.

05/02/03 15:00:00
05/10/03 09:00:00; 21:30:00
05/29/03 13:30:00

June 1-30, 2003 Sampling Period

Big Bay

a) During the following periods, the depth readings are negative. The depth data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

06/01/03 01:30:00-03:30:00; 14:00:00
06/08/03 07:30:00-08:00:00
06/19/03 06:00:00-06:30:00
06/20/03 06:30:00

b) During the following periods, the salinity and specific conductivity readings are not within the normal polyhaline/euhaline salinity range, 18 and 40

ppt. The data sonde frequently recorded salinities below 18 ppt as a result of the large freshwater discharge from the South Edisto River. From March to August of 2003, the river was experiencing flood conditions, which caused the river stage to rise above 10 feet. The average height of the South Edisto River in June was 10.19 feet.

06/04/03 15:00:00-17:00:00
06/08/03 11:30:00; 17:00:00-21:30:00
06/09/03 06:00:00-8:00:00; 09:30:00-10:00:00
06/13/03 01:00:00-02:30:00; 13:00:00-13:30:00
06/19/03 20:30:00-21:30:00
06/20/03 09:30:00-10:00:00; 21:30:00-22:30:00

06/29/03 15:00:00-15:30:00

c) During the following periods, salinity, specific conductivity, dissolved oxygen concentration (DO), and depth readings were deleted. Specific conductivity readings were deleted because the conductivity probe was partially exposed, and the depth readings were deleted because the depth sensor went dry. Salinity and DO readings were deleted because these values are calculated based on specific conductivity reading.

06/08/03 20:30:00-21:00:00

06/10/03 09:30:00

d) During the following periods, the turbidity spiked ranging from 1079 NTU to 1523 NTU.

06/08/03 12:00:00

06/13/03 00:30:00-01:30:00

e) During the following periods, data were deleted because the datalogger went dry.

06/09/03 08:30:00-09:00:00

06/11/03 10:30:00-11:00:00

06/12/03 11:00:00-12:30:00

06/14/03 13:30:00-14:30:00

06/15/03 14:00:00-15:30:00

06/16/03 15:00:00-15:30:00

Refer to section 14, Other Remarks, for a more detailed description for the following suspect and deleted data.

f) During the following periods, the pH readings are deleted due to a broken bulb on the probe.

06/01/03 00:00:00 THRU 06/05/03 10:00:00

St. Pierre

a) During the following periods, dissolved oxygen (DO) readings are below 28% air saturation, and they occurred during late ebb and early flood tides.

06/01/03 02:30:00

06/02/03 03:00:00-05:00:00

06/03/03 04:00:00-05:30:00

06/04/03 05:00:00; 16:00:00-16:30:00

06/05/03 05:30:00-06:00:00

06/06/03 06:00:00-06:30:00; 18:30:00

06/08/03 21:00:00

06/11/03 10:30:00

06/17/03 04:30:00-05:00:00

06/18/03 05:30:00; 06:30:00

06/20/03 07:30:00-08:00:00

06/22/03 08:00:00-09:00:00; 20:30:00

06/26/03 01:00:00

06/30/03 02:30:00

b) During the following periods, the salinity and specific conductivity readings are not within the normal polyhaline/euhaline salinity range, 18 and 40

ppt. The data sonde frequently recorded salinities below 18 ppt as a result of

the large freshwater discharge from the South Edisto River. From March to

August of 2003, the river was experiencing flood conditions, which caused the

river stage to rise above 10 feet. The average height of the South Edisto River

in June was 10.19 feet.

06/01/03 00:30:00-01:00:00; 03:30:00-07:00:00; 11:00:00-18:00:00

06/02/03 05:30:00-06:30:00; 12:00:00-18:00:00

06/03/03 18:00:00-19:00:00

06/04/03 03:00:00-08:30:00; 13:30:00-19:30:00

06/05/03 02:30:00-09:00:00; 14:30:00-17:30:00; 19:00:00; 20:00:00-20:30:00

06/06/03 04:00:00-09:00:00; 20:30:00-21:30:00

06/07/03 20:00:00-21:00:00; 22:00:00-22:30:00

06/08/03 05:30:00-09:30:00; 10:30:00-11:00:00; 18:00:00-23:30:00

06/09/03 07:00:00-12:30:00; 23:00:00-23:30:00

06/10/03 00:00:00-00:30:00; 11:30:00-13:00:00

06/11/03 13:00:00-14:00:00

06/12/03 14:00:00-14:30:00

06/13/03 15:00:00-15:30:00

06/14/03 15:30:00-16:30:00

06/15/03 05:00:00; 16:30:00-17:30:00

06/16/03 06:00:00; 17:30:00-18:30:00

06/17/03 06:30:00-07:00:00; 18:30:00-19:00:00

06/18/03 07:30:00-08:00:00; 19:00:00-20:00:00

06/19/03 04:30:00-05:30:00; 07:00:00-10:00:00; 15:00:00-21:30:00

06/20/03 03:30:00-10:30:00; 15:30:00-23:00:00

06/21/03 04:00:00-11:00:00; 17:30:00-23:00:00

06/22/03 05:00:00-11:30:00; 19:30:00-20:30:00

06/23/03 12:00:00-12:30:00

06/24/03 00:30:00; 13:00:00

06/27/03 15:00:00

06/28/03 15:00:00-15:30:00; 22:30:00-23:30:00

06/29/03 00:00:00-05:30:00; 10:00:00-16:30:00; 23:00:00-23:30:00

06/30/03 00:00:00-06:00:00; 10:30:00-17:00:00

c) During the following periods, the turbidity spiked ranging from 1120

NTU to 1445 NTU.

06/20/03 09:30:00; 12:30:00; 16:30:00; 17:30:00; 18:30:00; 20:30:00;

21:30:00; 22:30:00; 23:30:00

06/21/03 00:30:00; 01:30:00; 04:00:00; 06:00:00; 07:00:00;

08:00:00;

09:00:00; 10:00:00; 11:00:00; 12:00:00-12:30:00

Fishing Creek

- a) No anomalous data.

Mosquito Creek

- a) During the following periods, dissolved oxygen (DO) readings are below 28% air saturation, and they occurred during late ebb, low slack, and early flood tides.

06/01/03	15:00:00	
06/05/03	06:30:00;	18:00:00
06/07/03	08:00:00;	20:30:00
06/08/03	09:00:00	
06/09/03	10:00:00	
06/11/03	12:00:00	
06/12/03	01:00:00;	13:00:00
06/13/03	14:00:00	
06/14/03	03:00:00	
06/15/03	04:00:00;	15:30:00
06/16/03	16:30:00	
06/17/03	05:30:00	
06/18/03	12:30:00;	18:00:00
06/19/03	19:00:00	
06/20/03	07:30:00	
06/22/03	09:00:00	
06/23/03	22:30:00	
06/24/03	10:30:00	
06/25/03	11:00:00	
06/26/03	06:00:00;	12:00:00
06/27/03	01:00:00;	07:00:00; 12:30:00
06/28/03	01:30:00;	13:30:00
06/29/03	14:30:00	
06/30/03	09:00:00	

- b) During the following period, the depth readings were erratic because the data logger was logged in the deployment mount due to operator error. The data logger was dislodged and returned to the accurate depth prior to the 11:00:00 reading.

06/12/03 10:30:00

July 1-31, 2003 Sampling Period

Big Bay

- a) During the following periods, the salinity and specific conductivity readings are not within the normal polyhaline/euhaline salinity range, 18 and 40 ppt. The data sonde frequently recorded salinities below 18 ppt as a result of the large freshwater discharge from the South Edisto River. From March to August of 2003, the river was experiencing flood conditions, which caused the

river stage to rise above 10 feet. The average height of the South Edisto River in July was 10.15 feet.

07/19/03	17:00:00-22:30:00
07/20/03	03:30:00-10:30:00; 16:00:00-23:00:00
07/21/03	03:30:00-10:30:00; 17:00:00-23:30:00
07/22/03	00:00:00-01:30:00; 03:30:00-12:00:00; 17:30:00-23:30:00
07/23/03	00:00:00-02:30:00; 05:00:00-07:30:00; 11:00:00-12:00:00; 19:00:00-19:30:00
07/24/03	06:00:00-06:30:00; 08:00:00-10:00:00; 11:30:00-12:30:00; 20:00:00-22:30:00
07/25/03	01:00:00; 08:30:00-11:00:00; 12:30:00
07/26/03	10:00:00-12:00:00; 13:30:00
07/27/03	11:30:00; 14:00:00-15:00:00
07/28/03	12:30:00; 15:00:00-15:30:00
07/29/03	04:30:00; 15:30:00-16:30:00
07/30/03	16:30:00-17:00:00
07/31/03	17:00:00-17:30:00

b) During the following periods, the turbidity spiked ranging from 1052 NTU to 1947 NTU.

07/15/03	20:00:00
07/16/03	21:30:00-22:00:00
07/17/03	04:00:00; 10:00:00-10:30:00; 20:30:00; 21:30:00; 23:00:00-23:30:00
07/18/03	01:30:00-02:00:00; 09:00:00
07/19/03	01:30:00; 04:00:00; 05:00:00; 06:30:00; 07:30:00; 15:00:00; 16:00:00; 17:30:00-18:00:00; 19:30:00; 22:00:00
07/20/03	08:00:00; 10:30:00; 15:30:00; 19:00:00; 20:00:00; 22:30:00
07/21/03	05:30:00; 14:30:00; 18:00:00-18:30:00; 20:00:00; 22:30:00-23:00:00
07/22/03	00:30:00; 02:30:00-03:00:00; 05:00:00-05:30:00; 09:30:00; 20:00:00; 22:30:00
07/23/03	01:00:00; 06:00:00
07/25/03	07:30:00
07/30/03	22:00:00

St. Pierre

a) During the following periods, the salinity and specific conductivity readings are not within the normal polyhaline/euhaline salinity range, 18 and 40 ppt. The data sonde frequently recorded salinities below 18 ppt as a result of the large freshwater discharge from the South Edisto River. From March to August of 2003, the river was experiencing flood conditions, which caused the

river stage to rise above 10 feet. The average height of the South Edisto River in July was 10.15 feet.

07/01/03	01:00:00-06:00:00; 12:00:00-17:30:00
07/02/03	12:30:00-18:30:00
07/03/03	02:30:00-08:00:00; 13:30:00-20:00:00
07/04/03	03:00:00-09:00:00; 14:30:00-20:30:00
07/05/03	04:30:00-09:30:00; 10:30:00; 16:00:00-21:30:00
07/06/03	08:00:00-10:00:00; 20:30:00-22:30:00
07/07/03	09:00:00-11:30:00; 22:00:00-23:30:00
07/08/03	00:00:00; 10:00:00-12:00:00; 22:30:00-23:30:00
07/09/03	00:00:00-00:30:00; 07:00:00; 11:00:00-13:00:00
07/10/03	00:00:00-01:30:00; 12:00:00-13:30:00
07/11/03	02:00:00-02:30:00; 13:00:00-14:30:00
07/12/03	02:00:00-03:30:00; 13:30:00-15:30:00; 23:30:00
07/13/03	00:00:00-04:30:00; 10:00:00-16:30:00
07/14/03	01:30:00; 03:30:00-05:30:00; 10:00:00-18:00:00
07/15/03	01:00:00-06:30:00; 12:00:00-18:00:00
07/16/03	03:00:00; 05:00:00-07:00:00; 14:00:00-19:00:00
07/17/03	06:00:00-08:00:00; 14:30:00-15:30:00; 18:00:00-20:00:00
07/18/03	03:00:00-09:00:00; 15:00:00-20:30:00
07/19/03	07:30:00-09:30:00; 16:00:00-22:00:00
07/20/03	03:30:00-10:00:00; 16:00:00-23:00:00
07/21/03	04:00:00-09:30:00; 10:30:00; 17:30:00-18:30:00; 23:30:00
07/22/03	10:30:00-11:30:00; 18:30:00-23:30:00
07/23/03	00:00:00; 10:30:00-13:00:00; 18:00:00-23:30:00
07/24/03	00:00:00-02:30:00; 06:00:00-13:30:00; 18:30:00-23:30:00
07/25/03	00:00:00-04:00:00; 08:30:00-13:30:00; 14:30:00; 20:00:00-22:00:00
07/26/03	00:00:00-01:30:00; 03:30:00-04:00:00; 08:30:00-14:30:00; 21:30:00-23:30:00
07/27/03	00:00:00-01:00:00; 02:30:00-03:30:00; 09:30:00-12:30:00; 13:30:00-14:00:00; 15:00:00-15:30:00; 23:00:00-23:30:00
07/28/03	00:00:00-04:30:00; 09:30:00-16:30:00; 23:00:00-23:30:00
07/29/03	00:00:00-05:30:00; 10:00:00-17:00:00
07/30/03	00:00:00-06:30:00; 10:30:00-18:00:00
07/31/03	01:00:00-07:00:00; 11:30:00-18:30:00

b) During the following periods, dissolved oxygen (DO) readings are below 28% air saturation, and they occurred during low slack and early flood tides.

07/01/03	03:00:00
07/06/03	07:00:00
07/16/03	04:30:00
07/17/03	05:00:00-06:00:00
07/18/03	05:30:00-06:00:00
07/19/03	06:00:00
07/20/03	06:30:00
07/21/03	07:30:00

c) At 16:00:00 on July 22 and 08:30:00 on July 23, the turbidity spiked (1204, 1946 NTU) respectively.

Fishing Creek

a) During the following periods, dissolved oxygen (DO) readings are below 28% air saturation, and they occurred during late ebb, low slack, and early flood tides.

07/09/03 08:00:00
07/10/03 11:00:00
07/17/03 05:30:00
07/19/03 06:00:00; 07:00:00
07/20/03 07:30:00; 18:30:00
07/21/03 05:30:00-09:00:00; 20:00:00; 21:00:00
07/22/03 07:30:00-08:30:00; 21:30:00
07/23/03 03:00:00; 08:30:00-09:00:00
07/25/03 10:30:00

b) During the following periods, the turbidity spiked ranging from 1006 NTU to 1980 NTU.

07/10/03 15:30:00
07/13/03 09:00:00
07/14/03 22:30:00; 23:30:00
07/15/03 14:30:00; 21:00:00
07/16/03 09:30:00; 14:30:00; 15:30:00; 18:00:00; 19:00:00;
23:00:00
07/17/03 00:30:00; 01:30:00; 05:30:00; 06:30:00; 08:00:00;
10:30:00;
11:30:00; 13:00:00; 15:00:00; 16:30:00; 20:00:00
07/18/03 07:00:00; 08:00:00; 09:30:00; 12:00:00, 18:00:00;
19:00:00;
20:30:00; 21:30:00
07/19/03 21:30:00; 22:30:00
07/20/03 00:00:00; 01:00:00; 07:30:00; 10:00:00; 12:00:00;
14:00:00;
17:30:00; 18:30:00
07/21/03 00:00:00; 01:00:00; 06:30:00; 07:30:00; 10:00:00;
13:00:00;
15:00:00; 22:00:00
07/22/03 08:00:00; 09:00:00; 13:30:00; 15:30:00
07/23/03 01:30:00; 03:00:00; 17:00:00
07/28/03 04:30:00

Mosquito Creek

a) During the following periods, dissolved oxygen (DO) readings are below 28% air saturation, and they occurred during late ebb, low slack and early flood tides.

07/01/03 03:30:00; 15:30:00
07/02/03 16:30:00
07/03/03 17:00:00
07/04/03 06:00:00; 18:00:00
07/05/03 19:00:00
07/06/03 07:30:00
07/07/03 08:30:00

07/08/03 09:30:00; 22:30:00
07/09/03 10:30:00; 23:30:00
07/10/03 11:00:00-11:30:00
07/11/03 00:30:00; 12:30:00
07/12/03 07:30:00; 13:30:00
07/13/03 02:30:00; 08:30:00; 14:00:00
07/14/03 03:30:00; 15:30:00
07/15/03 04:30:00; 16:00:00
07/16/03 05:00:00
07/17/03 17:30:00
07/19/03 19:00:00
07/22/03 09:00:00
07/28/03 02:00:00

b) At 20:00:00 on July 28, the turbidity spiked (1676 NTU).

August 1-31, 2003 Sampling Period

Big Bay

a) During the following periods, the salinity and specific conductivity readings are not within the normal polyhaline/euhaline salinity range, 18 and 40 ppt. The data sonde frequently recorded salinities below 18 ppt as a result of the large freshwater discharge from the South Edisto River. From March to August of 2003, the river was experiencing flood conditions, which caused the river stage to rise above 10 feet. The average height of the South Edisto River in August was 9.18 feet.

08/01/03 18:00:00-18:30:00
08/04/03 08:30:00
08/05/03 09:30:00
08/06/03 10:30:00
08/07/03 11:00:00-11:30:00
08/09/03 13:30:00
08/10/03 14:00:00-14:30:00
08/11/03 15:00:00-15:30:00
08/12/03 16:00:00
08/13/03 05:00:00; 17:00:00
08/14/03 05:30:00; 17:30:00
08/15/03 06:00:00; 18:00:00-18:30:00
08/16/03 06:30:00-07:00:00; 18:30:00-20:00:00
08/17/03 02:30:00-04:30:00; 07:00:00-07:30:00; 15:30:00-18:00:00;
19:30:00-
21:00:00
08/18/03 02:00:00-09:00:00; 15:30:00-19:00:00; 20:30:00; 21:30:00
08/19/03 03:30:00-09:30:00; 17:30:00-19:00:00
08/20/03 05:30:00-07:00:00

b) During the following periods, no data was recorded by the datalogger. The datalogger experienced a malfunction. The PC output hardware did not allow the

datalogger to retain and store the data collected throughout the deployment.

08/21/03 07:30:00 THRU 08/31/03 23:30:00

St. Pierre

a) During the following periods, data were deleted because the datalogger went dry.

08/10/03 12:00:00-12:30:00

b) During the following periods, the salinity and specific conductivity

readings are not within the normal polyhaline/euhaline salinity range, 18 and 40

ppt. The data sonde frequently recorded salinities below 18 ppt as a result of

the large freshwater discharge from the South Edisto River. From March to

August of 2003, the river was experiencing flood conditions, which caused the

river stage to rise above 10 feet. The average height of the South Edisto River

in August was 9.18 feet.

08/01/03 01:30:00-07:30:00; 12:30:00-19:30:00

08/02/03 02:30:00-08:30:00; 14:00:00-20:00:00

08/03/03 03:00:00-09:00:00; 15:00:00-21:00:00

08/04/03 03:00:00-10:00:00; 16:00:00-23:00:00

08/05/03 03:00:00-11:00:00; 17:30:00-23:30:00

08/06/03 04:30:00-12:00:00; 19:00:00-23:30:00

08/07/03 00:00:00-01:00:00; 05:30:00-13:00:00; 20:30:00-23:30:00

08/08/03 00:00:00-02:00:00; 06:30:00-14:00:00; 22:30:00-23:30:00

08/09/03 00:00:00-03:00:00; 07:30:00-15:00:00; 23:00:00-23:30:00

08/10/03 00:00:00-04:00:00; 08:30:00-11:30:00; 13:00:00-15:30:00;

23:00:00-

23:30:00

08/11/03 00:00:00-05:00:00; 09:30:00-16:30:00

08/12/03 00:00:00-06:00:00; 10:30:00-17:30:00

08/13/03 00:30:00-06:30:00; 11:00:00-18:00:00

08/14/03 01:00:00-07:00:00; 12:00:00-19:00:00

08/15/03 01:00:00-07:30:00; 13:00:00-19:30:00

08/16/03 01:30:00-08:00:00; 13:30:00-20:30:00

08/17/03 01:30:00-09:00:00; 14:00:00-22:30:00

08/18/03 01:30:00-10:00:00; 14:30:00-23:30:00

08/19/03 00:00:00; 01:00:00-01:30:00; 02:30:00-10:30:00; 15:30:00-22:30:00

08/20/03 00:30:00; 03:30:00-11:00:00; 17:00:00-19:00:00

08/21/03 06:30:00-09:30:00

c) During the following periods, dissolved oxygen (DO) readings are below 28%

air saturation, and they occurred during a slack low and an early flood tide.

08/03/03 05:30:00-06:00:00

d) During the following periods, the depth readings are negative. The depth

data were not deleted because the salinity and dissolved oxygen readings indicate the data logger was submerged during these periods.

08/05/03 06:30:00-07:30:00
08/06/03 07:30:00-08:30:00
08/07/03 08:30:00-09:30:00
08/08/03 09:30:00-10:30:00
08/09/03 10:30:00-12:00:00
08/10/03 00:30:00; 11:30:00; 13:00:00-13:30:00
08/11/03 00:30:00-01:30:00; 12:30:00-14:00:00
08/12/03 02:00:00-02:30:00

Fishing Creek

a) During the following periods, dissolved oxygen (DO) readings are below 28% air saturation, and they occurred during low slack and early flood tides.

08/20/03 07:30:00-08:30:00
08/23/03 11:30:00

b) During the following periods, the turbidity spiked ranging from 1090 NTU to 2150 NTU.

08/22/03 18:30:00
08/23/03 02:30:00
08/26/03 04:00:00

c) During the following period, no data were recorded by the data

logger due to operator error.

08/21/03 09:30:00

Mosquito Creek

a) At 22:00:00 on August 8 and 12:30:00 on August 12, the turbidity spiked (1660, 1048 NTU) respectively.

b) During the following period, no data were recorded by the data logger due to operator error.

08/05/03 10:30:00

September 1-30, 2003 Sampling Period

Big Bay

a) During the following periods, no data were recorded by the datalogger. The datalogger experienced a malfunction. The PC output hardware did not allow the datalogger to retain and store the data collected throughout the deployment.

09/01/03 00:00:00 THRU 09/08/03 09:30:00

St. Pierre

a) During the following periods, dissolved oxygen (DO) readings are below 28% air saturation, and they occurred during low slack and early flood tides.

09/08/03 13:00:00

09/09/03 01:30:00
 09/10/03 02:00:00-03:00:00; 14:30:00
 09/11/03 03:00:00-03:30:00
 09/12/03 03:30:00-04:00:00
 09/13/03 04:00:00-04:30:00
 09/14/03 04:00:00-05:00:00; 16:30:00-17:00:00
 09/15/03 04:30:00-05:00:00
 09/16/03 04:30:00-06:00:00
 09/17/03 06:00:00-06:30:00
 09/18/03 07:30:00
 09/19/03 07:30:00-08:00:00
 09/20/03 21:30:00
 09/21/03 09:30:00-10:00:00
 09/22/03 11:00:00; 23:30:00
 09/23/03 00:00:00; 12:00:00
 09/24/03 00:30:00-01:00:00
 09/25/03 01:30:00-02:00:00
 09/26/03 02:30:00
 09/30/03 06:00:00

b) At 17:00:00 on September 8, the turbidity spiked (1152 NTU).

c) During the following periods, dissolved oxygen (DO) readings are below 28% air saturation, and they occurred during late ebb, slack water, and early flood tides.

10/03/03 09:00:00
 10/04/03 10:00:00; 22:30:00
 10/05/03 11:00:00
 10/08/03 01:00:00

Fishing Creek

No anomalous data.

Mosquito Creek

a) During the following periods, the turbidity spiked ranging from 1272 NTU to 1761 NTU.

09/09/03 13:30:00; 23:30:00
 09/16/03 12:00:00

October 1-31, 2003 Sampling Period

Big Bay

a) During the following periods, the turbidity spiked ranging from 1093 NTU to 1824 NTU.

10/04/03 09:30:00; 10:30:00; 12:00:00; 16:30:00; 21:00:00;
 22:30:00
 10/05/03 00:00:00; 01:30:00; 03:00:00; 04:30:00; 08:00:00;
 09:30:00;
 11:00:00; 12:30:00; 14:00:00; 16:00:00; 17:30:00-18:00:00; 20:00:00-
 20:30:00; 21:30:00; 23:00:00
 10/06/03 00:30:00; 02:00:00; 03:30:00; 05:00:00; 06:30:00-
 07:00:00;
 08:30:00; 10:00:00; 11:30:00; 15:00:00

10/13/03 21:00:00
10/23/03 07:30:00

St. Pierre

a) During the following periods, the data were deleted because the temperature probe failed during deployment. Temperature is used to calculate and/or compensate the other parameters. A minor temperature failure (tenths of a degree) can be corrected, for example: DO% = 1.1% per degree C correction. However, the major temperature probe failure (~30 oC above normal levels) that occurred during the deployment cannot be corrected.
10/25/03 18:30:00 THRU 10/31/03 23:30:00

Fishing Creek

No anomalous data.

Mosquito Creek

No anomalous data.

November 1-30, 2003 Sampling Period

Big Bay

a) During the following periods, the turbidity spiked ranging from 1002 NTU to 1696 NTU.

11/10/03 08:30:00
11/11/03 21:00:00
11/16/03 07:30:00; 12:30:00
11/17/03 01:00:00; 10:00:00; 23:30:00
11/30/03 01:00:00

b) During the following periods, the pH readings were deleted due to a broken bulb on the probe.

11/17/03 23:00:00 THRU 11/20/03 08:30:00

St. Pierre

a) During the following periods, the data were deleted because the temperature probe failed during deployment. Temperature is used to calculate and/or compensate the other parameters. A minor temperature failure (tenths of a degree) can be corrected, for example: DO% = 1.1% per degree C correction. However, the major temperature probe failure (~30 oC above normal levels) that occurred during the deployment cannot be corrected.
11/01/03 00:00:00 THRU 11/20/03 09:00:00

Fishing Creek

a) During the following periods, turbidity data were deleted because the

values were negative. The post-calibration check of the 0 NTU standard was negative 24.1, indicating that the 0 NTU standard used to calibrate the data sonde was contaminated.

11/20/03 19:00:00
11/21/03 01:30:00-03:30:00; 07:30:00; 14:00:00-16:30:00
11/22/03 02:00:00-04:00:00; 15:00:00-17:30:00
11/23/03 02:00:00-05:00:00; 16:00:00-18:30:00; 21:30:00
11/24/03 03:00:00-06:00:00; 17:30:00; 18:30:00-19:30:00; 22:30:00
11/25/03 03:00:00-06:30:00; 18:30:00; 19:30:00-20:00:00
11/26/03 04:30:00-08:00:00; 13:00:00; 19:00:00-21:00:00
11/27/03 00:00:00-01:00:00; 04:30:00-09:00:00; 14:00:00-14:30:00;
15:30:00; 19:30:00-22:00:00
11/28/03 00:30:00-01:00:00; 02:00:00-10:00:00; 14:00:00-14:30:00;
20:30:00-23:30:00
11/29/03 00:00:00-06:00:00; 07:00:00; 08:00:00-10:30:00; 11:30:00-
12:00:00; 17:30:00; 18:30:00; 19:30:00-23:30:00
11/30/03 00:00:00; 05:00:00-12:00:00; 18:00:00-23:30:00

Mosquito Creek

a) During the following periods, the depth readings were erratic because the data logger was lodged in the deployment mount due to operator error. The data logger was dislodged and returned to the accurate depth prior to the 14:00:00 reading.

11/20/03 12:00:00 THRU 11/20/03 13:30:00

December 1-31, 2003 Sampling Period

Big Bay

a) At 11:00:00 on December 16, the turbidity spiked (1034 NTU).

St. Pierre

No anomalous data.

Fishing Creek

a) During the following periods, turbidity data were deleted because the values were negative. The post-calibration check of the 0 NTU standard was negative 24.1, indicating that the 0 NTU standard used to calibrate the data sonde was contaminated.

12/01/03 00:00:00-01:30:00; 03:30:00-14:00:00; 15:00:00-16:00:00;
17:30:00-23:30:00
12/02/03 00:00:00-09:30:00; 10:30:00-15:00:00; 16:30:00-17:00:00;
18:00:00-23:30:00
12/03/03 00:00:00-03:30:00; 07:00:00-15:00:00; 18:30:00; 20:30:00-
21:00:00; 22:00:00; 23:00:00-23:30:00
12/04/03 00:00:00-03:00:00; 07:00:00; 11:30:00-16:00:00; 19:30:00;
22:30:00-23:30:00
12/05/03 01:00:00-04:00:00; 12:30:00-13:30:00; 14:30:00-15:00:00;

16:00:00-17:00:00; 19:30:00-20:00:00; 22:00:00-23:30:00
 12/06/03 00:00:00-05:00:00; 08:00:00-08:30:00; 10:00:00-15:30:00;
 16:30:00-18:00:00; 22:00:00-23:30:00
 12/07/03 00:00:00-05:00:00; 12:30:00; 13:30:00-18:00:00; 23:00:00-
 23:30:00
 12/08/03 00:00:00-05:30:00; 10:00:00; 12:00:00; 13:30:00-15:00:00;
 16:00:00-19:00:00; 21:30:00-22:00:00; 23:30:00
 12/09/03 00:00:00-06:30:00; 10:00:00-10:30:00; 11:30:00; 13:30:00;
 14:30:00-19:30:00; 21:30:00-22:30:00; 23:30:00
 12/10/03 00:00:00-07:00:00; 12:30:00-13:00:00; 16:30:00-20:30:00;
 21:30:00-22:00:00; 23:00:00-23:30:00
 12/11/03 00:00:00; 09:30:00-10:00:00; 18:30:00-19:00:00; 20:30:00-
 23:30:00
 12/12/03 00:00:00-06:30:00; 07:30:00-08:30:00; 16:30:00; 17:30:00-
 21:30:00; 23:30:00
 12/13/03 00:00:00-00:30:00; 02:00:00-08:30:00; 18:00:00-22:00:00
 12/14/03 01:00:00-01:30:00; 03:00:00-09:30:00; 20:00:00-23:30:00
 12/15/03 00:00:00; 01:00:00-11:00:00; 14:00:00; 16:30:00-23:30:00
 12/16/03 00:00:00-08:30:00; 09:30:00; 10:30:00-12:00:00; 15:00:00;
 17:00:00-23:30:00
 12/17/03 00:00:00-00:30:00; 03:30:00-04:30:00; 05:30:00-10:30:00;
 11:30:00-15:30:00; 16:30:00-23:30:00
 12/18/03 00:00:00-02:00:00; 03:00:00-05:00:00; 06:00:00-06:30:00;
 07:30:00; 08:30:00-13:30:00; 18:30:00-23:30:00
 12/19/03 00:00:00-02:30:00; 08:30:00

b) During the following periods, the turbidity spiked ranging
 from 1139
 NTU to 1772 NTU.

12/06/03 16:00:00
 12/12/03 22:00:00
 12/21/03 15:00:00

Mosquito Creek

a) At 14:00:00 on December 11, the turbidity spiked (1552 NTU).

12. Missing Data

Missing data are denoted by a period in the data set. Periods were later
 removed

for data dissemination purposes and left blank. Data are missing due to
 equipment failure, probes not installed, maintenance/calibration of
 equipment,

elimination of obvious outliers, or elimination of data due to
 calibration (both

pre and post) problems. For more details on deleted data, see the
 Anomalous

Data Section (11.). To find out more details about missing data, contact
 the

Research Coordinator at the site submitting the data.

13. Post Deployment Information

A. Control sonde End of Deployment Readings:

Site ID

Date	DO(mg/l)	Salinity	pH
	(Std: Variable)	(Std: 18-40 ppt)	(Std: 7.00)

Big Bay			
01/14/03	8.39	25.18	7.84
02/13/03	8.90	26.73	7.77
03/13/03	5.32	20.11	7.40
04/14/03	6.23	23.56	7.60
05/13/03	n/a	23.75	n/a
06/05/03	n/a	23.30	n/a
06/26/03	4.27	22.45	7.56
07/23/03	5.94	16.92	7.52
08/04/03	5.58	26.32	7.98
08/21/03	4.46	18.75	7.45
09/08/03	PC MALFUNCTION		
09/23/03	4.21	25.77	7.49
10/06/03	4.31	28.21	7.44
10/21/03	5.40	28.21	7.57
11/20/03	6.44	25.11	6.69
12/19/03	9.03	27.99	7.90
01/19/04	8.22	27.04	7.95

St. Pierre			
01/14/03	8.70	23.92	8.01
02/13/03	8.63	24.66	7.98
03/13/03	5.83	19.47	7.48
04/14/03	5.91	17.47	7.41
05/13/03	4.00	19.96	7.38
06/05/03	4.79	15.97	7.47
06/23/03	2.91	18.29	7.21
07/23/03	3.84	20.01	7.47
8/04/03	4.82	18.54	7.62
09/08/03	4.26	26.54	7.71
09/23/03	3.04	25.98	7.17
10/06/03	4.17	29.06	7.35
10/21/03	4.34	29.57	7.49
11/20/03	1.84	12.06	7.51
12/19/03	8.64	25.65	7.97
01/19/04	7.54	27.11	7.72

Fishing Creek			
01/14/03	9.19	4.81	7.1
02/13/03	9.38	3.73	7.20
03/13/03	5.02	4.25	6.80
04/14/03	7.54	1.53	6.76
05/13/03	3.59	1.48	6.79
06/11/03	3.21	2.38	6.66
06/23/03	2.62	0.67	6.62
07/23/03	2.26	0.95	6.66
08/04/03	3.20	0.51	6.57
08/21/03	2.93	0.49	6.54
09/08/03	4.52	7.40	6.77
09/23/03	3.54	3.60	6.68
10/06/03	5.15	7.00	6.81
10/21/03	5.02	7.26	6.86
11/20/03	5.83	3.37	6.94
12/19/03	10.62	3.88	7.06

01/19/04	9.81	4.06	7.22
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Mosquito Creek

01/14/03	9.44	9.43	7.55
02/13/03	8.95	13.26	7.54
03/13/03	6.42	7.33	7.05
04/14/03	5.67	4.62	6.87
05/13/03	3.86	6.89	7.0
06/12/03	3.60	4.90	6.90
06/23/03	2.85	2.79	6.83
07/23/03	3.46	5.56	7.08
08/05/03	3.63	3.14	6.94
08/21/03	3.17	2.74	6.86
09/10/03	4.76	12.52	7.18
09/23/03	4.12	11.52	7.03
10/06/03	5.12	15.95	7.14
10/21/03	5.55	17.56	7.26
11/21/03	6.74	18.04	7.52
12/19/03	9.56	16.02	7.50
01/19/04	9.83	16.81	7.53

B. End of Deployment Post-Calibration Readings in Standard Solutions:

Site ID

Date	Sp. Conductivity (Std: 58.54 mS/cm)	DO(mg/l) (Std: Variable)	pH (Std: 7.00t)	pH (Std: 10.00)
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Big Bay

01/14/03	57.59	100.1	7.08	10.08
02/13/03	58.80	100.0	7.10	10.07
03/13/03	56.74	100.6	7.11	10.09
04/14/03	56.80	98.2	7.08	10.06
05/13/03	58.70	PUNCTURED	BULB BROKEN	
06/05/03	58.10	PUNCTURED	BULB BROKEN	
06/26/03	57.66	99.3	7.02	10.02
07/23/03	57.05	101.8	7.04	9.84
08/04/03	58.33	98.2	7.19	9.83
08/21/03	57.84	107.5	7.02	9.96

Data Sonde MALFUNCTION

09/23/03	55.99	102.2	7.01	10.00
10/06/03	57.94	99.1	7.01	10.01
10/21/03	59.52	101.0	7.00	9.94
11/20/03	57.71	97.8	BULB BROKEN	
12/19/03	58.64	101.0	7.08	10.00
01/19/04	57.43	96.6	7.09	10.11

St. Pierre

01/14/03	58.37	73.10	7.14	10.15
02/13/03	58.45	99.50	7.03	10.02
03/13/03	57.63	99.20	7.15	10.13
04/14/03	57.37	87.30	7.09	10.07
05/13/03	58.09	99.80	7.15	10.14
06/05/03	59.19	100.40	7.00	10.00
06/23/03	58.02	97.90	7.04	10.04
07/23/03	57.22	102.00	7.02	10.03
08/04/03	58.47	100.80	7.07	10.02

09/08/03	58.16	92.00	7.06	10.06
09/23/03	55.96	101.80	7.00	10.12
10/06/03	58.34	97.00	7.03	10.03
10/21/03	60.16	99.10	7.02	9.99
11/20/03	25.88	47.90	7.08	9.45
12/19/03	57.10	108.10	7.08	10.08
01/19/04	58.28	92.70	6.97	10.01

Fishing Creek

01/14/03	58.56	100.00	7.09	10.12
02/13/03	59.40	104.50	7.09	10.10
03/13/03	57.01	99.80	7.11	10.09
04/14/03	56.98	103.00	7.08	10.08
05/13/03	58.78	97.60	7.09	10.04
06/11/03	58.84	102.20	7.05	10.04
06/23/03	58.28	97.20	7.03	10.03
07/23/03	58.40	103.20	7.05	10.03
08/04/03	58.62	101.60	7.02	10.00
08/21/03	58.23	104.80	7.01	10.02
09/08/03	58.56	96.50	7.07	10.07
09/23/03	55.91	101.60	7.12	10.10
10/06/03	58.28	101.30	7.09	10.08
10/21/03	60.40	99.50	7.09	10.08
11/20/03	58.16	104.00	7.11	10.07
12/19/03	56.77	108.50	6.96	9.99
01/19/03	57.15	96.30	7.07	10.07

Mosquito Creek

01/14/03	58.41	101.80	7.07	10.06
02/13/03	59.29	98.90	7.11	10.09
03/13/03	56.35	94.40	7.12	10.06
04/14/03	56.98	100.00	7.05	10.04
05/13/03	58.55	88.10	7.09	10.08
06/12/03	59.19	100.00	7.05	10.02
06/23/03	58.05	100.10	7.03	10.02
07/23/03	57.81	103.40	7.07	9.92
08/05/03	58.75	92.90	7.10	10.11
08/21/03	58.33	100.60	7.01	10.01
09/09/03	58.34	101.20	7.10	10.08
09/23/03	56.18	95.00	7.05	10.08
10/06/03	58.00	100.10	7.09	10.08
10/21/03	59.51	99.50	7.10	10.11
11/21/03	58.31	80.80	7.06	9.99
12/19/03	57.25	104.50	7.02	9.89
01/19/04	56.91	95.00	6.82	9.91

14. Other Remarks

On 06/30/2021 this dataset was updated to include embedded QAQC flags for anomalous/suspect data. System-wide monitoring data beginning in 2007 were

processed to allow for QAQC flags and codes to be embedded in the data files

rather than detailed in the metadata alone (as in the anomalous/suspect,

deleted, and missing data sections above). Prior to 2006, rejected data were deleted from the dataset so they are unavailable to be used at all, but suspect data were only noted in the metadata document. Suspect data flags <1> were embedded retroactively in order to allow suspect data to be easily identified and filtered from the dataset if desired for analysis and reporting purposes. No other flags or codes were embedded in the dataset and users should still refer to the detailed explanations above for more information.

Salinity Blanket Statement:

South Carolina experienced drought conditions from June 1998 thru April 2003.

Beginning in the winter of 2002, the state was frequently inundated with rainfall. This rainfall helped to alleviate the lingering effects of the drought; however, the rainfall extending thru the summer of 2003 had a pronounced and prolonged effect on the discharge of coastal watersheds. The

South Edisto River was above flood stage (Crest at 10 feet +) from March to

August of 2003. The SWMP YSI stations recorded decreased salinities as a result

of the freshwater discharge from the river.

Big Bay Creek:

The data sonde was located in a small tributary off Big Bay Creek. Large amounts of sedimentation began to build in the creek in April of 2003.

There

was a steady decline in water depth, which caused the data sonde to experience

some out of the water periods. The building sediments later shifted and eroded,

resulting in two broken pH probe bulbs, two punctured DO membranes, and one

turbidity probe failure within three deployments. Part of the embankment near

the data sonde collapsed in to the creek, making the creek nearly impassable by

boat even at high tide and placing the data sonde at a higher risk of being

damaged. The data sonde was retrieved and redeployed at a new location on July

1, 2003 to allow for safe and more efficient data collection.

Dissolved Oxygen (DO) Blanket Statements:

a) DO less than 28% air saturation (hypoxia) is frequently observed in the

ACE Basin NERR during the warmer months, especially from May to September;

hypoxia also was observed from March and April in St. Pierre Creek, Fishing

Creek, and Mosquito Creek. Hypoxia events are common in the salt march

environment and typically occur during late ebb, low slack, and early flood tides. Natural factors contribute to these low DO measurements including insufficient water circulation, elevated water temperature, and the lack of stratification in shallow estuarine habitats.

b) DO measurements between 100% and 120% air saturation are not listed in the metadata. These DO readings consistently occur in the ACE Basin NERR and are not considered to be suspect. DO measurements recorded above 100% will often subsequently result in high DO mg/l reading like those recorded in St. Pierre and Fishing Creeks in December 2003.

c) DO greater than 120% air saturation (supersaturation) is frequently observed in the ACE Basin NERR during the colder months, especially in February and March in Big Bay Creek. Supersaturation events are not uncommon in shallow estuarine waters and usually occur during afternoon daylight hours as water temperature rises, thus elevating primary productivity. The supersaturation event in February corresponded with the highest water levels, suggesting an environmental cause.

Depth (meters) Blanket Statement: Negative depth readings were recorded in both St. Pierre and Big Bay Creeks. The data were not deleted because the salinity and dissolved oxygen readings indicated the data logger was submerged during these periods. The depth sensor on an YSI data sonde is calibrated inside a laboratory using a barometric pressure of 760 millibars. Changes in barometric pressure while the data sonde is deployed often result in negative depth values, especially at low tides.

Turbidity (NTU) Blanket Statement: Turbidity readings greater than 1000 NTU are recorded at all YSI sites. The high spikes were possibly caused by an animal, a clump of plant matter, or sediment that passed by the sensor optics during the sampling interval. Furthermore, a low tide and/or rainfall event may contribute to the turbidity spiking.