

Jacques Cousteau (JAC) NERR Water Quality Metadata
1 January 2007 – 31 December 2007
Latest Update: 22 June 2012

I. Data set and Research Descriptors

1) Principal investigator & contact persons

Principal investigator:

Dr. Michael Kennish

Research Coordinator JCNERR

Institute of Marine & Coastal Sciences, Rutgers University

71 Dudley Road

New Brunswick, NJ 08901

Voice: (732) 932-6555 x240

Fax: (732) 932-1821

kennish@marine.rutgers.edu

Contact Person:

Gregg P. Sakowicz

Field Researcher/SWMP Technician

Jacques Cousteau National Estuarine Research Reserve (JCNERR)

Rutgers University Marine Field Station (RUMFS)

800 Great Bay Blvd.

C/o 132 Great Bay Blvd.

Tuckerton, NJ 08087

Voice: (609) 296-5260 x267

Fax: (609) 296-1024

sakowicz@marine.rutgers.edu

2) Entry verification

Deployment data are uploaded from the YSI data logger to a Personal Computer (IBM compatible). Files are exported from EcoWatch in a comma-delimited format (.CDF) and uploaded to the CDMO where they undergo automated primary QAQC and become part of the CDMO's online provisional database. Excessive pre- and post-deployment data are removed from the file prior to upload with up to 2 hours of pre- and post-deployment data retained to assist in data management. During primary QAQC, data are flagged if they are missing or out of sensor range. The edited file is then returned to the Reserve 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 graphs the data for review. It allows the user to apply QAQC flags and codes to the data, remove remaining pre- and post-deployment data, append files, and export the resulting data file to the CDMO for tertiary QAQC 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.

3) Research Objectives

The water quality of the Mullica River and Great Bay has traditionally been relatively clean and free of excessive nutrient loading from anthropogenic sources. This is due to the fact that there is very little development or industry within the drainage basin of the Mullica River and its tributaries. Great Bay had a large source of nutrient loading coming from a menhaden fish processing factory that was in operation from the early 1930's to the early 1960's and affected the lower portion of the bay. The river is relatively deep, three to nine meters in the section that is monitored. Great Bay averages about two meters in depth. The river also has a dark color due to tannins and humic compounds that are a natural product coming from the Pine Barrens and are present in large amounts within the river. It is believed that nutrients entering the river upstream do not get utilized within the river because of the lack of light penetration. The great depth of the river and the dark color from the tannins flowing down the river from the Pine Barrens hinders the utilization of these nutrients by planktonic organisms. Where the river empties into the bay, light penetration reaches the bottom of the bay and allows the utilization of the nutrients by phytoplankton, making this region more productive (Durand 1979). Water circulation questions within this unique estuary can be addressed by the use of datasondes. Because of the close proximity of the lower station (site name: B6) to Little Egg Inlet, the effects of an influx of ocean water can have dramatic effects on both the water quality and on the biological aspect of the region. Upwelling along the coast is a common occurrence during the summer months. The influx of this water into the bay can and does affect larval fish transport into and out of the bay. The cooler ocean waters can have dramatic effects on the growth rates of many different species living in the area. Datasondes have been useful in tracking the physical changes within the estuary due to occurrences such as upwelling and storm events and will be helpful in translating the resulting biological events.

4) Research Methods

The YSI datasondes (a.k.a. “dataloggers”) are programmed to record temperature, specific conductance, salinity, dissolved oxygen, depth, pH, and turbidity every 15 minutes. Presently, four SWMP monitoring stations are established in the Mullica River/Great Bay Reserve. These monitoring sites extend from the fresh water/salt water interface at Lower Bank, approximately 25 kilometers up the Mullica River from the point where it joins Great Bay to the mouth of Great Bay, a distance of eight kilometers. Thus the datasondes cover a total of 33 kilometers in this estuarine system.

Calibration standards required for pH were purchased from Y.S.I. (003822 (pH 7), 003823(pH 10), and p/n 003821 (pH 4)). A two or three point calibration was employed

for pH, the first being pH 7 followed by pH 10. An optional third point (pH4) was also applied at the operator's discretion.

Calibration standards required for conductivity were purchased from Y.S.I.. A standard of 10 mS/cm (p/n 060911), approved by Y.S.I., Inc., was used to calibrate for conductivity. Calibration of the conductivity probe was performed via immersion in the standard and using the calibration feature of the EcoWatch software as per the manufacturer's instructions.

Dissolved oxygen was calibrated one of two ways. 1) via a calibration cup filled with approximately 0.5 cm of tap water, which, after at least 30 minutes, creates a 100% water-saturated air environment for the sensor. The sensors were allowed to sample and equilibrate for approximately 60 seconds in the cup before DO (% saturation) was calibrated. 2) An aerator was run in a bucket for a minimum of 2 hours to saturate tap water in which the DO probe was calibrated as described above. The membrane on the oxygen probe was changed when anomalous data was recorded, when bad diagnostic values were observed during calibration or post-calibration, when the DO membrane was visible punctured, folded, or otherwise damaged, or when the terminals of the DO probe were tarnished or otherwise discolored, and prior to almost every deployment during the summer months. Installation of the D.O. membrane was as follows: the datasonde was inverted (probes facing upwards) and the reservoir of the DO probe was filled with the appropriate solution, allowing a meniscus bubble to form over the DO terminals. The DO membrane was then stretched over the face of the probe and secured using a rubber O-ring. The membrane was inspected for folds or trapped bubbles. Prior to calibration, the membrane was then "burned in" by allowing the datasonde to run in discrete mode for a minimum of 10 minutes.

Calibration of the turbidity probe was performed with a 0 NTU (Nephelometric Turbidity Units) solution (de-ionized water) and a 123 NTU standard (supplied by YSI, inc., p/n 607300) in the longer version of the datasonde cup/cap (YSI p/n 116275).

Used conductivity and pH standards were stored for rinsing probes and performing post-deployment calibrations after retrieval and prior to cleaning loggers. Great care was taken to clean the datasondes before calibration, and each used standard was used once as a post-calibration solution and once as a rinse solution before being discarded (unless egregious contamination was suspected).

Datasondes were deployed by inserting them in PVC pipes that are affixed to a permanent structure (in this case, two US Coast Guard channel markers, one bridge, and one commercial dock). A line was used to lower and recover the datasondes within the pipes. A cross-pin (stainless steel bolt) was inserted across the bottom of the pipe and served as an end-stop for the datasonde during its descent, assuring a maximum fixed depth and retaining the datasonde if the line parted. Vent holes or slots were drilled or cut in the bottom of the pipe to allow for circulation of water across the probes. An antifouling paint (Petit Trinidad SLR) was used to coat the last few meters of the PVC

pipes, both inside and out, to retard biofouling and subsequent blockage of the holes/vents. A locking cap provided security.

In 2007, two methods of deployment and data collection were employed. The first being a stand-alone deployment during which a datasonde autonomously collected data on 15-minute intervals on Eastern Standard Time (EST) and record these data internally, to later be downloaded onto a desktop/laptop computer post-retrieval. This method was employed at stations Buoy 139 (B9) and Lower Bank (BA). The second method employed was the pairing of datasondes with telemetry equipment that received data from the datasondes and broadcast it to the GOES satellite for receipt by the NOAA Hydrometeorological Automated Data System (HADS). These data were also recorded independently every 15 minutes in Eastern Standard Time (EST) by the datasondes for redundancy and to continue with the pre-existing NERRS SOP. Telemetry was employed at Buoy 126 (B6) and Chestnut Neck (NE) in 2007. For more detail concerning these telemetered datasonde stations, see below:

A Sutron Sat-Link2 transmitter was installed at this Buoy 126 (B6) on 06/22/06 and transmits data to the NOAA GOES satellite, NESDIS ID #3B00C264. The transmissions are scheduled hourly and contain four (4) datasets reflecting fifteen minute data sampling intervals. The telemetry data are "Provisional" data and not the "Authentic" dataset used for long term monitoring and study. These data can be viewed by accessing <http://cdmo.baruch.sc.edu>

A Sutron Sat-Link2 transmitter was installed at Chestnut Neck (NE) on 09/19/06 and transmits data to the NOAA GOES satellite, NESDIS ID #3B03E386. The transmissions are scheduled hourly and contain four (4) datasets reflecting fifteen minute data sampling intervals. The telemetry data are "Provisional" data and not the "Authentic" dataset used for long term monitoring and study. These data can be viewed by accessing <http://cdmo.baruch.sc.edu>

During each sampling period, measurements of specific conductance, salinity, temperature, dissolved oxygen, (percent saturation and concentration measured in mg/L), water level (depth), pH, and turbidity were recorded. After approximately 30 days datasondes were retrieved from the PVC pipe. Deployment periods were occasionally extended during 2007 because of weather restrictions. A YSI 600 datasonde attached to a YSI 650-MDS "handheld unit" was then lowered to depth in order to sample in-situ water conditions at approximately the same depth at which data was recorded. A different calibrated and programmed YSI datasonde was then deployed to replace the datasonde being recovered. The recovered datasonde was brought back to the laboratory for downloading, post-deployment calibration checking, cleaning, and re-calibration. For some retrievals (due to one of our three 6600 datasondes being out for repairs or our desire to keep the same datasonde at the same SWMP site for consistency), the datasonde was not replaced but rather brought back to the field station, processed as described above, and re-deployed or replaced later that day or the following day.

Upon retrieval, datasondes were wrapped in a white towel and placed in a cooler for transport back to the laboratory. Datasondes were then placed in an aerated bucket of tap water overnight before post-processing according to SWMP standard operating procedures. Post-processing involves the placing of the un-cleaned datasonde in standards and recording of the displayed values, to judge how well the probes maintained calibration, determine the effect of bio-fouling (if any), and judge whether probe failure occurred during the deployment. After this post-deployment calibration check, probes were cleaned as per SWMP SOP's and either re-calibration for the next deployment or capped for storage for later calibration and deployment.

Datasondes were programmed to start recording data (ranging from one sample period to a few hours) before they were deployed in the field and allowed to run in either a wet, enclosed environment or an aerated water-filled bucket, so these deployment files often contained "tail ends" of non-deployment ("out-of-water event") data, which were used to diagnose the probes but deleted before the data were processed for import into the yearly datasets. The beginning and end of each data file was compared to the 600/650MDS handheld unit values and the data were checked for probe failure and fouling.

5) Site Location and Character

The Jacques Cousteau National Estuarine Research Reserve (JCNERR) at Mullica River/Great Bay is located on the northeast coast of the United States on the Atlantic Ocean. The estuary is near Tuckerton, New Jersey about 14 kilometers north of Atlantic City. All four locations can be characterized by having little macroalgae (few to no established beds in the immediate locale; only occasional seasonal and structurally-dependent fouling-type macroalgal communities) and fast moving tidal currents. All sites are in an undisturbed area with little impact from development or pollution. There were four active sampling stations in 2007:

1) Buoy 126 (B6) - 39° 30.478' N, 74° 20.308' W- located three kilometers from Little Egg Inlet on the eastern side of Great Bay and is 100 meters from the nearest land that is a natural marsh island. This is a naturally deep area that has never been dredged, but it is located about 0.5 kilometers from an area in the Intracoastal Waterway that is dredged regularly. The datasonde at this location is attached to Intracoastal Waterway Buoy 126 and is the closest monitoring station to Little Egg Inlet. This site can be characterized by having strong tidal currents, 2-3 knots, fine to coarse sand bottom with an extensive blue mussel bed surrounding the area. Groundwater inputs from margins of the estuary as well as surface flow from Mullica River account for the majority of freshwater coming into the system at this site, followed by input from rainwater from the marsh surface. In 2007, salinities at this station averaged 29.6ppt, with an average depth at the station of 4.03m (assuming the datasonde's location was 1m off the bottom and not accounting for sediment migrations).

2) Buoy 139 (B9) - 39° 29.883' N, 74° 22.873' W- is located 4 kilometers from Buoy 126 on the western side of Great Bay and is located about one to one and one-half kilometers from land. The datasonde at this location is attached to Intracoastal Waterway

Buoy 139. The closest landform is an extensive salt marsh approximately 1.5 kilometers wide, which borders the upland area. This area is dredged by the U.S. Army Corp of Engineers approximately every five to six years to maintain the channel at a depth of approximately 2.5 meters. The surrounding depth of the bay is approximately 1.5 to 2 meters. This site is characterized by having maximum currents of about 1.5 knots with a muddy sand bottom and with little structure or shell. Groundwater inputs from margins of the estuary as well as surface flow from Mullica River account for the majority of freshwater coming into the system at this site, followed by input from rainwater from the marsh surface and above. In 2007, salinities at this station averaged 28.8ppt, with an average depth at the station of 3.16m (assuming the datasonde's location was 1m off the bottom and not accounting for sediment migrations)

3) Chestnut Neck (NE) - 39° 32.872' N, 74° 27.676' W - located 12 kilometers up the Mullica River from the mouth of the river. The river begins at a line drawn between Graveling Point and Oysterbed Point on the northwestern side of Great Bay. The Mullica River at this location is quite wide, about 250 meters. The datasonde is attached to the dock of a small marina along the southern shore of the river adjacent to the main channel. This location has never been dredged. The site is characterized by having tidal currents of less than one knot, during both ebb and flood tide, and has a mixed organic mud/sand bottom. Freshwater input is primarily from groundwater and watershed runoff. In 2007, salinities at this station averaged 16.3ppt, with an average depth at the station of 2.31m (assuming the datasonde's location was 1m off the bottom and not accounting for sediment migrations)

4) Lower Bank (BA) - 39° 35.618' N, 74° 33.091' W - located 13 kilometers upriver of the Chestnut Neck location. The Mullica River at this site is about two hundred meters wide. The datasonde is located at the center of a bridge spanning the Mullica River. The northern bank of the river is sparsely developed with single-family houses and has a steep bank about five meters high. The southern shore has an extensive marsh and fresh water wetland area about three kilometers wide. This site can be characterized by having fast tidal currents, just over one knot, deep water, and fine mixed organic mud and sandy sediment. Freshwater input is primarily from groundwater and watershed runoff. In 2007, salinities at this station averaged 5.0ppt, with an average depth at the station of 2.87m (assuming the datasonde's location was 1m off the bottom and not accounting for sediment migrations)

6) Data Collection Period

Site	Filename	Deploy Date	Time	Retrieve Date	Time
B6	B6112106	11/21/06	14:30	01/04/07	14:15
B6	B6010407	01/04/07	14:30	02/07/07	11:30
B6	B6051407	05/14/07	14:00	06/25/07	11:00
B6	B6062507	06/25/07	11:15	07/19/07	13:00
B6	B6071907	07/19/07	13:15	08/30/07	09:45
B6	B6083007	08/30/07	10:15	10/03/07	12:30

B6	B6100307	10/03/07	12:45	11/09/07	11:00
B6	B6110907	11/09/07	11:30	12/18/07	13:45
B6	B6121807	12/18/07	12:45	02/12/08	15:30
B9	B9112706	11/27/06	14:30	01/18/07	10:30
B9	B9051707	05/17/07	13:30	06/21/07	13:45
B9	B9062107	06/21/07	14:00	07/12/07	10:30
B9	B9071207	07/12/07	10:45	08/15/07	10:15
B9	B9081507	08/15/07	10:30	09/27/07	09:45
B9	B9092707	09/27/07	10:00	11/01/07	13:45
B9	B9110107	11/01/07	14:00	12/11/07	14:30
B9	B9121107	12/11/07	14:45	01/31/08	13:45
NE	NE122206	12/22/06	13:00	01/30/07	09:15
NE	NE013007	01/30/07	13:00	02/00/07	09:00
NE	NE031407	03/14/07	14:30	04/18/07	12:15
NE	NE041807	04/18/07	12:30	05/14/07	08:45
NE	NE051407	05/14/07	13:45	06/13/07	14:15
NE	NE063107	06/31/07	14:30	07/12/07	14:30
NE	NE071207	07/12/07	15:00	08/08/07	14:00
NE	NE080807	08/08/07	14:30	09/06/07	11:15
NE	NE090607	09/06/07	11:45	10/03/07	12:30
NE	NE100507	10/05/07	12:45	11/01/07	13:15
NE	NE110107	11/01/07	13:45	11/15/07	15:15
NE	NE111507	11/15/07	15:30	12/12/07	11:15
NE	NE121207	12/12/07	11:30	01/11/08	13:30
BA	BA122106	12/21/06	13:30	01/29/07	09:00
BA	BA040307	04/03/07	10:30	05/03/07	09:00
BA	BA050307	05/03/07	13:30	06/06/07	12:00
BA	BA060607	06/06/07	12:30	07/03/07	11:00
BA	BA070307	07/03/07	11:30	07/31/07	09:45
BA	BA073107	07/31/07	10:15	08/29/07	13:15
BA	BA082907	08/29/07	13:30	09/27/07	10:45
BA	BA092707	09/27/07	11:15	10/11/07	10:00
BA	BA101107	10/11/07	10:30	11/02/07	12:15
BA	BA110207	11/02/07	12:30	12/04/07	14:00
BA	BA120407	12/04/07	14:30	01/09/08	11:00

7) Distribution

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 this NOAA/OCRM supported research that are produced for publication in open literature, including refereed scientific journals, will acknowledge that the research was conducted under an award from the Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration. The data set enclosed within this package/transmission is only as good as the quality assurance and quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to the Recipient or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data.

NERR water quality data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see Principal investigators and contact persons), from the Data Manager at the Centralized Data Management Office (please see personnel directory under the general information link on the CDMO home page) and online at the CDMO home page <http://cdmo.baruch.sc.edu/>. Data are available in text tab-delimited format.

8) Associated Researchers and Projects

During 2007, weekly ichthyoplankton sampling at Little Sheepshead Creek Bridge (LSCB) continued as part of the long-term sampling conducted by the Rutgers University Marine Field Station (RUMFS) in the Jacques Cousteau National Estuarine Research Reserve (JCNERR). Presence and abundance of larval fishes are determined with a plankton net (1 m, 1 mm mesh) deployed during night flood tides from a bridge near Little Egg Inlet (New Jersey) in the Great Bay/Little Egg harbor portion of the JCNERR.

RUMFS conducted an annual trawl survey at numerous sites from offshore of Little Egg Inlet to the freshwater interface up the Mullica River. SWMP data will be used in the analysis of community composition and species assemblage.

A wire-mesh trapping survey of fish and crustaceans conducted by RUMFS within the RUMFS boat basin also continued in 2007 as part of long-term sampling within the Reserve.

Data from the Chestnut Neck (NE) and Lower Bank (BA) SWMP stations were used for comparative and ground-truthing purposes for numerous research activities by RUMFS at Hog Island, Lower Bank, and adjacent sites.

Drs. Kenneth W. Able and Thomas Grotheus from the Rutgers University Marine Field Station (RUMFS) are studying species distributions, daily movements, and seasonal migration patterns of striped bass (*Morone saxatilis*) using surgically implanted hydroacoustic transmitters and an array of buoy-mounted receivers. The study area includes the Mullica River/Great Bay estuary, the southern end of Barneget Bay, and the coastal ocean outside of Little Egg Inlet off Tuckerton, New Jersey. Dr. Thomas Grotheus is using the 2006 SWMP water quality data extensively in his multivariate statistical analyses. Visit www.stripertracker.org for more information.

Dr. Mark Sullivan, RUMFS, is conducting research concerning eel ontogeny and distributions in the Little Egg Harbor-Mullica River waters. SWMP data will be used in the analysis of his data.

Master's student candidate Jackie Toth (Rutgers University) utilized water-quality data from Buoy 126 (B6) in her analyses of Atlantic bottle-nose dolphin (*Tursiops truncatus*) distributions and social behaviors observed in reserve waters.

Jason Turnure, the JCNERR's Graduate Research Fellow, will be utilizing 2007 and 2008 SWMP data in his analyses of movements of telemetered weakfish (*Cynoscion regalis*)

Other projects orchestrated in the year 2007 in the JCNERR include the continuation of a biofouling project that was initiated in 2003. Conducted by the Research Coordinator and JCNERR staff, several biofouling panels constructed of PVC plates were secured to cages and placed on the bottom. Many of these panels were deployed near SWMP stations. One set of panels was retrieved per month from June through the end of October and were processed for species content after the samples were preserved.

II. Physical Structure Descriptors

9) Sensor Specifications

YSI 6600/YSI 6600EDS datasonde

Parameter: Temperature
Units: Celsius (C)
Sensor Type: Thermistor
Model #: 6560
Range: -5 to 45 °C
Accuracy: +/-0.15 °C
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 or 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; 200-500 % 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 per Liter (mg/L)
Sensor Type: Rapid Pulse – Clark type, polarographic
Model #: 6562
Range: 0 to 50 mg/L
Accuracy: 0 to 20 mg/L, +/- 2 % of the reading or 0.2 mg/L, whichever is greater; 20 to 50 mg/L, +/- 6 % of the reading
Resolution: 0.01 mg/L

Parameter: 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: 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 0-10 ft: +/- 0.01 ft (0.003 m)
Accuracy 10-30 ft: +/- 0.06 ft (0.018 m)
Resolution: 0.001 ft (0.001 m)

Parameter: pH

Units: units

Sensor Type: Glass combination electrode (glass “globe” type)

Model #: 6561

Range: 0 to 14 units

Accuracy: +/- 0.2 units

Resolution: 0.01 units

Parameter: pH

Units: units

Sensor Type: Glass combination electrode (flat glass type)

Model #: 605091

Range: 0 to 14 units

Accuracy: +/- 0.2 units

Resolution: 0.01 units

Parameter: Turbidity

Units: nephelometric turbidity units (NTU)

Sensor Type: Optical, 90 ° scatter, with mechanical cleaning

Model #: 6136

Range: 0 to 1000 NTU

Accuracy: +/- 5 % reading or 2 NTU (whichever is greater)

Resolution: 0.1 NTU

The NERR System-Wide Monitoring Program utilizes YSI datasondes that can be equipped with either depth or water level sensors. Both sensors measure water depth, but by convention, level sensors refer to atmospherically vented measurements and depth refers to non-vented measurements. Readings for both vented and non-vented sensors are automatically compensated for water density change due to variations in temperature and salinity; but for all non-vented depth measurements, changes in atmospheric pressure between calibrations appear as changes in water depth. The error is equal to approximately 1.03 cm for every 1 millibar change in atmospheric pressure, and is eliminated for level 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 site can be corrected. The Research Coordinator at the specific NERR site should be contacted in order to obtain information regarding atmospheric pressure data availability.

Important Notes:

In 2007, the two “downriver stations” (B6 and B9) were monitored using non-vented YSI 6600EDS (Extended Deployment System) sondes with deployment periods of approximately 30 days. The depth-offset was applied to calibrations at B6 starting 02/20/06, and at B9 on 02/15/06. The two “upriver stations” (NE and BA) were monitored using vented level YSI6600 and YSI6600EDS sondes. The depth-offset were therefore not applicable at either of these stations.

10) Coded Variable Definitions

Sampling Station:	Sampling Site Code	Station Code
Buoy 126	B6	jacb6wq
Buoy 139	B9	jacb9wq
Lower Bank	BA	jacbawq
Chestnut Neck	NE	jacnewq

mul = Mullica River Reserve = Jacques Cousteau National Estuarine Research Reserve
RUMFS = Rutgers University Marine Field Station

wq = water quality data

example 1: B6010407 = this demonstrates the naming convention for deployment files. This denotes a deployment at Buoy 126 starting on 01/04/07.

example 2: mulB6wq2007 = the Mullica River (the JCNERR’s study site) water quality data from Buoy 126 for the year 2007.

11) QAQC flag definitions – This section details the automated and secondary QAQC flag definitions. Include the following excerpt:

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 *Open - reserved for later flag*
- 4 Historical Data: Pre-Auto QAQC
- 5 Corrected Data

12) QAQC code definitions – 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.

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

Sensor Errors

SBO	Blocked Optic
SCF	Conductivity Sensor Failure
SDF	Depth Port Frozen
SDG	Suspect Due to Sensor Diagnostics
SDO	DO Suspect
SDP	DO Membrane Puncture
SIC	Incorrect Calibration / Contaminated Standard
SNV	Negative Value
SOW	Sensor Out of Water
SPC	Post Calibration Out of Range
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

Deployment D.O.(1), D.O. (2), depth measured/expected offset, pH7, pH10, pH4, Turbidity0, Turbidity123, Battery

B6112106	58.0, 56.8, 0.072/0.059, 9.37, 7.20, 10.22, 4.21, 0.2, 122.8, 12.2
B6010407	calibration sheet missing
B6051407	101.0, 100.6, 0.090/0.091, 9.85, 7.13, 10.00, 4.20, -0.2, 122.4, 8.3
B6062507	96.7, 96.5, -0.053/-0.053, 9.89, 7.14, 10.21, 4.22, -0.8, 123.0, 11.3
B6071907	101.2, 100.8, 0.002/-0.001, 9.85, 6.76, 9.68, 3.86, 1900.6, NST, 10.7
B6083007	97.0, 97.1, 0.079/0.088, 9.38, 7.03, 9.99, 4.02, 0.2, 125.9, 11.3
B6100307	84.4, 75.6, 0.018/0.019, 9.47, 6.95, 9.86, 4.01, 0.2, 122.4, 10.8
B6110907	105.0, 105.1, 0.098/0.099, 9.92, 6.74, 9.61, 3.84, 0.1, 122.8, 11.2
B6121807	73.4, 73.4, -0.129/-0.091, 2.93, 6.84, 9.58, NST, 1.4, 122.2, 11.8
B9112706	11, 106.2, 106.1, 0.144/0.155, 9.98, 6.62, 9.73, 3.69, -0.8, 123.5, 10.5
B9051707	13, 16.6, NR, -0.031, 9.55, NR(PM), NR(PM), NR(PM), 0.3, 123.4, 11.3

B9062107	11, 92.2, 92.0, -0.010/-0.019, 9.84, 7.06, 10.03, 4.07, 1.1, 122.5, 11.6
B9071207	14, 103.0, 103.0, -0.001/-0.011, 9.91, 7.06, 10.10, 3.98, -0.2, 120.6, 12.3
B9081507	13, 17.4, 16.6, 0.007/0.015, 6.06, 7.07, 10.06, 4.00, 0.0, 124.4, 10.5
B9092707	11, 107.6, 107.6, 0.046/0.095, 10.11, 6.93, 10.15, 4.07, -0.1, 121.9, 11.2
B9110107	14, 91.1, NR, 0.153/0.163, 10.05, 6.82, 9.98, 3.98, -0.1, 122.6, 11.2
B9121107	13, 87.7, 87.7, 0.013/0.014, 9.98, 6.94, 9.84, NST, 0.3, 124.6, 9.7
NE122206	5, 104.5, 104.6, 0.000/0.000, 10.26, 7.15, 10.06, 3.90, 0.3, 129.7, 11.9
NE013007	12, 106.7, 106.2, 0.001, NR, NR, NR, NR, NR, NR, 11.8
NE031407	5, 92.4, 92.3, 0.000/0.000, 10.00, 7.03, 9.95, 3.99, 0.9, 121.8, 12.7
NE041807	5, 83.4, 83.3, 0.001/0.000, 9.92, 7.16, 10.05, 4.02, -0.1, 122.9, 12.9
NE051407	5, 63.2, 63.0, 0.001/0.000, 10.08, 6.56, 9.30, NST, 2.7, 127.7, 11.4
NE061307	X, 110.8, 114.1, 0.196/0.000, 9.96, 7.02, 10.01, NST, -1.6, 116.0, 10.9
NE071207	12, 101.7, 101.9, -0.001, NST, 7.07, 10.08, NST, 7.2, 123.6, 11.3
NE080807	5, 111.2, 111.3, -0.007, 9.96, 7.08, 10.14, 0.0, 113.4, 11.1
NE090607	X, 97.1, 95.5, -0.069/0.000, 9.92, 6.88, 9.88, NST, 1.2, 121.0, 13.2
NE100507	12, 110.7, 110.9, 0.000, 9.82, 7.05, 10.09, 4.01, -2.1, 119.4, 12.3
NE110107	5, 102.3, 102.2, -0.001, 9.91, 7.02, 10.08, 4.06, -0.1, 114.6, 12.1
NE111507	X, 102.0, 102.0, 0.118, 6.50, 9.47, 3.47, 0.1, 111.9, 11.7
NE121207	12, 117.9, 117.9, 0.001, 10.04, 7.02, 10.10, NST, -0.1, 115.4, 11.4
BA122106	X, 104.5, 104.5, -0.043, 10.20, 7.29, 10.18, 4.21, 0.2, 128.2, 13.1
BA040307	X, 100.5, 100.2, -0.080, 9.90, 7.11, 10.90, 4.34, 1.2, 120.7
BA050307	X, NR, NR, NR, NR, NR, NR, NR, NR, NR, NR
BA060607	12, 108.5, 108.7, -0.407, 9.90, 6.96, 10.32, NST, -0.6, 124.2, 12.0
BA070307	5, 104.3, NR, 0.004, 5.09, 6.96, 9.82, -1.2, 9.82, -1.2, 115.2, 10.7
BA073107	X, 171.7, NR, 0.347, 9.93, 7.18, 10.15, NST, 0.0, 116.6, 11.7
BA082907	12, 105.6, 102.2, 0.001, 10.75, 7.09, 10.06, NST, -0.3, 119.4, 11.6
BA092707	5, 122.0, 108.2, -0.001, 8.90, 6.88, 9.74, NST, -1.7, 127.4, 10.7
BA101107	X, 105.2, 105.1, -0.011, 9.73, 6.60, 9.54, 3.90, -0.1, 114.7, 11.7
BA110207	12, 111.8, 111.7, NST, 19.21, 6.96, 9.95, 3.97, 1.3, 112.2, 11.5
BA120407	5, 104.5, 104.5, -0.007, 10.07, 6.80, 9.84, NST, -0.2, 105.7, 11.0

Note: While the Specific Conductivity probe post-calibrated low for the BA070307 deployment, the in situ values were reasonable and compared well with the YSI field unit, It is believed that the amphipods that had taken up residence in the sonde guard may have entered the conductivity ports and died after the datasonde was immersed in fresh water for post-calibration.

Note: It is apparent that 20 mS/cm³ standard was used to post-calibrate the BA110207 deployment.

Deployment= deployment file name

#= datasonde ID number

D.O.% (1)= first datasonde output in a 100% Dissolved Oxygen-saturated environment

D.O.% (2)= second datasonde output in a 100% Dissolved Oxygen-saturated environment

Depth displayed/expected offset = depth in meters (m) displayed by the datasonde when in a depth=0.000m environment. The offset reflects expected depth value, adjusted for local atmospheric pressure (applicable only to non-vented datasondes (#8, 11, 13, 14, and the 600XLS-M unit); vented datasondes (#X, 5, and 12) have an expected offset = 0.000)

SpCond= datasonde output in a 10 OR 20 milliSiemens per centimeter cubed conductivity standard solution

pH7= datasonde output in a pH7 standard solution

pH10= datasonde output in a pH10 standard solution

pH4= datasonde output in a pH4 standard solution

Turbidity0= datasonde output in a 0 NTU turbidity standard (e.g.- Deionized water)

Turbidity123= datasonde output in 123 NTU turbidity standard

Battery= in volts

NR= Value not recoded for unspecified reason(s)

NR(PM)- No sample taken due to probe malfunction.

NST= No sample taken. This could be for a number of reasons: the appropriate calibration solution may not have been available, the standard had not yet been phased in or had been phased out, or recording of the particular parameter had not yet been adopted as SOP.

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.

There were a few instances at this NERR site where negative turbidity values between -0001 and -0002 NTU's were recorded. Because such values fall within the range of accuracy (+/-2 NTU) of the turbidity probes, these data were not rejected but flagged suspect.

There were a few instances at this NERR site where turbidity values less than -0002 were recorded and flagged as rejected. Although these fall outside the turbidity probes' range of accuracy (+/-2 NTU), these data remain in the data set for future consideration and possibly post-correction by users of the data. It is the users' responsibility to consider these data and retain or omit them from analyses if deemed appropriate.

Note to users: When utilizing these data, it is always best to also review the SWMP Weather Station (MET) dataset from this reserve to provide weather conditions that may affect the SWMP Water Quality (WQ) data from this reserve. For example, strong

precipitation and strong sustained winds may cause elevations in turbidity and alter dissolved oxygen levels. Periods of drought may alter salinity patterns and lead to anoxic conditions in poorly-circulated regions of reserve waters. Hurricane and Nor'easter events may alter WQ parameters in the above, and other, manners. Authenticated MET data are available at the CDMO website (<http://cdmo.baruch.sc.edu/>).

Station-Specific Remarks/Notes:

Buoy 126 (site code: B6)

The Dissolved Oxygen probe post-calibrated poorly for the B6112106 deployment. Since the "start point" of this perturbation could not be identified, all D.O. data from the deployment are considered suspect.

Upon retrieval of the B6112106 deployment, it was found that the pH probe post-calibrated high (7.2 in a 7.0 standard, 10.22 in a 10.0 standard, 4.21 in a 4.0 standard). Therefore all pH data collected during this deployment are considered suspect.

Upon retrieval of the B6112106 deployment, it was found that a "ball" of mud and algae had collected in the bottom of the sonde guard, possibly affecting turbidity readings during the deployment. Since the "start point" of this perturbation could not be identified, all turbidity data from this deployment (after the correct depth was established on 11/28/06 11:00:00) are considered suspect. All other data collected during this deployment, with the exception of D.O. (see above), were comparable to measurements obtained with a YSI 600XL/650MDS "field unit".

The Dissolved Oxygen probe appeared to read high, and post-calibrated a little high, for the B6010407 deployment. Therefore all data collected during this deployment are considered suspect.

A long out-of-water event occurred between 02/01/07 and 05/14/07 due to damages sustained by ice and ice-floes (proactive removal of the datasonde followed by destruction of the site by ice shortly thereafter). Redesign, refabrication, and reinstallation via diver of the sonde tube and bracketing system, and redeployment of the datasonde, occurred on 05/14/07.

Battery failure of the datasonde was evident on 06/22/07 15:15:00 of the B6051407 deployment. While the unit reactivated on its own on 06/25/07 01:15:00, the data collected from this date and time until the end of the deployment were rejected due to the unreliability associated with collecting data with low voltage.

Upon retrieval of the B6062507 deployment, it was discovered that some growth of mussels had occurred on the sonde guard and filamentous algae on the mesh and turbidity wiper. While DO appeared to go low at times during this deployment (particularly during slack tides), the final D.O. value recorded was comparable to that collected via a

YSI 600XL/650MDS “field unit”, so the data are retained but possibly considered suspect.

Upon retrieval of the B6062507 deployment, fouling inside the conductivity ports was observed, a low post-calibration of the Specific Conductivity probe occurred (9.89 in a 10.00 standard), and a mis-match with the last Specific Conductivity value of the B6062507 deployment and the first value of the B6071907 deployment was observed. A time at which this first started affecting data could not be identified. For these reasons, all Specific Conductivity data, and parameters dependent on Specific Conductivity (Salinity, DO concentration, and Depth) from this deployment are considered suspect.

Post-calibration of the pH probe after the B6062507 deployment yielded slightly elevated readings (7.14 in a 7.00 standard, 10.21 in a 10.00 standard, 4.22 in a 4.00 standard). All pH data collected during the B6062507 deployment are therefore considered suspect.

Upon retrieval of the B6062507 deployment, fouling by long, filamentous algae was observed on the mesh and turbidity wiper. Some elevated turbidity readings were recorded during this deployment, but it is not clear when the start of this interference began, so all turbidity values recorded during this deployment are considered suspect.

Upon retrieval of the B6071907 deployment, a low post-calibration of the Specific Conductivity probe occurred (9.89 in a 10.00 standard). A time at which this first started affecting data could not be identified. For these reasons, all Specific Conductivity data, and parameters dependent on Specific Conductivity (Salinity, DO concentration, and Depth) from this deployment are considered suspect.

The last Dissolved Oxygen values obtained during the B6071907 deployment was not comparable to either the values obtained with the field unit or the first value of the 083007 deployment. Therefore, all Dissolved Oxygen data collected during this deployment are considered suspect.

Post-calibration of the pH probe after the B6071907 deployment yielded slightly low readings (6.76 in a 7.00 standard, 9.68 in a 10.00 standard, 3.86 in a 4.00 standard). All pH data collected during the B6062507 deployment are therefore considered suspect.

Upon retrieval of the B6071907 deployment, it was observed that long filamentous algae had grown on the mesh and turbidity wiper, intermittently interfering with Turbidity readings before permanently obstructing the optics. It is not clear when the start of this interference began, so all turbidity values recorded during this deployment are considered suspect.

Upon retrieval of the B6083007 deployment, it was observed that algae had grown on the turbidity wiper, intermittently interfering with Turbidity readings. It is not clear when the start of this interference began, so all turbidity values recorded during this deployment are considered suspect.

Upon retrieval of the B6100307 deployment, minor blockage of the Specific Conductivity ports was observed. Post-calibration measurements were slightly depressed (9.47 in a 10.00 standard). A slight mis-match with the last Specific Conductivity measurement made during this deployment and the first measurement of the successive deployment was also observed. Because other probes rely on the accuracy of the Specific Conductivity probe, the following measurements made during this deployment must also be considered suspect: Salinity, Dissolved Oxygen concentration, and depth.

Upon retrieval of the B6100307 deployment, light fouling by algae was observed. While it does not appear that turbidity readings were drastically affected during this deployment, some “spiking” and periods of elevated turbidity were observed. While these “spikes” could be the result of parking issues, and the periods of elevated turbidity may be actual events, a cause could not be identified so all turbidity data from this deployment are considered suspect.

Dissolved Oxygen percent post-calibrated poorly after the B6100307 deployment. All D.O. data from this deployment are considered suspect.

The dissolved oxygen probe post-calibrated high (approximately 105% in a 100% saturated environment) after the B6110907 deployment. All D.O. data from that deployment may be considered suspect.

A notable degree of sensor drift of the pH probe was observed during the B6110907 deployment. The probe post-calibrated low (6.74 in a 7.00 standard, 9.61 in a 10.00 standard, 3.84 in a 4.00 standard) and failed the pH slope diagnostic (but recovered during a later calibration). Therefore, all pH data from this deployment should be considered suspect.

At the time of recovery of the B6121807 deployment, it was discovered that a “ball” of mud and unidentified fouling organisms and/or algae had collected in the sonde guard. Some of this material had collected in the ports of the conductivity probe, affecting conductivity/salinity measurements and most likely cascading through the rest of the data (as the other parameters are dependent on the conductivity measurements). The conductivity probe also post-calibrated poorly. Unfortunately, a “start point” of this event was not identifiable, so all data from this deployment are considered suspect. **IMPORTANT NOTE TO USERS:** While flagged as suspect for the aforementioned reasons, it appears that Temperature measurements remained accurate as compared to field-obtained measurements.

Buoy 139 (site code: B9)

The B9112706 deployment was programmed to sample on a 30-minute interval (deployment was prior to the 15-minute sample interval being required). Therefore, no samples were obtained on the 15 and 45 minute marks during this deployment.

The pH probe post-calibrated low (6.62 in a 7.00 standard, 9.73 in a 10.00 standard, and 3.69 in a 4.00 standard). It cannot be determined when this error began to affect the data, so all pH data collected during this deployment are considered suspect.

The Dissolve Oxygen probe post-calibrated high (approximately 106% in a 100% environment). It cannot be determined when this error began to affect the data, so all DO data collected during this deployment are considered suspect.

An extended out-of-water event occurred between 01/18/07 10:30:00 and 05/17/07 13:30:00 due to damages sustained by ice and ice-floes (proactive removal of the datasonde followed by destruction of the site by ice shortly thereafter). Redesign, refabrication, and reinstallation via diver of the sonde tube and bracketing system, and redeployment of the datasonde, occurred on 05/17/07.

The pH probe to be used on the B9051707 deployment failed to calibrate, so it was disabled and therefore no pH data were collected for this deployment (but default values between 7.4 and 7.6 were recorded in the dataset by the datasonde).

Upon retrieval of the B9051707 deployment, it was discovered that the ports of the specific conductivity probe post-calibrated a little low (9.55 in a 10.00 standard). It is not clear what caused this to occur (no fouling), but sensor drift is suspected. Because it cannot be determined when this first started affecting the data, all Specific Conductivity values from this deployment are considered suspect. Likewise, all salinity, dissolved oxygen concentration (mg/l) and depth data for this deployment are considered suspect (note: DO mg/L data after 0/19/07 04:15:00 are rejected due to membrane failure; See comment below).

The Dissolved Oxygen probe failed post-calibration check for the B9051707 deployment. It is obvious that the probe suffered a catastrophic failure on 0/19/07 04:15:00, and all data collected after then were rejected.

The Dissolved Oxygen probe post-calibrated a bit low (approximately 92.2% in a 100% environment) for the B9062107 deployment, but it is not clear when the drift first started to occur, so all D.O. data from this deployment can be considered suspect.

There was a period of elevated turbidity during the B9071207 deployment, at times above the sensor limit, between 07/28/07 and 08/05/07. After this period, the measurements appeared to fall back into a more reasonable pattern. Due to the extreme levels the measurements reached during this time, these data are considered suspect, but may reflect a real event.

All DO data collected during the B9081507 deployment were rejected on the grounds that the probe failed its post-calibration check and it became readily apparent there was some issue that compromised the function of the DO membrane.

Upon retrieval of the B9081507 deployment, it was discovered that the ports of the specific conductivity probe were partially obstructed by algae, and the probe post-calibrated low (6.06 in a 10.00 standard). It is not clear when this obstruction first started affecting the data, so all Specific Conductivity, Salinity, and depth data for this deployment are considered suspect (DO mg/L would also be affected, but has already been rejected (See above comment)).

Dissolved oxygen post-calibrated a bit high (107% in a 100% environment) for the B9092707 deployment, but data appear comparable to field data, so all DO data from this deployment are considered suspect.

Upon retrieval of the B9110107 deployment, it was found that Dissolved Oxygen post-calibrated a bit low (approximately 92% in a 100% environment). I could not be determined when this depression in DO data first occurred; therefore, all DO data from this deployment are considered suspect.

Upon retrieval of the B9121807 datasonde, it was observed that the dissolved oxygen post-calibrated a bit low (between 87 and 96% in a 100% environment). It is not clear what caused this issue or when it began, so all dissolved oxygen data from this deployment are considered suspect.

Dredging activities and turbidity plumes were visually observed near Buoy 139 in the months of November and December (and perhaps earlier). Therefore, elevated turbidity values were expected and recorded at the B9 datasonde station (reference to B9110107 and B9121807 deployments).

Chestnut Neck (site code: NE)

An extended out-of-water event occurred from 02/06/07 09:15:00 to 03/14/07 14:30:00 due to heavy ice at the site. The datasonde was removed from this station as proactive measures to safeguard against equipment damage and/or loss.

Upon retrieval of the NE041807 deployment, it was found that the Dissolved Oxygen probe post-calibrated poorly. When this began to affect the data could not be identified, so all DO data collected during this deployment can be considered suspect.

Upon retrieval of the NE051407 deployment, it was found that the Dissolved Oxygen probe post-calibrated poorly. When this began to affect the data could not be identified, so all DO data collected during this deployment can be considered suspect.

Upon retrieval of the NE051407 deployment, it was found that the pH probe post-calibrated poorly. However, the values were fairly comparable to those obtained with a YSI 600XL/650MDS field unit. If, and when the dataset was affected could not be identified, so all pH data collected during this deployment can be considered suspect.

Upon retrieval of the NE071207 deployment, heavy biofouling was observed and elevated values were observed during post-calibration of the turbidity probe. When this began to affect the data could not be identified, so all turbidity data collected during this deployment can be considered suspect.

Upon retrieval of the NE071207 deployment, the pH probe post-calibrated a little low (6.88 in a 7.00 standard, 9.88 in a 10.00 standard), but did closely match those obtained with a YSI 600XL/650MDS field unit. All pH data from this deployment can be considered suspect.

The turbidity wiper fell off sometime during the NE090607 deployment, affecting the post-calibration values for DO and causing turbidity values to rise due to light algal formation on the turbidity probe optics. It is very difficult to identify a time at which this first started affecting these parameters, but it does appear that turbidity measurements started to rise, and DO measurements degraded, sometime around October 3rd, so Turbidity and Dissolved Oxygen data from 10/03/07 to 10/05/07 12:30:00 are considered suspect.

Depth values from 11/15 15:30 to 12/12 11:15 were elevated. All other parameters were most likely collected at the correct depth and unaffected by the elevated readings. The elevated readings are believed to be due to using the wrong cable for calibration.

Elevated pH values were observed via the telemetry unit during the NE110107 deployment. This deployment was then retrieved early and replaced with a new datasonde. Oddly, post-calibration of the first datasonde was acceptable. This pH probe was later replaced due to its questionable accuracy.

During the NE111507 deployment, elevated pH values were again observed via the telemetry unit. On 11/21/07, the datasonde was retrieved, the pH was quickly recalibrated, and the datasonde was returned. All pH data from 11/21/07 TIME to 11/21/07 12:00:00 are rejected, and an out-of-water event was recorded by the datasonde from 11/21/07 12:15:00 – 12:45:00.

An Out-of-water event was recorded during the NE12120 deployment on 12/18/07 11:00:00, presumably due to a lower-than-usual “blow-out” low tide. These data are disregarded in the dataset.

For unknown reasons, the datasonde failed to log data on 12/18/07 11:15:00, which was immediately after the out-of-water event (See above).

After the aforementioned out-of-water event on 12/18/07 11:00:00, the Dissolved Oxygen probe recorded values much higher than expected, and later post-calibrated high, possibly due to damage by ice and/or dry conditions. Therefore all DO data 12/18/07 11:30:00 to 12/31/07 23:45:00 are considered suspect.

Lower Bank (site code: BA)

The BA122106 deployment was programmed to sample on a 30-minute interval (deployment was prior to the 15-minute sample interval being required). Therefore, no samples were obtained on the 15 and 45 minute marks during this deployment.

The BA121106 deployment experienced a battery failure and ceased logging data on 01/19/07 06:30, so data from the remainder of the deployment (01/19/07 06:15 – 01/29/07 09:00) are missing.

The BA040307 deployment was erroneously programmed to sample on a 30-minute interval (deployment was prior to the 15-minute sample interval being required). Therefore, no samples were obtained on the 15 and 45 minute marks during this deployment.

The dissolved oxygen probe appeared to not communicate between 04/03/07 10:30:00 to 04/03/07 16:00:00 by evidence of the dataset reflecting 500% measurements; these Dissolved Oxygen data have been rejected. More realistic values were recorded from 04/03/07 16:30:00 until the end of the deployment, and the probe post-deployed acceptably, so these data are considered suspect.

The BA050307 deployment was erroneously programmed to sample on a 30-minute interval (deployment was prior to the 15-minute sample interval being required). Therefore, no samples were obtained on the 15 and 45 minute marks during this deployment.

Dissolved Oxygen readings appeared to be low at the end of the BA050307 and did not match up with the first DO readings of the BA060607 deployment. No post-calibration information was recorded. The DO data from this deployment are considered suspect.

The pH probe used in the BA050307 deployment appeared to have a poor pH slope, and the values recorded appear a little low as compared to the BA040307 or the BA060607 deployments. All pH data collected during the BA050307 deployment are rejected.

The DO probe used in the BA060607 deployment allegedly post-calibrated poorly (72.6 in a 100% environment), but the last DO values recorded are very comparable to the successive deployment (BA073107). It is suspected that poor post-calibration procedures were not followed.

Upon retrieval of the BA070307 deployment, it was found that many amphipods had established residency in the sonde guard, resulting in elevated turbidity values during the deployment. Because it cannot be identified when they first established residency and when turbidity data were first affected, all turbidity data collected during this deployment are considered suspect.

Upon retrieval of the BA073107 deployment, it was discovered that the turbidity wiper had fallen off, but the turbidity optics and DO membrane were clear or had very little

fouling. It cannot be determined when, and if, fouling interfered with Turbidity measurements, so all data from the deployment are considered suspect.

Upon retrieval of the BA082907 deployment, it was found that numerous mudcrabs had established residency in the sonde guard, resulting in elevated turbidity values during the deployment. Because it cannot be identified when they first established residency and when turbidity data were first affected, all turbidity data collected during this deployment are considered suspect.

It was discovered, after the datasonde had been deployed for the BA092707 deployment, that the turbidity wiper had fallen off pre-deployment. On 10/04/07 a new EDS wiper was installed, resulting in an out-of-water event at 10:00:00 on this date. All turbidity data prior to this date are considered suspect because the wiper had not been cleaning the optics.

During maintenance of the BA092707 deployment on 10/04/07 10:00, it appears that the Dissolved Oxygen membrane was damaged. All dissolved oxygen data from this time to the end of the deployment were therefore rejected.

Upon retrieval of the BA101107 deployment, it was discovered that the ports of the specific conductivity probe post-calibrated a little low (9.73 in a 10.00 standard). It is not clear what caused this to occur (no fouling of the ports was noted), but sensor drift is suspected. Because it cannot be determined when this first started affecting the data, all Specific Conductivity values from this deployment are considered suspect. Likewise, all salinity, dissolved oxygen concentration (mg/l) and depth data for this deployment are considered suspect.

It appears that the Dissolved Oxygen membrane/probe “drifted” during the BA110207 deployment, as evident by high post-calibration values (approximately 112% in a 100% environment) and differing in comparison to “field values” obtained with a YSI 600 sonde/650 MDS display. Therefore, DO data from this deployment are considered suspect.