Chesapeake Bay Virginia (CBV) NERR Water Quality Metadata
January – December 2009
Latest Update: May 22, 2014

I. Data Set and Research Descriptors

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2) Entry verification

Deployment data are uploaded from the YSI data logger to a Personal Computer (IBM compatible). Files are exported from EcoWatch in a comma-delimited format (.CDF) and uploaded to the CDMO where they undergo automated primary QAQC; automated depth/level corrections for changes in barometric pressure (cDepth or cLevel parameters); and become part of the CDMO's online provisional database. All pre- and post-deployment data are removed from the file prior to upload. During primary QAQC, data are flagged if they are missing or out of sensor range. The edited file is then returned to the Reserve for secondary QAQC where it is opened in Microsoft Excel and processed using the CDMO's NERRQAQC Excel macro. The macro inserts station codes, creates metadata worksheets for flagged data and summary statistics, and graphs the data for review. It allows the user to apply QAQC flags and codes to the data, remove any overlapping deployment data, append files, and export the resulting data file for upload to the CDMO. Upload after secondary QAQC results in ingestion into the database as provisional plus data, recalculation of cDepth or cLevel parameters, and finally tertiary QAQC by the CDMO and assimilation into the CDMO's authoritative online database. Where deployment overlap occurs between files, the data produced by the newly calibrated sonde is generally accepted as being the most accurate. For more information on QAQC flags and codes, see Sections 11 and 12. Joy Austin has been responsible for data management since January 2002.

3) Research objectives

Goodwin Islands (GI) component:
The Goodwin Islands represent marsh islands surrounded by intertidal flats, submerged aquatic vegetation (SAV) beds, oyster reefs, and shallow open estuarine waters. Because minimal human activities occur within upland

portions, the Goodwin Islands are suitable as a reference or control site for non-point source water quality issues. Furthermore, due to extensive wetlands, intertidal, and submerged habitats, the Goodwin Islands are used extensively for SAV, material flux, fisheries science and trophic interaction research activities.

Claybank (CB) component:
The Claybank site represents a shallow (< 2m) littoral area approximately 300-400 meters in width and located within the mesohaline portion of the York River estuary. Prior to 1972, this area supported submersed aquatic vegetation (SAV) but current conditions are not conducive to SAV survival. This site is used extensively to study sediment dynamics and environmental stress on SAV.

Taskinas Creek (TC) component:
The Taskinas Creek watershed is representative of an inner coastal plain, rural watershed within the southern Chesapeake Bay system. This watershed is dominated by forested and agricultural land uses with an increasing urban land use component. The drainage basin is suited for investigating hydrologic and non-point source water quality issues associated with developing land use patterns.

Sweet Hall Marsh (SH) component:
Sweet Hall Marsh is the most downriver extensive tidal freshwater marsh located in the Pamunkey River, one of two major tributaries of the York River. Research activities are currently addressing the impacts of salinity intrusion due to relative sea level rise. In addition, Sweet Hall Marsh has been used extensively to study general ecology and material flux within tidal freshwater marshes.

4) Research methods

The following research methods apply for all stations.

A YSI 6600 EDS and a YSI 6600 V2 unvented dataloggers were used to measure specific conductivity, pH, depth, percent dissolved oxygen saturation, temperature, and turbidity at 15-minute intervals throughout the 2009 deployment year (see Section 6 for deployment intervals). Salinity and dissolved oxygen concentration are calculated parameters. At approximately one to two-week intervals, the datalogger was returned to the lab for downloading, cleaning, membrane replacement and recalibration. Maintenance intervals vary from year to year and site-to-site depending on the amount of biofouling and expected battery life. In general, YSI dataloggers were deployed for two-week intervals from mid October to the end of June and one-week intervals from the beginning of July through mid October. A second YSI datalogger was deployed following retrieval of the original YSI datalogger in order to maintain a continuous record.

Field verification samples for pH, dissolved oxygen, salinity, and temperature were taken during the deployment/retrieval procedure. Temperature, pH, salinity and dissolved oxygen were determined in the field by using the YSI 600 XLM sonde. All YSI procedures are in accordance with the YSI operating manual methods, Sections 3 and 6. Standards for pH were purchased from Fisher. Standards for specific conductivity and turbidity were purchased from YSI. Data are reviewed and edited according to the YSI Data Review and Editing Protocol in Appendix C of the CDMO manual version 6.2.

Goodwin Islands (GI) component:
The Chesapeake Bay Virginia NERR maintains a long-term water quality monitoring station at Goodwin Islands. This station is located on the southeastern side of the main island in a shallow embayment, approximately 400 meters from shore. The station was established in 1997 and consisted of a stable structure composed of a 4 inch PVC pipe housed within a galvanized steel tower. The lower portion of the PVC pipe was milled to allow for water circulation within the pipe and around the datalogger sensors. The datalogger was suspended so that the sensors are maintained 0.5 m from the bottom substrate. On July 22, 2004 (12:15 EST), the station was moved approximately 25 meters southwest of the previous station in order to address sand shoaling and station maintenance issues. Other than the datalogger being suspended 0.25 m above the bottom substrate, the construction design of the new station is identical to the previous station. On March 25, 2009 (9:15 EST), the new station coordinates: Lat 37.215796;

Long -76.392675 is now located approximately 400 feet south of the old station coordinates: Lat 37.217013; Long -76.392620. The station was moved in order to address sand shoaling and station maintenance issues. The construction design of the new station is a stable structure composed of a 4 inch PVC pipe bolted to 3 ½ inch blocks screwed into a 10 inch marine treated piling (16 feet in length and driven into the sediment approximately 6 ft. to 7ft.). PVC pipe is suspended to the blocks by hanger clamps which allow the tube to be switched and replaced easily for maintenance and for depth adjustments. The lower portion of the PVC pipe is milled to allow water to circulate within the pipe and around the datalogger sensors. The datalogger is currently suspended 10 cm above the bottom substrate.

Claybank (CB) component:
The Chesapeake Bay Virginia NERR maintains a long-term water quality monitoring station at Claybank. The station is located within a shallow (<2m) littoral area approximately 300-400 meters wide. A stable structure that consists of a 4 inch PVC pipe attached to a piling was built in January 2001. The lower portion of the PVC pipe was milled to allow for water circulation within the pipe and around the datalogger sensors. The datalogger is suspended so that sensors are located 0.25 m from the bottom substrate. On June 17, 2004 (13:15 EST) the station was moved approximately 100 meters offshore of the previous station in order to address sand shoaling and station maintenance issues. The new structure is composed of a 4 inch PVC pipe, with the lower portion milled to allow for uninhibited water circulation, housed within a galvanized steel tower. The datalogger is suspended 0.31 m above the bottom substrate. The new station results in sensors being maintained 9 cm deeper as compared to the previous station. Due to station stabilization issues, the Clay Bank station was reestablished on June 5, 2006 at 13:00. The new station coordinates: Lat 37.20800; Long 76.36673 is located approximately 3 meters down river of the old station coordinates: Lat 37.21739; Long 76.3954. The new station retained a similar water depth from the water surface to the bottom of the datalogger as the old station. On March 25, 2009 (10:45 EST), the new station coordinates: Lat 37.346665; Long -76.611263 is located approximately 5 meters west of the old station coordinates: Lat 37.346671; Long -76.611205. The station was moved in order to address station stability and station maintenance issues. The construction design of the new station is a stable structure composed of a 4 inch PVC pipe bolted to 3 ½ inch blocks screwed into a 10 inch marine treated piling (16 feet in length and driven into the sediment approximately 6 ft. to 7ft.). PVC pipe is suspended to the blocks by hanger clamps which allow the tube to be switched and replaced easily for maintenance of the tube and for depth adjustments. The lower portion of the PVC pipe is milled to allow water to circulate within the pipe and around the datalogger sensors. The datalogger is currently suspended 40 cm above the bottom substrate.

Taskinas Creek (TC) component:
The Chesapeake Bay Virginia NERR maintains a long-term water quality monitoring station at Taskinas Creek. The station is located near the mouth of Taskinas Creek where the tidal marsh creek converges with the York River estuary. A simple deployment, consisting of a suspended wire attached to an overhanging tree, was established in September 1995. The datalogger was suspended at a fixed depth approximately 0.5 m above the creek-bed. In September 1997, the deployment was modified so that the datalogger remained secure and stable at all times within a 4 inch PVC housing attached to a piling system. The lower portion of the PVC pipe was milled to allow for water circulation within the pipe and around the datalogger sensors. The datalogger was suspended so that the sensors are maintained 0.5 m above the bottom substrate. On May 19, 2009 (11:30 EST), the station coordinates: Lat 37.414986; Long -76.71442 is located approximately 2 feet away from old station Lat 37.41497; Long -76.71441. The station was moved in order to address station stability and station maintenance issues. The construction design of the new station is a stable structure composed of a 4 inch PVC pipe bolted to 3 ½ inch blocks screwed into a 10 inch marine treated piling (16 feet in length and driven into the sediment approximately 6 ft. to 7ft.). PVC pipe is suspended to the blocks by hanger clamps which allow the tube to be switched and replaced easily for maintenance of the tube and for depth adjustments. The lower portion of the PVC pipe is milled to allow water to circulate within the pipe and around the datalogger sensors. The datalogger is currently suspended 25 cm above the bottom substrate.

Sweet Hall Marsh (SH) component:
The Chesapeake Bay Virginia NERR maintains a long-term water quality station at Sweet Hall Marsh. This station, established in 2000, is located adjacent to a low-use boathouse where a 6-inch PVC pipe is attached to an adjacent pier piling. The datalogger was suspended so that the sensors remained 0.7 m from the bottom substrate. In contrast to above stations, the Sweet Hall Marsh station is maintained on a two-week deployment interval

throughout the year. In order to prepare the Sweet Hall Marsh station for telemetry equipment, a new station platform was installed on May 4, 2006 at the exact location of the old station. All elevations, height off the bottom and total water depth remained the same as the old station platform.

A Sutron Sat-Link2 transmitter was installed at this station on 05/04/06 and transmits data to the NOAA GOES satellite, NESDIS ID #3B0116F6. The transmissions are scheduled hourly and contain four (4) datasets reflecting fifteen minute data sampling intervals. Upon receipt by the CDMO, the data undergoes the same automated primary QAQC process detailed in Section 2 above. The "real-time" telemetry data become part of the provisional dataset until undergoing secondary and tertiary QAQC and assimilation in the CDMO's authoritative online database. Provisional and authoritative data are available at http://cdmo.baruch.sc.edu.

5) Site location and character

In 2009 the Goodwin Island and Claybank stations were moved. We have reviewed the data from before and after this move. Note that the moves in space were on the order of 100m or less. There are no differences evident in the time series data (signals) for any of the parameters measured except for a slight increase in depths that are noted in the metadata (approximately 10-25 cm deeper). We also compared statistically the medians as well as the quartiles and other descriptors of the different parameters measured for several years before and after the switches with no significant differences found.

Below is a summary of the station locations and when they were moved:

Site	Old Lat/Long (2009 and previous years)	Current Lat/Long (2009 to Present)
GI	37.21739, -76.3954	37.215796, -76.392675 Station moved 3/25/2009 09:15
CB	37.34855, -76.61123	37.346665, -76.611263 Station moved 3/25/2009 10:45
TC	37.41497, -76.714414	37.414986, -76.71442 Station rebuilt 05/19/2009 11:30
SH	37.57138, -76.88424	37.57138, -76.88424

(a) Goodwin Islands (Lat 37.215796; Long 76.392675)

The Goodwin Islands component of CBNERRVA is located on the southern side of the mouth of the York River. The station is located approximately 400 meters from shore, with an average water depth on the order of 1 meter. MHW depth at the sample location is approximately 1.70 meters. Goodwin Islands are a 315 ha (777 acre) archipelago of salt-marsh islands surrounded by inter-tidal flats and extensive beds of submerged aquatic vegetation dominated by eelgrass (Zostera marina) and Widgeon grass (Ruppia maritime). Water circulation patterns around the island are influenced by York River discharge and wind patterns of the Chesapeake Bay. Tides at the Goodwin Islands are semi-diurnal and display an average range of 0.7 m (range: 0.4 - 1.1 m). Mean

seasonal water temperature values ranged from 13.7-15.6 °C for spring (March-May), 25.7-27.2 °C for summer (June-August), 18.0-19.2 °C for fall (September-November), and 4.7-8.2 °C for winter (January-February, and December). Mean seasonal salinity values ranged from 13.9-23.0 psu for spring, 17.2-23.0 psu for summer, 16.5-24.0 for fall, and 15.9-23.3 psu for winter. The data logger probes are located 0.5 m above the sandy substrate bottom. Potential activities that could impact the site included, light recreational and commercial boating activity.

(b) Claybank (Lat 37.346665; Long 76.611263)

The Claybank station is located within a shallow (<2m) littoral area approximately 300-400 meters wide along the mesohaline portion of the York River estuary. The site is approximately 26 km upriver from the mouth of the estuary. The shoreline consists of a narrow fringe of salt marsh with some areas armored with bulkhead or stone. Tidal range is on the order of 0.85 meters and depth at MHW is approximately 2.25 meters. This station is located along the north shoreline of the estuary in an area that historically (prior to 1972) supported submersed aquatic vegetation. The sampling station is influenced by a secondary turbidity maximum that moves back and forth in a region of about 20-40 km from the mouth of the York River estuary. Substrate within the region varies from fine sediments to sand. The site is exposed to strong winds from the northwest and re-suspension of sediment during storm events can be high. There is no fresh water input at this site. Seasonal water quality conditions described here are from Spring: March-May; Summer: June-August; Fall: September-November; Winter: December-February. Mean seasonal water temperature ranged between 14.0-16.2 for spring, 26.1-27.7 for summer, 17.5-19.4 for fall, and 4.9-8.0 °C in winter. Mean seasonal salinity ranged between 15.7-20.3 for spring, 16.5-21.3 for summer, 13.2-21.6 for fall, and 14.3-20.0 ppt in winter.

(c) Taskinas Creek (Lat 37.414986; Long 76.71442)

Taskinas Creek Reserve, component of CBNERRVA, encompasses 397 ha (980 acres) and is located within the boundaries of York River State Park near the town of Croaker, Virginia. The small sub-estuary of the York River is located on the southern side of the river, approximately 37 km up river from the mouth of the York River. The Taskinas Creek watershed is representative of an inner coastal plain, rural watershed within the southern Chesapeake Bay system. The watershed is dominated by forested and agricultural land uses with an increasing residential land use component. The non-tidal portion of Taskinas Creek contains feeder streams that drain oak-hickory forests, maple-gum-ash swamps and freshwater marshes. Freshwater mixed wetlands are found in the upstream reaches of Taskinas Creek. The creek is roughly 2 meters deep and 20 meters wide towards the lower end of the creek where substrate is dominated by fine sediment. MHW depth at the sample location is approximately 2.0 meters and mean tide range is 0.85 meters. Mean seasonal water temperature values ranged from 15.2-19.0 °C for spring, 26.8-28.2 °C for summer, 15.7-18.3 °C for fall, and 3.6-9.0 °C for winter. Located within the meso-polyhaline region of the York River estuary, mean seasonal salinity values ranged from 4.0-14.0 psu for spring, 7.0-18.2 psu for summer, 6.9-17.0 for fall, and 5.8-15.3 psu for winter. Potential activities that could impact the site include residential development, selective hardwood logging, and light recreational boating activity. Wildlife populations have been shown to influence microbiological water quality within the watershed.

(d) Sweet Hall Marsh (Lat 37.57138; Long 76.88424)

Sweet Hall Marsh is the most downriver extensive tidal freshwater marsh located in the Pamunkey River, one of two major tributaries of the York River. The marsh is located approximately 77 km upriver from the mouth of the York River estuary. The reserve is 353 ha (871 acres) in area and includes 331 ha (818 acres) of emergent fresh-water marsh, 14 ha (35 acres) of permanently flooded broad-leaved forested wetlands and approximately 4 ha (9 acres) of scrub-shrub. The marsh community is classified as freshwater mixed. Mean tidal range at Sweet Hall Marsh is on the order of 0.9 meters and MHW depth at the sample location is approximately 1.5 meters. The Pamunkey River, which surrounds Sweet Hall Marsh, can reach depths up to 15 meters. Substrate within the littoral zone and channel is dominated by fine sediment. Mean seasonal water temperature values ranged from 14.7-16.7 °C for spring, 26.7-27.9 °C for summer, 18.6-19.1 °C for fall, and 4.7-6.3 °C for winter. Located within the oligohaline, lower freshwater reaches of the Pamunkey River, mean seasonal salinity values ranged from 0.1-3.4 psu for spring, 0.1-8.4 psu for summer, 0.3-8.4 psu for fall, and 0.1-3.2 psu for winter Potential activities that could impact the site include minor municipal point source discharges above and below river of Sweet Hall Marsh, a major industrial discharge site (pulp mill) in the town of West Point and significant groundwater withdrawal near the confluence of the Pamunkey and York Rivers.

6) Data collection period

Claybank (CB)

Deployment Date/Time (MM/DD/YY)	(HH:MM:SS)	Retrieval Date/Time (MM/DD/YY)	(HH:MM:SS)
12/18/08	09:45:00	01/08/09	10:30:00
01/08/09	10:45:00	01/26/09	10:00:00
01/26/09	10:15:00	02/11/09	10:00:00
02/11/09	10:15:00	02/25/09	12:00:00
02/25/09	12:15:00	03/11/09	10:30:00
03/11/09	10:45:00	03/25/09	10:30:00
03/25/09	10:45:00	04/01/09	10:00:00
04/01/09	10:15:00	04/15/09	10:00:00
04/15/09	10:15:00	04/29/09	09:00:00
04/29/09	09:15:00	05/13/09	10:00:00
05/13/09	10:15:00	05/27/09	10:00:00
05/27/09	10:15:00	06/10/09	10:15:00
06/10/09	10:30:00	06/24/09	10:00:00
06/24/09	10:15:00	07/08/09	10:15:00
07/08/09	10:30:00	07/22/09	10:45:00
07/22/09	11:00:00	08/05/09	10:00:00
08/05/09	10:15:00	08/20/09	10:45:00
08/20/09	11:00:00	08/27/09	09:15:00
08/27/09	09:30:00	09/03/09	10:00:00
09/03/09	10:15:00	09/09/09	13:00:00
09/09/09	13:15:00	09/17/09	08:45:00
09/17/09	09:00:00	09/24/09	08:30:00
09/24/09	08:45:00	10/01/09	09:30:00
10/01/09	09:45:00	10/19/09	13:15:00
10/19/09	13:30:00	10/29/09	10:30:00
10/29/09	10:45:00	11/17/09	11:45:00
11/17/09	12:00:00	12/07/09	12:00:00
12/07/09	12:15:00	12/18/09	11:15:00
12/18/09	11:30:00	01/06/10	12:45:00

Goodwin Islands (GI)

Deployment Date/Time (MM/DD/YY)	(HH:MM:SS)	Retrieval Date/Time (MM/DD/YY)	(HH:MM:SS)
12/18/08	11:15:00	01/08/09	09:15:00
01/08/09	09:30:00	01/15/09	06:00:00
01/22/09	10:15:00	02/11/09	09:00:00
02/11/09	09:15:00	02/25/09	09:45:00
02/25/09	10:00:00	03/11/09	08:45:00
03/11/09	09:00:00	03/25/09	09:00:00
03/25/09	09:15:00	04/01/09	08:45:00
04/01/09	09:00:00	04/15/09	08:30:00
04/15/09	08:45:00	04/30/09	08:00:00
04/30/09	08:15:00	05/13/09	08:15:00
05/13/09	08:30:00	05/27/09	09:00:00
05/27/09	09:15:00	06/10/09	08:15:00
06/10/09	08:30:00	06/24/09	08:00:00

06/24/09	08:15:00	07/08/09	08:15:00
07/08/09	08:30:00	07/13/09	09:45:00
07/13/09	10:00:00	07/22/09	08:15:00
07/22/09	08:45:00	07/29/09	07:45:00
07/29/09	08:15:00	08/05/09	08:15:00
08/05/09	08:30:00	08/20/09	08:30:00
08/20/09	08:45:00	08/27/09	08:15:00
08/27/09	08:30:00	09/09/09	11:45:00
09/09/09	12:00:00	09/24/09	10:45:00
09/24/09	11:15:00	10/01/09	08:30:00
10/01/09	08:45:00	10/19/09	11:30:00
10/19/09	11:45:00	10/29/09	08:15:00
10/29/09	08:30:00	11/17/09	09:30:00
11/17/09	10:00:00	12/07/09	10:15:00
12/07/09	10:30:00	12/18/09	09:30:00
12/18/09	09:45:00	01/06/10	10:15:00

Sweet Hall Marsh (SH)

Deployment Date/Time		Retrieval Date/Time	
(MM/DD/YY)	(HH:MM:SS)	(MM/DD/YY)	(HH:MM:SS)
12/22/08	12:15:00	01/07/09	12:00:00
01/07/09	12:15:00	01/15/09	15:15:00
01/22/09	13:45:00	02/03/09	12:30:00
02/23/09	12:45:00	02/18/09	12:45:00
02/18/09	13:00:00	03/05/09	13:00:00
03/05/09	13:15:00	03/19/09	12:30:00
03/19/09	12:45:00	03/31/09	11:00:00
03/31/09	11:15:00	04/14/09	11:45:00
04/14/09	12:00:00	04/28/09	11:15:00
04/28/09	11:30:00	05/12/09	12:00:00
05/12/09	12:15:00	05/26/09	11:30:00
05/26/09	11:45:00	06/09/09	12:00:00
06/09/09	12:15:00	06/22/09	11:30:00
06/22/09	11:45:00	07/06/09	12:00:00
07/06/09	12:15:00	07/20/09	12:45:00
07/20/09	13:00:00	08/03/09	12:45:00
08/03/09	13:00:00	08/17/09	11:15:00
08/17/09	11:45:00	08/31/09	09:30:00
08/31/09	09:45:00	09/14/09	12:30:00
09/14/09	12:45:00	09/28/09	11:30:00
09/28/09	12:00:00	10/12/09	11:45:00
10/12/09	12:15:00	10/28/09	12:00:00
10/28/09	12:15:00	11/16/09	15:45:00
11/16/09	16:00:00	12/02/09	12:45:00
12/02/09	13:00:00	12/21/09	13:15:00
12/21/09	13:30:00	01/05/10	16:15:00

Taskinas Creek (TC)

Deployment Date/Time		Retrieval Date/Time	
(MM/DD/YY)	(HH:MM:SS)	(MM/DD/YY)	(HH:MM:SS)
12/22/08	10:00:00	01/07/09	09:30:00
01/07/09	09:45:00	01/22/09	12:15:00
01/22/09	12:30:00	02/03/09	09:45:00
02/03/09	10:00:00	02/18/09	10:15:00

02/18/09	10:30:00	03/05/09	09:45:00
03/05/09	10:00:00	03/19/09	09:15:00
03/19/09	09:30:00	03/31/09	08:45:00
03/31/09	09:00:00	04/14/09	09:00:00
04/14/09	09:15:00	04/28/09	09:15:00
04/28/09	09:30:00	05/12/09	09:15:00
05/12/09	09:30:00	05/19/09	11:15:00
05/19/09	11:45:00	05/26/09	08:30:00
05/26/09	08:45:00	06/09/09	09:15:00
06/09/09	09:30:00	06/22/09	08:45:00
06/22/09	09:00:00	06/29/09	09:00:00
06/29/09	09:15:00	07/06/09	09:00:00
07/06/09	09:15:00	07/15/09	09:00:00
07/15/09	09:15:00	07/20/09	09:00:00
07/20/09	09:15:00	07/27/09	08:45:00
07/27/09	09:00:00	08/03/09	10:00:00
08/03/09	10:15:00	08/10/09	09:00:00
08/10/09	09:15:00	08/17/09	08:45:00
08/17/09	09:00:00	08/31/09	11:30:00
08/31/09	11:45:00	09/08/09	08:45:00
09/08/09	09:00:00	09/14/09	09:30:00
09/14/09	09:45:00	09/21/09	08:45:00
09/21/09	09:00:00	09/28/09	08:45:00
09/28/09	09:00:00	10/12/09	09:00:00
10/12/09	09:15:00	10/28/09	09:15:00
10/28/09	09:30:00	11/16/09	14:15:00
11/16/09	14:30:00	12/02/09	09:45:00
12/02/09	10:00:00	12/21/09	10:45:00
12/21/09	11:00:00	01/05/09	14:15:00

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

Additional water quality monitoring programs within the York River system include:

a) USEPA Chesapeake Bay Mainstem and Tributary Monitoring Program. Since 1984, biweekly to monthly water quality sampling at a series of sites located along the mid-river channel has been conducted as part of the Chesapeake Bay Program (www.chesapeakebay.net). Station ID's: York River proper (WE4.2, LE4.3, LE4.2, LE4.1, RET4.3), the Pamunkey River (RET4.1, TF4.2) and Mattaponi River (RET4.2 and TF4.4).

b) VIMS Shoal Survey. Since 1984, biweekly to monthly water quality sampling at a series of sites located along the shoal areas of the lower York River estuary has been conducted by the Biological Sciences Department at the Virginia Institute of Marine Science. Station ID's include: Guinea Marsh, Goodwin Island, VIMS, Yorktown, Mumfort Islands, Catlett Islands and Clay Bank.

c) Alliance for the Chesapeake Bay Volunteer Monitoring Program. Physical and chemical (limited nutrients) data are collected by a volunteer network along the York River system (www. Acb-online.org). Station ID's include: Thorofare Creek, Wormley Creek, Blackwell Landing, Pamunkey Trail, Timberneck Creek, Yorktown Naval Weapons Station, Gloucester Point, West Point and Croaker Landing. Note:
Some stations may be inactive.

d) VIMS Juvenile Abundance Monitoring Survey. As part of their Juvenile Abundance Monitoring Surveys, water quality and hydrographic data has been collected since 1968 along a series of sites in the York River estuary (includes the Mattaponi and Pamunkey River systems) by the Fisheries Science Department (www.fisheries.vims.edu/research.html) at the Virginia Institute of Marine Science. Surveys include the VIMS Trawl Survey, the Striped Bass Seine Survey and the Juvenile Shad/River Herring Pushnet Survey.

e) Virginia Department of Health. The Virginia Department of Health, Division of Shellfish Sanitation's (www.vdh.state.va.us/shellfish) Seawater Sampling Program collects microbial and general water quality and hydrographic data along a series of sites in the York River estuary (includes lower portions of the Mattaponi and Pamunkey River systems).

f) USEPA Chesapeake Bay Shallow Water Monitoring Program. Since May 2003, CBNERRVA has maintained additional continuous (15 minute) fixed water monitoring stations within the York, Piankatank, James River, Rappahannock River, and Potomac River estuary systems using YSI 6600 EDS Datasondes. Measurements for this program include: temperature, specific conductivity, dissolved oxygen, pH, turbidity, insitu fluorescence, and depth. York River stations are located at Gloucester Point and White House (Pamunkey River). Piankatank River stations are located at Burton's Point, Bland's Wharf, and Dragon Run. James River stations are located at Wythe Point, James River Country Club, 4H Club, Chickahominy Haven, Rice Center, Appomattox, and Osborne Landing. Rappahannock River stations are located at Hicks Landing, Kendale Farms, Bowler's Wharf, Christ Church, and Corrotoman River. Potomac River stations are located Potomac Creek, Colonial Beach, Yeocomico River, and Nomini Bay. An additional surface water quality mapping program, which monitors the above stated parameters, at sub-surface depths of approximately 0.25 m along continuous cruise tracts, occurs on a monthly basis in the York River estuary (see www.VECOS.org). This sub-surface continuous sampling of water quality has been conducted since May 2003 on the York River until present, and for the Pamunkey and Mattaponi Rivers from May 2003 through October 2005.

g) Chesapeake Bay National Estuarine Research Reserve (CBV) Meteorological Monitoring Program. Since 2001, CBNERR-VA has maintained a meteorological monitoring station located at Taskinas Creek within the York River estuary system. Measurements for this program include: Air Temperature (degrees C), Relative Humidity (%), Barometric Pressure (mb), Wind speed (m/s),Wind Direction (degrees), PAR (mmol/m^2), and Precipitation (mm) data.

h) Chesapeake Bay National Estuarine Research Reserve (CBV) Nutrient Monitoring Program. Since 2002, CBNERR-VA has maintained monthly grab samples and a Diel sampling program. Monthly grab samples were collected at the following sites: Goodwin Island, York River Bridge, Catlett Island, Claybank, Taskinas Creek, and Sweet Hall Marsh. On a monthly basis, the Diel sampling program collected samples at Taskinas Creek, a small tributary of the York River, every two and one-half hours throughout a complete tidal cycle in order to quantify the short-term temporal variability of selected nutrients and plant pigments in the water column.

II. Physical Structure Descriptors

9) Sensor specifications

CBV NERR deployed 6600EDS and 6600V2 data sondes in 2009. Rapid-pulse DO sensors were deployed at sites; CB, SH, and TC from January - December 2009. ROX DO sensors were deployed at GI from January through December 2009.

YSI 6600EDS data sonde:

Parameter: Temperature
Units: Celsius (C)
Sensor Type: Thermistor
Model#: 6560
Range: -5 to 50 C
Accuracy: +/- 0.15
Resolution: 0.01 C

Parameter: Conductivity
Units: milli-Siemens per cm (mS/cm)
Sensor Type: 4-electrode cell with autoranging
Model#: 6560
Range: 0 to 100 mS/cm
Accuracy: +/- 0.5% of reading + 0.001 mS/cm
Resolution: 0.001 mS/cm to 0.1 mS/cm (range dependant)

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

Parameter: Dissolved Oxygen % saturation
Units: percent air saturation (%)
Sensor Type: Rapid Pulse - Clark type, polargraphic
Model#: 6562
Range: 0 to 500% air saturation
Accuracy: 0-200% air saturation: +/- 2% of the reading or 2% air saturation, whichever is greater; 200 to 500% air saturation: +/- 6% of the reading
Resolution: 0.1% air saturation

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature, and salinity)
Units: milligrams/Liter (mg/L)
Sensor Type: Rapid Pulse - Clark type, polargraphic
Model#: 6562

Range: 0 to 50 mg/L
Accuracy: 0-20 mg/L: +/- 2% of the reading or 0.2 mg/L, whichever is greater
20 to 50 mg/L: +/- 6% of the reading
Resolution: 0.01 mg/L

Parameter: Non-vented Level - Shallow (Depth)
Units: feet or meters (ft or m)
Sensor Type: Stainless steel strain gauge
Range: 0 to 30 ft (9.1 m)
Accuracy: +/- 0.06 ft (0.018 m)
Resolution: 0.001 ft (0.001 m)

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

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

Parameter: Chlorophyll Fluorescence
Units: micrograms/Liter
Sensor Type: Optical probe w/ mechanical cleaning
Model#: 6025
Range: 0 to 400 ug/Liter
Accuracy: Dependent on methodology
Resolution: 0.1 ug/L chl a, 0.1% FS

YSI 6600V2 data sonde:

Parameter: Temperature
Units: Celsius (C)
Sensor Type: Thermistor
Model#: 6560
Range: -5 to 50 C
Accuracy: +/- 0.15
Resolution: 0.01 C

Parameter: Conductivity
Units: milli-Siemens per cm (mS/cm)
Sensor Type: 4-electrode cell with autoranging
Model#: 6560
Range: 0 to 100 mS/cm
Accuracy: +/- 0.5% of reading + 0.001 mS/cm
Resolution: 0.001 mS/cm to 0.1 mS/cm (range dependant)

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

Sensor Type: Optical probe w/ mechanical cleaning
Model#: 6150 ROX
Range: 0 to 500% air saturation
Accuracy: 0-200% air saturation: +/- 1% of the reading or 1% air saturation, whichever is greater 200-500% air saturation: +/- 15% or reading
Resolution: 0.1% air saturation

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature, and salinity)
Units: milligrams/Liter (mg/L)
Sensor Type: Rapid Pulse - Clark type, polargraphic
Model#: 6562
Range: 0 to 50 mg/L
Accuracy: 0-20 mg/L: +/- 2% of the reading or 0.2 mg/L, whichever is greater
20 to 50 mg/L: +/- 6% of the reading
Resolution: 0.01 mg/L

Parameter: Non-vented Level - Shallow (Depth)
Units: feet or meters (ft or m)
Sensor Type: Stainless steel strain gauge
Range: 0 to 30 ft (9.1 m)
Accuracy: +/- 0.06 ft (0.018 m)
Resolution: 0.001 ft (0.001 m)

Parameter: pH – hemispherical bulb probe
Units: pH units
Sensor Type: Glass combination electrode
Model#: 6579
Range: 0 to 14 units
Accuracy: +/- 0.2 units
Resolution: 0.01 units

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

Parameter: Chlorophyll Fluorescence
Units: micrograms/Liter
Sensor Type: Optical probe w/ mechanical cleaning
Model#: 6025
Range: 0 to 400 ug/Liter
Accuracy: Dependent on methodology
Resolution: 0.1 ug/L chl a, 0.1% FS

Depth Qualifier:

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

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

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

10) Coded variable definitions

Sampling station:	Sampling site code:	Station code:
Claybank	CB	cbvcbwq
Goodwin Islands	GI	cbvgiwq
Sweet Hall Marsh	SH	cbvshwq
Taskinas Creek	TC	cbvtcwq

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 Calculated data: non-vented depth/level sensor correction for changes in barometric pressure
4 Historical Data: Pre-Auto QAQC
5 Corrected Data

12) QAQC code definitions – This section details the secondary QAQC Code definitions used in combination with the flags above. Include the following excerpt:

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

General Errors

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

Corrected Depth/Level Data Codes

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

Sensor Errors

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

Comments

CAB*	Algal bloom
CAF	Acceptable calibration/accuracy error of sensor
CAP	Depth sensor in water, affected by atmospheric pressure
CBF	Biofouling
CCU	Cause unknown
CDA*	DO hypoxia (<3 mg/L)
CDB*	Disturbed bottom

CDF	Data appear to fit conditions
CFK*	Fish kill
CIP*	Surface ice present at sample station
CLT*	Low tide
CMC*	In field maintenance/cleaning
CMD*	Mud in probe guard
CND	New deployment begins
CRE*	Significant rain event
CSM*	See metadata
CTS	Turbidity spike
CVT*	Possible vandalism/tampering
CWD*	Data collected at wrong depth
CWE*	Significant weather event

13) Post deployment information

Claybank:

Date (post cal)	Cond (ms) (Std:10)	DO (AirSat) (Std: 100%)	pH (Std:7)	Turb (Std:0)	Depth (Std:0)
01/09/09	10.010	51.9	7.09	-0.1	0.102
01/27/09	10.030	64.7	7.06	0.1	0.158
02/12/09	9.781	82.6	6.99	0.6	-0.116
02/26/09	9.703	65.7	7.04	-0.1	0.116
03/12/09	10.000	79.6	7.07	0.4	0.190
03/26/09	9.871	96.4	7.06	-0.1	0.014
04/02/09	10.140	99.2	7.01	0.5	0.018
04/16/09	9.919	100.8	7.04	-0.1	0.107
04/30/09	9.994	96.0	7.05	0.0	0.147
05/14/09	9.972	98.9	7.11	0.0	0.145
05/28/09	9.829	97.2	7.14	0.8	-0.023
06/11/09	9.883	102.3	7.52	0.0	-0.029
06/25/09	9.952	3.3	7.14	0.0	-0.065
07/09/09	9.293	101.7	7.00	0.8	0.062
07/23/09	9.697	97.4	7.08	0.2	-0.036
08/06/09	9.359	92.5	7.17	0.3	0.009
08/21/09	9.517	85.9	7.14	-1.2	0.012
08/28/09	9.920	101.0	7.07	-0.4	0.038
09/04/09	9.826	100.3	6.96	-0.2	0.046
09/11/09	10.080	99.1	7.08	0.3	0.038
09/18/09	10.020	101.0	6.96	1.1	0.061
09/25/09	10.030	100.4	7.25	0.0	0.072
10/02/09	9.949	99.6	7.02	0.4	0.026
10/20/09	9.825	100.4	7.11	-0.3	0.120
10/30/09	10.020	99.7	7.03	0.4	0.122
11/18/09	9.968	104.4	7.05	0.7	0.100
12/08/09	9.929	102.7	7.13	-0.6	0.195
12/21/09	9.899	100.3	6.97	0.2	0.068
01/07/10	9.978	88.2	7.07	0.0	0.137

Goodwin Island:

Date (post cal)	Cond (ms) (Std:10)	DO (AirSat) (Std: 100%)	pH (Std:7)	Turb (Std:0)	Depth (Std:0)

01/09/09	10.040	102.9	7.02	0.0	0.075
01/16/09	10.040	102.4	6.97	0.4	0.232
02/12/09	9.739	98.8	7.00	0.0	-0.072
02/26/09	9.338	101.2	7.03	-0.8	0.243
03/12/09	10.000	102.8	7.03	-0.2	0.256
03/26/09	10.010	na	7.02	0.5	0.055
04/02/09	10.050	99.7	7.04	-0.7	0.008
04/16/09	10.070	101.7	6.99	0.7	0.091
04/30/09	9.985	102.6	7.07	-0.6	0.128
05/14/09	9.910	99.4	7.03	-0.3	0.133
05/28/09	9.848	91.5	7.12	-0.6	-0.041
06/11/09	10.010	98.4	6.69	0.7	-0.019
06/25/09	9.899	97.9	7.06	-0.6	-0.047
07/09/09	9.773	98.6	7.00	0.4	0.049
07/14/09	10.230	na	6.97	1.5	0.051
07/23/09	9.795	100.3	6.93	0.2	-0.002
07/30/09	9.942	104.2	7.00	-1.0	-0.001
08/06/09	9.917	100.2	6.97	0.2	0.019
08/21/09	9.324	100.1	6.99	-0.1	-0.038
08/28/09	9.973	99.7	6.98	0.7	0.044
09/10/09	9.502	100.5	7.13	0.4	0.064
09/25/09	9.307	99.4	6.97	0.0	0.061
10/02/09	9.845	99.5	6.99	0.5	0.024
10/20/09	9.619	100.3	7.00	0.0	0.238
10/30/09	10.010	100.9	7.02	0.5	0.104
11/18/09	9.881	100.4	7.04	0.7	0.136
12/08/09	10.050	100.1	7.03	0.1	0.161
12/21/09	10.020	101.7	6.98	-0.7	0.121
01/07/10	10.030	100.2	7.01	-0.4	0.054

Sweethall Landing:

Date (post cal)	Cond (ms) (Std:10)	DO (AirSat) (Std: 100%)	pH (Std:7)	Turb (Std:0)	Depth (Std:0)
01/08/09	10.100	102.0	7.10	0.0	-0.087
01/16/09	10.070	103.9	7.01	0.2	0.294
02/04/09	10.020	103.2	7.11	-0.4	0.022
02/19/09	10.090	99.6	7.03	0.1	-0.153
03/06/09	10.010	113.2	7.03	-0.1	0.090
03/20/09	9.998	104.5	7.00	0.1	0.066
04/01/09	10.000	106.4	7.09	-0.2	0.054
04/15/09	9.949	101.1	7.05	-0.4	-0.060
04/29/09	10.050	109.1	7.07	-0.1	0.147
05/13/09	10.010	101.8	7.07	-0.1	0.151
05/27/09	10.020	81.0	7.04	-0.7	0.007
06/10/09	10.100	102.4	7.02	0.1	-0.004
06/23/09	9.965	101.0	6.97	0.3	-0.068
07/07/09	10.130	100.3	7.06	0.5	-0.051
07/21/09	9.992	102.4	7.07	-0.2	0.039
08/04/09	9.880	102.8	7.13	0.0	0.011
08/18/09	9.998	105.1	7.00	0.8	0.044
09/01/09	10.110	101.0	7.08	0.6	0.098
09/15/09	10.050	101.3	7.03	-0.9	0.008
09/29/09	10.120	97.5	7.02	0.0	-0.080

10/13/09	10.030	101.4	7.13	0.0	0.043
10/29/09	10.000	102.5	7.06	-0.5	0.083
11/17/09	10.020	101.5	7.07	-0.6	0.085
12/03/09	10.020	101.3	7.04	0.0	-0.096
12/23/09	10.030	103.2	7.00	1.0	0.113
01/06/10	10.060	101.0	7.05	0.0	-0.009

Taskinas Creek:

Date (post cal)	Cond (ms) (Std:10)	DO (AirSat) (Std: 100%)	pH (Std:7)	Turb (Std:0)	Depth (Std:0)
01/08/09	10.030	98.1	7.02	0.8	-0.104
01/23/09	9.813	101.8	7.05	0.7	0.047
02/04/09	9.962	98.5	6.97	1.1	0.017
02/19/09	9.981	94.3	7.05	0.2	-0.156
03/06/09	9.981	99.9	6.96	0.3	0.030
03/20/09	10.050	99.4	7.11	0.0	0.099
04/01/09	9.989	99.8	7.04	0.0	0.053
04/15/09	9.999	98.3	7.01	0.0	-0.051
04/29/09	10.020	102.0	6.99	0.0	0.086
05/13/09	3.209	0.6	7.19	0.0	0.146
05/20/09	10.020	64.8	6.99	-0.1	0.165
05/27/09	10.000	101.2	6.99	0.1	0.013
06/10/09	9.939	100.9	7.01	-0.7	-0.020
06/23/09	9.685	97.4	7.10	0.3	-0.071
06/30/09	10.080	97.4	6.94	-0.1	-0.142
07/07/09	9.939	100.4	7.05	0.6	-0.046
07/16/09	10.000	100.6	7.07	0.2	-0.021
07/21/09	10.110	99.9	6.98	0.7	0.038
07/28/09	na	62.3	na	-0.4	0.018
08/04/09	10.060	103.3	7.06	-0.2	0.024
08/11/09	10.000	100.1	7.06	-0.1	-0.001
08/18/09	9.899	83.5	6.95	1.3	0.068
09/01/09	9.782	105.9	7.03	0.5	0.098
09/09/09	9.933	101.2	7.07	-0.3	0.043
09/15/09	10.070	69.2	7.00	-0.1	0.017
09/22/09	10.040	100.9	6.99	-0.5	0.078
09/29/09	10.010	99.0	7.02	-0.5	-0.069
10/13/09	9.932	99.8	7.10	-0.4	0.039
10/29/09	9.991	96.4	7.08	26.3	0.091
11/17/09	10.020	100.5	6.95	-0.3	0.083
12/03/09	10.190	100.6	7.01	0.8	-0.098
12/22/09	10.070	101.7	6.97	0.3	0.109
01/06/10	10.070	100.2	6.85	0.0	-0.013

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.

As noted in the station location section in 2009 the Goodwin Island and Claybank stations were moved. We have reviewed the data from before and after this move. Note that the moves in space were on the order of 100m or less. There are no differences evident in the time series data (signals) for any of the parameters measured except for a slight increase in depths that are noted in the metadata (approximately 10-25 cm deeper). We also compared statistically the medians as well as the quartiles and other descriptors of the different parameters measured for several years before and after the switches with no significant differences found.

Storm Events:

January – Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 45 mph and 0.72" of rain. Data suspect, data retained.

01/06/2009 00:00:00 – 01/07/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 50 mph and 0.41" of rain. Data suspect, data retained.

01/27/2009 00:00:00 – 01/28/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 45 mph and 0.72" of rain. Data suspect, data retained.

01/06/2009 00:00:00 – 01/07/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 50 mph and 0.41" of rain. Data suspect, data retained.

01/27/2009 00:00:00 – 01/28/2009 23:45:00

Sweet Hall Marsh:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 10-20 mph and 0.59" of rain. Data suspect, data retained.

01/06/2009 00:00:00 – 01/07/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 15-20 mph and 0.48" of rain. Data suspect, data retained.

01/27/2009 00:00:00 – 01/28/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 10-20 mph and 0.59" of rain. Data suspect, data retained.

01/06/2009 00:00:00 – 01/07/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 15-20 mph and 0.48" of rain. Data suspect, data retained.

01/27/2009 00:00:00 – 01/28/2009 23:45:00

February – Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 25-40 mph. Data suspect, data retained.

02/10/2009 00:00:00 – 02/12/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 20-30 mph and 0.96" of rain. Data suspect, data retained.

02/28/2009 00:00:00 – 02/28/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 25-40 mph. Data suspect, data retained.

02/10/2009 00:00:00 – 02/12/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 20-30 mph and 0.96" of rain. Data suspect, data retained.

02/28/2009 00:00:00 – 02/28/2009 23:45:00

Sweet Hall Marsh:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 20 mph and 0.76" of rain. Data suspect, data retained.

02/28/2009 00:00:00 – 02/28/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 20 mph and 0.76" of rain. Data suspect, data retained.

02/28/2009 00:00:00 – 02/28/2009 23:45:00

March – Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 40 mph and 1.07" of rain. Data suspect, data retained.

03/01/2009 00:00:00 – 03/02/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 15-20 mph and 1.79" of rain. Data suspect, data retained.

03/13/2009 00:00:00 – 03/19/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 15-25 mph and 1.84" of rain. Data suspect, data retained.

03/26/2009 00:00:00 – 03/29/2009 23:45:00

For the following dates and times, all data values were influenced by a wind event, winds up to 40 mph. Data suspect, data retained.

03/29/2009 00:00:00 – 03/29/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 40 mph and 1.07" of rain. Data suspect, data retained.

03/01/2009 00:00:00 – 03/02/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 15-20 mph and 1.79" of rain. Data suspect, data retained.

03/13/2009 00:00:00 – 03/19/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 15-25 mph and 1.84" of rain. Data suspect, data retained.

03/26/2009 00:00:00 – 03/29/2009 23:45:00

For the following dates and times, all data values were influenced by a wind event, winds up to 40 mph. Data suspect, data retained.

03/29/2009 00:00:00 – 03/29/2009 23:45:00

Sweet Hall Marsh:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 25-35 mph and 1.067" of rain. Data suspect, data retained.

03/01/2009 00:00:00 – 03/04/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 1.92" of rain. Data suspect, data retained.

03/13/2009 00:00:00 – 03/17/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 20-25 mph and 1.39" of rain. Data suspect, data retained.

03/26/2009 00:00:00 – 03/29/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 25-35 mph and 1.06" of rain. Data suspect, data retained.

03/01/2009 00:00:00 – 03/04/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 1.92" of rain. Data suspect, data retained.

03/13/2009 00:00:00 – 03/17/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 20-25 mph and 1.39" of rain. Data suspect, data retained.

03/26/2009 00:00:00 – 03/29/2009 23:45:00

April – Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 40 mph. Data suspect, data retained.

04/03/2009 00:00:00 – 04/04/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 0.86" of rain. Data suspect, data retained.

04/06/2009 00:00:00 – 04/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph. Data suspect, data retained.

04/07/2009 00:00:00 – 04/08/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 35 mph. Data suspect, data retained.

04/10/2009 00:00:00 – 04/10/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 25 mph and 0.34" of rain. Data suspect, data retained.

04/14/2009 00:00:00 – 04/15/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 50 mph and 0.57" of rain. Data suspect, data retained.

04/20/2009 00:00:00 – 04/20/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 40 mph. Data suspect, data retained.

04/03/2009 00:00:00 – 04/04/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 0.86" of rain. Data suspect, data retained.

04/06/2009 00:00:00 – 04/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph. Data suspect, data retained.

04/07/2009 00:00:00 – 04/08/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 35 mph. Data suspect, data retained.

04/10/2009 00:00:00 – 04/10/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 25 mph and 0.34" of rain. Data suspect, data retained.

04/14/2009 00:00:00 – 04/15/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 50 mph and 0.57" of rain. Data suspect, data retained.

04/20/2009 00:00:00 – 04/20/2009 23:45:00

Sweet Hall Marsh:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph. Data suspect, data retained.

04/03/2009 00:00:00 – 04/03/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 1.18" of rain. Data suspect, data retained.

04/06/2009 00:00:00 – 04/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 0.31" of rain. Data suspect, data retained.

04/13/2009 00:00:00 – 04/14/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 0.74" of rain. Data suspect, data retained.

04/20/2009 00:00:00 – 04/22/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph. Data suspect, data retained.

04/03/2009 00:00:00 – 04/03/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 1.18" of rain. Data suspect, data retained.

04/06/2009 00:00:00 – 04/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 0.31" of rain. Data suspect, data retained.

04/13/2009 00:00:00 – 04/14/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 0.96" of rain. Data suspect, data retained.

04/20/2009 00:00:00 – 04/22/2009 23:45:00

May – Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 25-30 mph and 3.11" of rain. Data suspect, data retained.

05/01/2009 00:00:00 – 05/11/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.66" of rain. Data suspect, data retained.

05/15/2009 00:00:00 – 05/15/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 0.75" of rain. Data suspect, data retained.

05/17/2009 00:00:00 – 05/18/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 1.24" of rain. Data suspect, data retained.

05/28/2009 00:00:00 – 05/29/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 25-30 mph and 3.11" of rain. Data suspect, data retained.

05/01/2009 00:00:00 – 05/11/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.66" of rain. Data suspect, data retained.

05/15/2009 00:00:00 – 05/15/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 0.75" of rain. Data suspect, data retained.

05/17/2009 00:00:00 – 05/18/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 1.24" of rain. Data suspect, data retained.

05/28/2009 00:00:00 – 05/29/2009 23:45:00

Sweet Hall Marsh:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 2.73" of rain. Data suspect, data retained.

05/02/2009 00:00:00 – 05/07/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 0.26" of rain. Data suspect, data retained.

05/09/2009 00:00:00 – 05/09/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 1.54" of rain. Data suspect, data retained.

05/15/2009 00:00:00 – 05/18/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 0.67" of rain. Data suspect, data retained.

05/28/2009 00:00:00 – 05/28/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 2.73" of rain. Data suspect, data retained.

05/02/2009 00:00:00 – 05/07/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 0.26" of rain. Data suspect, data retained.

05/09/2009 00:00:00 – 05/09/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 1.54" of rain. Data suspect, data retained.

05/15/2009 00:00:00 – 05/18/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 0.67" of rain. Data suspect, data retained.

05/28/2009 00:00:00 – 05/28/2009 23:45:00

June – Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 35 mph and 2.14" of rain. Data suspect, data retained.

06/03/2009 00:00:00 – 06/05/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 25 mph and 1.31" of rain. Data suspect, data retained.

06/18/2009 00:00:00 – 06/18/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 35 mph and 2.14" of rain. Data suspect, data retained.

06/03/2009 00:00:00 – 06/05/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 25 mph and 1.31" of rain. Data suspect, data retained.

06/18/2009 00:00:00 – 06/18/2009 23:45:00

Sweet Hall Marsh:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 1.19" of rain. Data suspect, data retained.

06/03/2009 00:00:00 – 06/05/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.26" of rain. Data suspect, data retained.

06/09/2009 00:00:00 – 06/09/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.25" of rain. Data suspect, data retained.

06/18/2009 00:00:00 – 06/18/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 1.19" of rain. Data suspect, data retained.

06/03/2009 00:00:00 – 06/05/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.26" of rain. Data suspect, data retained.

06/09/2009 00:00:00 – 06/09/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.25" of rain. Data suspect, data retained.

06/18/2009 00:00:00 – 06/18/2009 23:45:00

July – Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 14 mph and 0.42" of rain. Data suspect, data retained.

07/05/2009 00:00:00 – 07/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.76" of rain. Data suspect, data retained.

07/12/2009 00:00:00 – 07/12/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 1.36" of rain. Data suspect, data retained.

07/17/2009 00:00:00 – 07/17/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 40 mph and 0.86" of rain. Data suspect, data retained.

07/26/2009 00:00:00 – 07/27/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 38 mph. Data suspect, data retained.

07/31/2009 00:00:00 – 07/31/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 14 mph and 0.42" of rain. Data suspect, data retained.

07/05/2009 00:00:00 – 07/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.76" of rain. Data suspect, data retained.

07/12/2009 00:00:00 – 07/12/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 1.36" of rain. Data suspect, data retained.

07/17/2009 00:00:00 – 07/17/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 40 mph and 0.86" of rain. Data suspect, data retained.

07/26/2009 00:00:00 – 07/27/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 38 mph. Data suspect, data retained.

07/31/2009 00:00:00 – 07/31/2009 23:45:00

Sweet Hall Marsh:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 8 mph and 0.35" of rain. Data suspect, data retained.

07/05/2009 00:00:00 – 07/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.43" of rain. Data suspect, data retained.

07/17/2009 00:00:00 – 07/17/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 18 mph and 2.59" of rain. Data suspect, data retained.

07/26/2009 00:00:00 – 07/26/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 8 mph and 0.35" of rain. Data suspect, data retained.

07/05/2009 00:00:00 – 07/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.43" of rain. Data suspect, data retained.

07/17/2009 00:00:00 – 07/17/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 18 mph and 2.59" of rain. Data suspect, data retained.

07/26/2009 00:00:00 – 07/26/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 18 mph and 1.31" of rain. Data suspect, data retained.

07/29/2009 00:00:00 – 07/31/2009 23:45:00

August - Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 0.55" of rain. Data suspect, data retained.

08/05/2009 00:00:00 – 08/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 1.08" of rain. Data suspect, data retained.

08/12/2009 00:00:00 – 08/12/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 1.93" of rain. Data suspect, data retained.

08/14/2009 00:00:00 – 08/15/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 2.00" of rain. Data suspect, data retained.

08/22/2009 00:00:00 – 08/22/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced 0.57" of rain. Data suspect, data retained.

08/28/2009 00:00:00 – 08/29/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 0.55" of rain. Data suspect, data retained.

08/05/2009 00:00:00 – 08/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 1.08" of rain. Data suspect, data retained.

08/12/2009 00:00:00 – 08/12/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 1.93" of rain. Data suspect, data retained.

08/14/2009 00:00:00 – 08/15/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 2.00" of rain. Data suspect, data retained.

08/22/2009 00:00:00 – 08/22/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced 0.57" of rain. Data suspect, data retained.

08/28/2009 00:00:00 – 08/29/2009 23:45:00

Sweet Hall Marsh:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 14 mph and 0.47" of rain. Data suspect, data retained.

08/06/2009 00:00:00 – 08/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.47" of rain. Data suspect, data retained.

08/13/2009 00:00:00 – 08/13/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.25" of rain. Data suspect, data retained.

08/22/2009 00:00:00 – 08/22/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 1.16" of rain. Data suspect, data retained.

08/28/2009 00:00:00 – 08/29/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 13 mph and 0.23" of rain. Data suspect, data retained.

08/31/2009 00:00:00 – 08/31/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 14 mph and 0.47" of rain. Data suspect, data retained.

08/06/2009 00:00:00 – 08/06/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.47" of rain. Data suspect, data retained.

08/13/2009 00:00:00 – 08/13/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 10 mph and 0.25" of rain. Data suspect, data retained.

08/22/2009 00:00:00 – 08/22/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 1.16" of rain. Data suspect, data retained.

08/28/2009 00:00:00 – 08/29/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 13 mph and 0.23" of rain. Data suspect, data retained.

08/31/2009 00:00:00 – 08/31/2009 23:45:00

September - Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 25 mph and 2.96" of rain. Data suspect, data retained.

09/07/2009 00:00:00 – 09/08/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 0.58" of rain. Data suspect, data retained.

09/10/2009 00:00:00 – 09/10/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 17 mph and 0.23 of rain. Data suspect, data retained.

09/24/2009 00:00:00 – 09/24/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 20-30 mph. Data suspect, data retained.

09/28/2009 00:00:00 – 09/30/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 25 mph and 2.96" of rain. Data suspect, data retained.

09/07/2009 00:00:00 – 09/08/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 0.58" of rain. Data suspect, data retained.

09/10/2009 00:00:00 – 09/10/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 17 mph and 0.23 of rain. Data suspect, data retained.

09/24/2009 00:00:00 – 09/24/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 20-30 mph. Data suspect, data retained.

09/28/2009 00:00:00 – 09/30/2009 23:45:00

Sweet Hall Marsh:
For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 17 mph and 3.52" of rain. Data suspect, data retained.

09/07/2009 00:00:00 – 09/08/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 0.38" of rain. Data suspect, data retained.

09/10/2009 00:00:00 – 09/10/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 12 mph and 0.25 of rain. Data suspect, data retained.

09/24/2009 00:00:00 – 09/24/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 0.32 of rain. Data suspect, data retained.

09/27/2009 00:00:00 – 09/27/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 17 mph and 3.52" of rain. Data suspect, data retained.

09/07/2009 00:00:00 – 09/08/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event; which produced heavy rain. Data suspect, data retained.

09/09/2009 04:30:00 – 09/09/2009 07:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 0.38" of rain. Data suspect, data retained.

09/10/2009 00:00:00 – 09/10/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 12 mph and 0.25 of rain. Data suspect, data retained.

09/24/2009 00:00:00 – 09/24/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 0.32 of rain. Data suspect, data retained.

09/27/2009 00:00:00 – 09/27/2009 23:45:00

October - Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 16 mph and 1.82" of rain. Data suspect, data retained.

10/15/2009 00:00:00 – 10/17/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 13 mph and 0.80" of rain. Data suspect, data retained.

10/27/2009 00:00:00 – 10/28/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 25 mph and 1.71" of rain. Data suspect, data retained.

10/15/2009 00:00:00 – 10/17/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 23 mph and 0.85" of rain. Data suspect, data retained.

10/27/2009 00:00:00 – 10/28/2009 23:45:00

Sweet Hall Marsh:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 16 mph and 1.82" of rain. Data suspect, data retained.

10/15/2009 00:00:00 – 10/17/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced 0.80" of rain. Data suspect, data retained.

10/27/2009 00:00:00 – 10/28/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 16 mph and 1.82" of rain. Data suspect, data retained.

10/15/2009 00:00:00 – 10/17/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced 0.80" of rain. Data suspect, data retained.

10/27/2009 00:00:00 – 10/28/2009 23:45:00

November - Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced 0.27" of rain. Data suspect, data retained.

11/01/2009 00:00:00 – 11/01/2009 23:45:00

For the following dates and times, all data values were influenced by a Nor'easter; which produced 7.54" of rain and winds 35-45 mph. Data suspect, data retained.

11/11/2009 00:00:00 – 11/13/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 37 mph and 0.41" of rain. Data suspect, data retained.

11/27/2009 00:00:00 – 11/27/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 30 mph and 0.39" of rain. Data suspect, data retained.

11/30/2009 00:00:00 – 11/30/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced 0.27" of rain. Data suspect, data retained.

11/01/2009 00:00:00 – 11/01/2009 23:45:00

For the following dates and times, all data values were influenced by a Nor'easter; which produced 7.54" of rain and winds 35-45 mph. Data suspect, data retained.

11/11/2009 00:00:00 – 11/13/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 37 mph and 0.41" of rain. Data suspect, data retained.

11/27/2009 00:00:00 – 11/27/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 30 mph and 0.39" of rain. Data suspect, data retained.

11/30/2009 00:00:00 – 11/30/2009 23:45:00

Sweet Hall Marsh:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 22 mph and 0.41" of rain. Data suspect, data retained.

11/01/2009 00:00:00 – 11/01/2009 23:45:00

For the following dates and times, all data values were influenced by a Nor'easter; which produced 5.77" of rain and winds up to 40 mph. Data suspect, data retained.

11/11/2009 00:00:00 – 11/13/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 15 mph and 0.37" of rain. Data suspect, data retained.

11/23/2009 00:00:00 – 11/24/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 22 mph and 0.43" of rain. Data suspect, data retained.

11/27/2009 00:00:00 – 11/27/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 22 mph and 0.41" of rain. Data suspect, data retained.

11/01/2009 00:00:00 – 11/01/2009 23:45:00

For the following dates and times, all data values were influenced by a Nor'easter; which produced 5.77" of rain and winds up to 40 mph. Data suspect, data retained.

11/11/2009 00:00:00 – 11/13/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 15 mph and 0.37" of rain. Data suspect, data retained.

11/23/2009 00:00:00 – 11/24/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 22 mph and 0.43" of rain. Data suspect, data retained.

11/27/2009 00:00:00 – 11/27/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 0.51" of rain. Data suspect, data retained.

11/30/2009 00:00:00 – 11/30/2009 23:45:00

December - Wind and Rain events

Claybank:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 25-35 mph and 1.03" of rain. Data suspect, data retained.

12/02/2009 00:00:00 – 12/03/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 26 mph and 0.73" of rain. Data suspect, data retained.

12/05/2009 00:00:00 – 12/05/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 40 mph and 2.43" of rain. Data suspect, data retained.

12/08/2009 00:00:00 – 12/09/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 28 mph and 1.02" of rain. Data suspect, data retained.

12/13/2009 00:00:00 – 12/13/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 1.30" of rain. Data suspect, data retained.

12/18/2009 00:00:00 – 12/19/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 0.80" of rain. Data suspect, data retained.

12/25/2009 00:00:00 – 12/25/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced 0.36" of rain. Data suspect, data retained.

12/31/2009 00:00:00 – 12/31/2009 23:45:00

Goodwin Island:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 25-35 mph and 1.03" of rain. Data suspect, data retained.

12/02/2009 00:00:00 – 12/03/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds 26 mph and 0.73" of rain. Data suspect, data retained.

12/05/2009 00:00:00 – 12/05/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 40 mph and 2.43" of rain. Data suspect, data retained.

12/08/2009 00:00:00 – 12/09/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 28 mph and 1.02" of rain. Data suspect, data retained.

12/13/2009 00:00:00 – 12/13/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 1.30" of rain. Data suspect, data retained.

12/18/2009 00:00:00 – 12/19/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 0.80" of rain. Data suspect, data retained.

12/25/2009 00:00:00 – 12/25/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced 0.36" of rain. Data suspect, data retained.

12/31/2009 00:00:00 – 12/31/2009 23:45:00

Sweet Hall Marsh:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 1.04" of rain. Data suspect, data retained.

12/02/2009 00:00:00 – 12/02/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced 0.62" of rain. Data suspect, data retained.

12/05/2009 00:00:00 – 12/05/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 1.81" of rain. Data suspect, data retained.

12/08/2009 00:00:00 – 12/09/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 13 mph and 1.08" of rain. Data suspect, data retained.

12/13/2009 00:00:00 – 12/13/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 1.17" of rain. Data suspect, data retained.

12/19/2009 00:00:00 – 12/19/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 25 mph and 0.65" of rain. Data suspect, data retained.

12/25/2009 00:00:00 – 12/25/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced 0.36" of rain. Data suspect, data retained.

12/31/2009 00:00:00 – 12/31/2009 23:45:00

Taskinas Creek:

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 15 mph and 1.04" of rain. Data suspect, data retained.

12/02/2009 00:00:00 – 12/02/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced 0.62" of rain. Data suspect, data retained.

12/05/2009 00:00:00 – 12/05/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 20 mph and 1.81" of rain. Data suspect, data retained.

12/08/2009 00:00:00 – 12/09/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 13 mph and 1.08" of rain. Data suspect, data retained.

12/13/2009 00:00:00 – 12/13/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 30 mph and 1.17" of rain. Data suspect, data retained.

12/19/2009 00:00:00 – 12/19/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced heavy winds up to 25 mph and 0.65" of rain. Data suspect, data retained.

12/25/2009 00:00:00 – 12/25/2009 23:45:00

For the following dates and times, all data values were influenced by a storm event which produced 0.36" of rain. Data suspect, data retained.

12/31/2009 00:00:00 – 12/31/2009 23:45:00

Missing Data

January

Goodwin Island:

For the following dates and times, datalogger was removed from the station due to freezing temperatures and extreme low tides.

01/15/2009 06:15:00 – 01/22/2009 10:00:00

Sweet Hall Marsh:

For the following dates and times, datalogger was removed from the station due to freezing temperatures and extreme low tides.

01/15/2009 15:30:00 – 01/22/2009 13:30:00

Suspect Data:

August

Claybank:

For the following dates and times, specific conductivity and salinity values were erratic during the entire deployment. Data suspect, data retained.

08/20/2009 11:00:00 – 08/31/2009 23:45:00

September

Claybank:

For the following dates and times, specific conductivity and salinity values were erratic during the entire deployment. Data suspect, data retained.

09/01/2009 00:00:00 – 09/09/2009 10:00:00

Rejected Data:

March

Goodwin

For the following dates and times, the ROX probe failed and therefore caused all other probes to fail.

03/19/2009 04:00:00 – 03/20/2009 09:00:00

June

Claybank:

For the following dates and times, crab found inside guard influenced turbidity readings, data rejected.

06/19/2009 20:450:00 – 06/24/2009 10:00:00

Station Installation/Station Maintenance

March – Station Installation

Claybank:

On the following date and time, Claybank station was rebuilt.

03/25/2009 10:45:00

Goodwin Island:

On the following date and time, Goodwin Island station was moved and rebuilt.

03/25/2009 09:15:00

May – Station Installation

Taskinas Creek:

On the following date and time, Taskinas Creek station was moved and rebuilt.

05/19/2009 11:30:00