Chesapeake Bay Virginia (CBV) NERR Water Quality Metadata
(January - December 1997)
Latest update: November 1, 2002

I. Data Set and Research Descriptors

1. Principal investigators and contact persons

Dr. Maurice Lynch, Manager
E-mail: mlynch@vims.edu; (804) 684-7151 Virginia Institute of Marine Science
College of William and Mary
Dr. William Reay, Research Coordinator PO Box 1346
E-mail: wreay@vims.edu; (804) 684-7119 Gloucester Point, VA 23062
Phone: (804) 684-7135

2. Entry verification
The data were uploaded to the PC from the YSI 6000 data loggers and reviewed using PC6000 software from YSI. Graphs were produced and examined using the PC6000 software then printed out and filed in order to aid in reviewing data to correlate any anomalous and outlying data. Next, raw data files were uploaded in .dat format and in comma delimited format. The comma delimited files were imported into Microsoft Excel 5.0 as .csv files and then saved in .xls format. Files were then edited to remove extraneous information (headers, footers, spaces, and pre- and post-deployment data). Monthly templates were used to form complete sets of monthly data sets. Macros supplied by NERRS/CDMO were used to help with editing, formatting and identifying outliers in the database. Suspect data (as in data believed to result from a damaged or biofouled probe) were evaluated according to Appendix B of the CDMO manual, edited and documented. Missing data due to YSI maintenance (down time) was inserted into the spreadsheet and was denoted by periods (.). Data that was not within calibration range of the instrument were evaluated and removed from the record and denoted by periods (.). Data that fall outside the normal range of water quality for a site was investigated for validity based on QC checks, weather data, field observations, instrument diagnostics and PC6000 graphs. Edited and raw data files were copied and archived in the CBNERRVA file server and uploaded to the CDMO FTP site in text format. All Taskinas Creek and Goodwin Islands files from 1997 have been verified using the latest update of the

Microsoft Excel 5.0 macro programs which identified outliers (values that fall outside of the calibration – see section II.8 of this document) and other erroneous data. Outliers were determined according to the instruments and manufacturers manual. Bill Seufzer collected and edited data from 01/97-06/97, during which time Dr. Jeff Shields was the RC for the CBV NERR.
In July 1997, a new RC was hired, Dr. William Reay, and a new SWMP coordinator, Tammy Dorman, who collected and edited data from 07/97- 12/97. Data was processed through the latest update of the CDMO macro and conducted final editing of the data. Both W. Reay and T. Dorman cleaned up the data. Following final editing, Tammy Dorman uploaded the database to the CBNERRVA server and to CDMO.

3. Research Objectives
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 nonpoint source water quality issues associated with changing land use patterns; these issues are of prime importance to the U.S. EPA Chesapeake Bay Program. Continuously monitored physical water quality parameters (dissolved oxygen, pH, specific conductance, turbidity, and temperature) provide long-term measurements which can be supplemented with shorter-term monitoring and process oriented studies.
Measurements were taken every 15 minutes at the Taskinas Creek site and the YSI dataloggers were maintained, downloaded, cleaned, and calibrated at two-week intervals.

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 nonpoint source water quality issues. Furthermore, due to extensive wetlands, intertidal, and submerged habitats, the Goodwin Islands are used extensively for SAV, material flux, and trophic interaction research activities.
Measurements were taken

every 15 minutes at the Goodwin Islands site and the YSI dataloggers were maintained,
downloaded, cleaned, and calibrated at two-week intervals.

4. Research methods
Taskinas Creek (TC) Component:
The Chesapeake Bay NERRS of Virginia maintains a long-term water quality-monitoring
program, which consists of two stations. The Taskinas Creek station is located in the
transitional zone of the York River tributary in the York River State Park. A simple
deployment was arranged with the State Park in September 1995, where the secured unit hung
at a fixed depth (0.5 m above the creek bed) from an overhanging tree approximately six
meters upstream from the parks canoe landing. In September 1997, the deployment was
modified so that the datalogger remained secure at all times within a 4-inch PVC housing 0.5
m above the bottom. Three wood pilings were driven into the sediment in an equilateral
triangle arrangement and the PVC pipe bolted to one piling. Specific conductivity, pH,
depth, DO saturation, temperature, and turbidity are recorded at 15-minute intervals. Salinity
and dissolved oxygen are determined from temperature and specific conductivity readings. At
approximately two-week intervals, the data logger is returned to the lab for downloading,
cleaning, membrane replacement and recalibration. Maintenance intervals are determined
according to the amount of biofouling that occurs and to accommodate battery life. A
second YSI 6000 datalogger is deployed following retrieval of the original YSI datasonde in
order to maintain a continuous record. All procedures are in accordance with the YSI
operating manual methods, sections 3 and 7. Standards for pH, and conductivity were
purchased from YSI. Turbidity standards were purchased from Advanced Polymer Systems.
Beginning in August/September 1997, water samples were taken at the time of datalogger
deployment and retrieval. The samples were then taken back to the lab and analyzed for the
following components: dissolved oxygen, pH and salinity while temperature was taken in the
field. These values were compared to the datalogger readings at the time the water sample
was taken to identify any discrepancies in the data as well as the sonde's performance. Data
are reviewed and edited according to the YSI Data Review and Editing Protocol in Appendix

B of the CDMO manual.

Goodwin Islands (GI) Component:
The Chesapeake Bay NERRS of Virginia maintains a second long-term water quality-monitoring program at Goodwin Islands, located at the mouth of the York River. This station is located on the southeastern side of the main island in a shallow embayment, approximately 400 meters from shore. A stable and permanent structure was built in October 1997 where 4-inch PVC pipe is housed inside of a commercially available galvanized steel communications tower with the datalogger 0.5 m from the bottom. Specific conductivity, pH, depth, DO saturation, temperature, and turbidity are recorded at 15-minute intervals. Salinity and dissolved oxygen are determined from temperature and specific conductivity readings. At approximately two-week intervals, the datalogger is returned to the lab for downloading, cleaning, membrane replacement and recalibration. Maintenance intervals are determined according to the amount of biofouling that occurs and to accommodate battery life. A second YSI 6000 datalogger is deployed following retrieval of the original YSI datasonde in order to maintain a continuous record. All procedures are in accordance with the YSI operating manual methods, sections 3 and 7. Standards for pH, and conductivity were purchased from YSI. Turbidity standards were purchased from Advanced Polymer Systems. Beginning in August/September 1997, water samples were taken at the time of datalogger deployment and retrieval. The samples were then taken back to the lab and analyzed for the following components: dissolved oxygen, pH and salinity while temperature was taken in the field. These values were compared to the datalogger readings at the time the water sample was taken to identify any discrepancies in the data as well as the sonde's performance. Data are reviewed and edited according to the YSI Data Review and Editing Protocol in Appendix B of the CDMO manual.

5. Site location and character
Taskinas Creek (TC) Component: (37 deg 24' 54.04617"; 76 deg 42' 51.75733")
The Taskinas Creek Component of the CBNERR-VA is on the south shore of the York River in James City County near Williamsburg. The site is approximately 44 kilometers upstream

from the river's mouth and 15 kilometers downstream from West Point. Headwaters of Taskinas Creek are near the town of Croaker, which is located 10 kilometers north of Williamsburg. Fed by numerous perennial streams, Taskinas Creek is approximately 3 kilometers in length and flows in a northeasterly direction eventually emptying into the York River. Tidal range within the creek is 0.0-1.3 m. The sampling station is located on the second bend from the mouth of Taskinas Creek within the York River State Park, about 6 meters upstream from the park's canoe landing. The sediment type at this station consists of approximately 42% fine sand, 30% clay, and 28% silt. The non-tidal portion contains feeder streams, which drain oak-hickory forests, maple-gum-oak-ash swamps and freshwater marshes. The marshes near the creek mouth are brackish with a salinity range from 3-13 ppt. The shoreline is moderately low with fringing marsh and tidal flats. Taskinas Creek mainly drains the undeveloped York River State Park watershed, however the watershed is lightly impacted above the State Park by residential development and selective hardwood logging. Wildlife populations have been shown to influence microbiological water quality within the watershed.

Goodwin Islands (GI) Component: (37 deg 13' 02.65093"; 76 deg 23' 32.75799")

The Goodwin Islands component of the CBNERR-VA is on the mouth of the York River at the northeastern tip of York County. This site is approximately 22 kilometers downstream from the Virginia Institute of Marine Science. Circulation patterns at the Goodwin Islands are influenced by York River discharge and the wind patterns of the Chesapeake Bay. The sampling station is located in a shallow embayment on the southeastern side of the main island amongst submerged aquatic vegetation beds dominated by Zostera marina. The Goodwin Islands represents a pristine, well-flushed polyhaline system with salinity ranges from 13-24 ppt and tidal ranges from 0.5-1.0 m. Spartina alterniflora dominates the low marsh, which covers 70% of the emergent marsh area. Estuarine scrub/shrub vegetation dominates the forested ridges, with the dominant shrub Myrica cerifera (wax myrtle). The

Goodwin Islands are undeveloped and only accessible by boat. This site is used extensively by
VIMS for SAV research.

6. Data collection period:
Ongoing sampling at Taskinas Creek (TC) began September 1995. Ongoing sampling at
Goodwin Islands (GI) began mid-October 1997.

Sonde Deployments at Taskinas Creek:

First Reading:	Last Reading:
12/20/96 12:45	01/14/97 16:30
01/14/97 16:45	02/11/97 15:30
02/11/97 15:45	03/10/97 14:00
03/10/97 14:30	04/08/97 14:45
04/08/97 15:00	04/30/97 16:15
04/30/97 16:30	05/30/97 16:30
06/02/97 11:15	06/25/97 14:45
06/25/97 15:00	07/16/97 14:45
07/23/97 14:30	08/06/97 12:45
08/07/97 14:15	08/21/97 12:00
08/21/97 12:15	09/09/97 10:45
09/09/97 11:00	09/23/97 10:30
09/23/97 10:45	10/06/97 15:15
10/06/97 16:30	10/23/97 11:15
10/23/97 11:30	11/11/97 15:45
11/11/97 16:00	11/21/97 10:00
11/21/97 10:15	12/03/97 12:45
12/03/97 13:15	12/18/97 12:15
12/18/97 12:30	01/07/98 12:00

Deployments at Goodwin Islands:

First Reading:	Last Reading:
10/21/97 13:15	11/04/97 13:15
11/04/97 13:30	11/18/97 09:00
11/18/97 09:30	12/04/97 13:30
12/04/97 13:45	12/18/97 10:15
12/18/97 10:30	01/06/98 10:30

January 1998 data are not included in this metadata.

7. Associated researchers and projects:

A volunteer water quality monitoring program sponsored by the Alliance for the Chesapeake
Bay has been ongoing at Taskinas Creek for several years, beginning January 10, 1990. This project samples some
overlapping parameters including dissolved oxygen and salinity on a two-week basis.

II. Physical Structure Descriptors

8. Variable sequence, range of measurements, units resolution and accuracy (for YSI):

Variable	Range of Measurements	Resolution	Accuracy
Date	1-12, 1-31, 00-99 (Mo,Day,Yr)	1 mo, 1 day, 1 yr	NA
Time	0-24, 0-60, 0-60 (Hr,Min,Sec)	1 hr, 1 min, 1 s	NA
Temp	-5 to 45 (c)	0.01 C	+/- 0.15C
Sp COND	0-100(mS/cm)	0.01mS/cm	+/- 0.5% Of reading + 0.001mS/Cm
Salinity	0-70 Parts per thousand (ppt)	0.01 ppt	+/- 1% of Reading or 0.1 ppt, (whichever is greater)
DO	0-200 (% air saturation)	0.1% @air sat	+/- 2% @air Saturation
DO	200-500 (% air saturation	0.1% @ air sat	+/- 6% @ Saturation
DO	0-20 (mg/l)	0.01 mg/l	+/- 0.2mg/l
DO	20-50 (mg/l)	0.01 mg/l	+/- 0.6mg/l
Depth (shallow)	0-9.1 (m)	0.001m	+/- 0.018m
PH	2-14 units	0.01 units	+/- 0.2units
Turb	0-1000 NTU	0.1 NTU	+/- 5% of Reading or 2 NTU (whichever is greater)

9. Coded variable indicator and variable code definitions

Site definitions: TC = Taskinas Creek, GI= Goodwin Islands
File definitions: YSI deployment site/month/year (ex.: TC0997 = Taskinas Creek data from
September 1997).

10. Data anomalies (suspect data):
Frequent data anomalies were recorded in depth levels for several months potentially due to
low-pressure weather fronts. This data remained in the database. According to the CDMO
Operations Manual Version 3.0, depth measurements taken with the non-vented level probe
can be influenced by up to 0.39 m (1.3 ft) during some low-pressure hurricane events.
Specific dates and time ranges of potentially influenced data are listed with each respective
month.

January 1997:
TC:

No anomalous data.

February 1997:
TC:
02/19/97 14:30:00 to 02/20/97 18:30:00 DO values plummet to zero but recover; pre- and post- okay
02/26/97 06:45:00 to 08:00:00 DO values plummet toward zero but recover; pre- and post- okay
02/28/97 06:45:00 to 23:45:00 DO values plummet to zero but recover; pre- and post- okay

March 1997:
TC:
03/01/97 00:00:00 to 16:00:00 DO values plummet but recover; pre- and post- values okay
03/02/97 16:00:00 to 16:15:00 Low DO spike but recovers
03/07/97 14:45:00 to 18:15:00 DO values plummet toward zero but recover; pre- and post- okay
03/08/97 02:00:00 to 03/09/97 00:15:00 DO values plummet but recover; pre- and post- values okay
03/10/97 14:30:00 to 03/11/97 17:30:00 DO mg/L values incorrect due to incorrect spcond values; data deleted
03/10/97 14:30:00 to 03/31/97 23:45:00 Salinity/Spcond too high for site; could have been a calibration error or probe malfunction; data deleted
03/11/97 17:45:00 to 03/31/97 23:45:00 DO membrane puncture early in study; data deleted

Note: YSI told us that only the DO mg/L values were affected by the incorrect spcond calibration. DO % saturation should be correct since it is not calculated from conductivity values.

April 1997:
TC:
04/01/97 00:00:00 to 04/08/97 14:45:00 DO membrane puncture early in study; data deleted
04/01/97 00:00:00 to 04/08/97 14:45:00 Salinity/Spcond too high for site; could have been a calibration error or probe malfunction; data deleted
04/30/97 16:30:00 to 23:45:00 Negative DO values probably due to a membrane puncture prior to deployment; data deleted

May 1997:
TC:
05/01/97 00:00:00 to 05/30/97 16:30:00 Negative DO values probably due to a
membrane puncture prior to deployment; data deleted
05/02/97 10:30:00 Small negative turbidity values due to calibration error

June 1997:
TC:
06/11/97 00:45:00 to 03:00:00 Small negative turbidity values due to calibration error
06/11/97 11:30:00 to 12:15:00Negative DO values; data deleted
06/11/97 15:15:00 Negative DO values; data deleted
06/11/97 20:45:00 to 21:15:00 Negative DO values; data deleted
06/11/97 23:45:00 to 06/12/97 00:45:00 Negative DO values; data deleted
06/12/97 01:15:00 to 02:00:00 Negative DO values; data deleted
06/12/97 02:30:00 to 02:45:00 Negative DO values; data deleted
06/12/97 03:45:00 to 08:15:00 Negative DO values; data deleted
06/12/97 08:45:00 to 09:45:00 Negative DO values; data deleted
06/12/97 12:00:00 to 15:45:00 Negative DO values; data deleted
06/12/97 16:45:00 to 18:00:00 Negative DO values; data deleted
06/12/97 21:15:00 to 21:45:00 Negative DO values; data deleted
06/13/97 00:30:00 to 00:45:00 Negative DO values; data deleted
06/13/97 01:15:00 Turbidity spike > 1000 NTU
06/13/97 01:30:00 to 02:00:00 Negative DO values; data deleted
06/13/97 03:15:00 to 04:00:00 Turbidity spike > 1000 NTU
06/13/97 04:30:00 to 11:15:00 Negative DO values; data deleted
06/13/97 13:00:00 to 13:45:00 Negative DO values; data deleted
06/13/97 14:15:00 to 16:30:00 Negative DO values; data deleted
06/13/97 16:45:00 to 17:00:00 Turbidity spike > 1000 NTU
06/13/97 17:45:00 to 23:45:00 Negative DO values; data deleted
06/14/97 01:30:00 Negative DO values; data deleted
06/14/97 02:00:00 Negative DO values; data deleted
06/14/97 03:00:00 Negative DO values; data deleted
06/14/97 04:00:00 to 04:15:00 Negative DO values; data deleted
06/14/97 05:45:00 to 10:00:00 Negative DO values; data deleted
06/14/97 14:15:00 to 15:00:00 Negative DO values; data deleted
06/14/97 15:00:00 to 15:15:00 Small negative turbidity values due to calibration error
06/14/97 15:45:00 Negative DO values; data deleted
06/14/97 15:45:00 Small negative turbidity values due to calibration error
06/14/97 16:15:00 Negative DO values; data deleted
06/14/97 16:15:00 Small negative turbidity values due to calibration error
06/14/97 16:45:00 Small negative turbidity values due to calibration error
06/14/97 16:45:00 to 17:00:00 Negative DO values; data deleted
06/14/97 17:45:00 to 18:00:00 Negative DO values; data deleted
06/14/97 18:45:00 to 19:30:00 Negative DO values; data deleted
06/14/97 20:15:00 Negative DO values; data deleted
06/14/97 20:45:00 to 22:15:00 Small negative turbidity values due to calibration error

06/14/97 21:30:00 to 23:30:00 Negative DO values; data deleted
06/14/97 22:30:00 to 22:45:00 Turbidity spike > 1000 NTU
06/14/97 23:00:00 Small negative turbidity values due to calibration error
06/14/97 23:15:00 to 23:30:00 Turbidity spike > 1000 NTU
06/14/97 23:45:00 Small negative turbidity values due to calibration error
06/15/97 03:30:00 to 05:45:00 Negative DO values; data deleted
06/15/97 05:30:00 Small negative turbidity values due to calibration error
06/15/97 06:45:00 to 11:30:00 Negative DO values; data deleted
06/15/97 13:45:00 to 19:00:00 Negative DO values; data deleted
06/15/97 16:45:00 to 17:00:00 Small negative turbidity values due to calibration error
06/15/97 17:45:00 Small negative turbidity values due to calibration error
06/15/97 19:30:00 Small negative turbidity values due to calibration error
06/15/97 19:45:00 to 20:00:00 Turbidity spike > 1000 NTU
06/15/97 20:00:00 to 20:30:00 Negative DO values; data deleted
06/15/97 21:00:00 to 21:15:00 Negative DO values; data deleted
06/15/97 23:30:00 Negative DO values; data deleted
06/16/97 00:00:00 to 01:15:00 Negative DO values; data deleted
06/16/97 01:45:00 to 03:45:00 Negative DO values; data deleted
06/16/97 03:30:00 Small negative turbidity values due to calibration error
06/16/97 05:15:00 Turbidity spike > 1000 NTU
06/16/97 05:30:00 Small negative turbidity values due to calibration error
06/16/97 06:45:00 Turbidity spike > 1000 NTU
06/16/97 09:45:00 Turbidity spike > 1000 NTU
6/16/97 10:45:00 to 11:15:00 Turbidity spike > 1000 NTU
06/16/97 15:15:00 Turbidity spike > 1000 NTU
06/16/97 16:00:00 to 16:15:00 Small negative turbidity values due to calibration error
06/16/97 17:00:00 Small negative turbidity values due to calibration error
06/16/97 17:30:00 to 17:45:00 Small negative turbidity values due to calibration error
06/16/97 20:30:00 Small negative turbidity values due to calibration error
06/16/97 20:45:00 Turbidity spike > 1000 NTU
06/16/97 21:00:00 Small negative turbidity values due to calibration error
06/16/97 21:15:00 Turbidity spike > 1000 NTU
06/19/97 05:15:00 Negative DO values; data deleted
06/19/97 05:45:00 to 06:00:00 Negative DO values; data deleted
06/19/97 09:45:00 Negative DO values; data deleted
06/20/97 03:30:00 to 03:45:00 Negative DO values; data deleted
06/20/97 04:30:00 Negative DO values; data deleted
06/20/97 05:15:00 to 05:30:00 Negative DO values; data deleted
06/20/97 06:00:00 Negative DO values; data deleted
06/20/97 06:45:00 to 07:00:00 Negative DO values; data deleted
06/20/97 07:45:00 Negative DO values; data deleted

06/20/97 11:15:00 Negative DO values; data deleted
06/20/97 11:45:00 Negative DO values; data deleted
06/20/97 16:15:00 to 16:30:00 Negative DO values; data deleted
06/22/97 13:15:00 to 06/25/97 14:45:00 DO problem-maybe membrane puncture; data deleted
06/23/97 13:45:00 Small negative turbidity values due to calibration error

Note: Entire DO record from 06/02/97 11:15:00 to 06/25/97 14:45:00 should be viewed as suspect. Very low DO values were recorded and the post- deployment do value was negative.

July 1997:
TC:
07/01/97 15:45:00 to 07/16/97 14:45:00 DO membrane puncture-data deleted
07/03/97 18:30:00 to 18:45:00 Small negative turbidity values due to calibration error
07/03/97 19:30:00 Small negative turbidity values due to calibration error
07/03/97 21:30:00 to 23:30:00 Small negative turbidity values due to calibration error
07/04/97 00:00:00 to 03:15:00 Small negative turbidity values due to calibration error
07/04/97 04:15:00 to 08:30:00 Small negative turbidity values due to calibration error
07/04/97 09:00:00 to 19:30:00 Small negative turbidity values due to calibration error
07/04/97 20:00:00 to 22:30:00 Small negative turbidity values due to calibration error
07/04/97 23:00:00 to 07/05/97 01:45:00 Small negative turbidity values due to calibration error
07/05/97 02:15:00 to 05:15:00 Small negative turbidity values due to calibration error
07/05/97 05:45:00 to 08:00:00 Small negative turbidity values due to calibration error
07/05/97 08:45:00 to 13:30:00 Small negative turbidity values due to calibration error
07/05/97 14:00:00 Small negative turbidity values due to calibration error
07/05/97 14:45:00 to 16:30:00 Small negative turbidity values due to calibration error
07/05/97 17:00:00 to 18:30:00 Small negative turbidity values due to calibration error
07/05/97 19:15:00 to 20:15:00 Small negative turbidity values due to calibration error
07/05/97 20:45:00 to 22:15:00 Small negative turbidity values due to calibration error
07/05/97 22:45:00 to 23:00:00 Small negative turbidity values due to calibration error
07/05/97 23:30:00 to 07/06/97 05:15:00 Small negative turbidity values due to

calibration error
07/06/97 05:45:00 to 07:00:00 Small negative turbidity values due to calibration error
07/06/97 07:30:00 to 08:15:00 Small negative turbidity values due to calibration error
07/06/97 08:45:00 to 09:15:00 Small negative turbidity values due to calibration error
07/06/97 10:00:00 to 11:30:00 Small negative turbidity values due to calibration error
07/06/97 12:00:00 to 14:15:00 Small negative turbidity values due to calibration error
07/06/97 15:30:00 to 15:45:00 Small negative turbidity values due to calibration error
07/06/97 16:30:00 to 17:30:00 Small negative turbidity values due to calibration error
07/06/97 18:00:00 to 21:45:00 Small negative turbidity values due to calibration error
07/06/97 22:45:00 to 07/07/97 00:30:00 Small negative turbidity values due to
calibration error
07/07/97 01:00:00 to 02:30:00 Small negative turbidity values due to calibration error
07/07/97 04:15:00 to 05:00:00 Small negative turbidity values due to calibration error
07/07/97 05:30:00 to 07:45:00 Small negative turbidity values due to calibration error
07/07/97 09:00:00 to 09:15:00 Small negative turbidity values due to calibration error
07/07/97 10:00:00 to 10:15:00 Small negative turbidity values due to calibration error
07/07/97 11:45:00 to 13:00:00 Small negative turbidity values due to calibration error
07/07/97 13:30:00 to 14:00:00 Small negative turbidity values due to calibration error
07/07/97 14:30:00 to 16:45:00 Small negative turbidity values due to calibration error
07/07/97 17:30:00 to 20:00:00 Small negative turbidity values due to calibration error
07/07/97 20:45:00 to 07/08/97 02:45:00 Small negative turbidity values due to
calibration error
07/08/97 03:45:00 to 05:00:00 Small negative turbidity values due to calibration error
07/08/97 05:30:00 Small negative turbidity values due to calibration
error
07/08/97 06:00:00 to 07:30:00 Small negative turbidity values due to calibration error
07/08/97 08:00:00 to 08:45:00 Small negative turbidity values due to calibration error
07/08/97 09:15:00 to 10:15:00 Small negative turbidity values due to calibration error
07/08/97 10:45:00 to 12:15:00 Small negative turbidity values due to calibration error

07/08/97 12:45:00 Small negative turbidity values due to calibration error
07/08/97 13:30:00 Small negative turbidity values due to calibration error
07/08/97 14:00:00 Small negative turbidity values due to calibration error
07/08/97 14:30:00 to 15:00:00 Small negative turbidity values due to calibration error
07/08/97 15:30:00 to 16:00:00 Small negative turbidity values due to calibration error
07/08/97 16:30:00 to 16:45:00 Small negative turbidity values due to calibration error
07/08/97 17:15:00 to 21:30:00 Small negative turbidity values due to calibration error
07/08/97 22:00:00 to 07/09/97 00:15:00 Small negative turbidity values due to
calibration error
07/09/97 00:45:00 to 01:30:00 Small negative turbidity values due to calibration error
07/09/97 02:15:00 Small negative turbidity values due to calibration error
07/09/97 03:15:00 to 03:30:00 Small negative turbidity values due to calibration error
07/09/97 04:00:00 Small negative turbidity values due to calibration error
07/09/97 04:30:00 to 05:00:00 Small negative turbidity values due to calibration error
07/09/97 05:45:00 to 06:45:00 Small negative turbidity values due to calibration error
07/09/97 07:15:00 to 08:30:00 Small negative turbidity values due to calibration error
07/09/97 09:00:00 to 09:30:00 Small negative turbidity values due to calibration error
07/09/97 10:00:00 to 11:00:00 Small negative turbidity values due to calibration error
07/09/97 11:30:00 to 11:45:00 Small negative turbidity values due to calibration error
07/09/97 12:15:00 to 12:45:00 Small negative turbidity values due to calibration error
07/09/97 13:15:00 Small negative turbidity values due to calibration error
07/09/97 13:45:00 to 14:00:00 Small negative turbidity values due to calibration error
07/09/97 14:30:00 to 15:45:00 Small negative turbidity values due to calibration error
07/09/97 16:15:00 to 21:30:00 Small negative turbidity values due to calibration error
07/09/97 22:00:00 to 07/10/97 02:30:00 Small negative turbidity values due to
calibration error
07/10/97 03:00:00 to 06:15:00 Small negative turbidity values due to calibration error
07/10/97 06:45:00 to 07:00:00 Small negative turbidity values due to calibration error

07/10/97 07:30:00 to 09:15:00 Small negative turbidity values due to calibration error
07/10/97 09:45:00 to 11:30:00 Small negative turbidity values due to calibration error
07/10/97 12:00:00 to 14:00:00 Small negative turbidity values due to calibration error
07/10/97 14:45:00 to 15:15:00 Small negative turbidity values due to calibration error
07/10/97 15:45:00 Small negative turbidity values due to calibration error
07/10/97 16:15:00 to 18:30:00 Small negative turbidity values due to calibration error
07/10/97 19:00:00 Small negative turbidity values due to calibration error
07/10/97 19:30:00 to 20:00:00 Small negative turbidity values due to calibration error
07/10/97 20:30:00 to 07/11/97 02:15:00 Small negative turbidity values due to calibration error
07/11/97 02:45:00 Small negative turbidity values due to calibration error
07/11/97 03:15:00 to 06:30:00 Small negative turbidity values due to calibration error
07/11/97 07:15:00 to 08:30:00 Small negative turbidity values due to calibration error
07/11/97 09:00:00 Small negative turbidity values due to calibration error
07/11/97 09:30:00 to 10:45:00 Small negative turbidity values due to calibration error
07/11/97 11:30:00 to 07/12/97 08:00:00 Small negative turbidity values due to calibration error
07/12/97 08:30:00 to 19:15:00 Small negative turbidity values due to calibration error
07/12/97 19:45:00 Small negative turbidity values due to calibration error
07/12/97 20:15:00 to 07/13/97 08:00:00 Small negative turbidity values due to calibration error
07/13/97 08:30:00 to 09:00:00 Small negative turbidity values due to calibration error
07/13/97 09:30:00 Turbidity spike > 1000 NTU
07/13/97 10:00:00 to 10:15:00 Small negative turbidity values due to calibration error
07/13/97 10:45:00 Small negative turbidity values due to calibration error
07/13/97 11:15:00 to 12:00:00 Small negative turbidity values due to calibration error
07/13/97 14:45:00 Small negative turbidity values due to calibration error
07/13/97 15:30:00 Small negative turbidity values due to calibration error
07/13/97 23:30:00 to 07/14/97 00:15:00 Small negative turbidity values due to

calibration error
07/14/97 00:30:00 Turbidity spike > 1000 NTU
07/14/97 00:45:00 Small negative turbidity values due to calibration error
07/14/97 01:15:00 Small negative turbidity values due to calibration error
07/14/97 01:30:00 Turbidity spike > 1000 NTU
07/14/97 02:15:00 Turbidity spike > 1000 NTU
07/14/97 08:45:00 Small negative turbidity values due to calibration error
07/14/97 09:45:00 Small negative turbidity values due to calibration error
07/14/97 10:45:00 to 11:00:00 Small negative turbidity values due to calibration error
07/14/97 11:30:00 Small negative turbidity values due to calibration error
07/14/97 12:00:00 to 14:30:00 Small negative turbidity values due to calibration error
07/14/97 15:45:00 Small negative turbidity values due to calibration error
07/14/97 16:15:00 Small negative turbidity values due to calibration error
07/15/97 05:15:00 to 07:15:00 Small negative turbidity values due to calibration error
07/15/97 08:15:00 to 09:00:00 Small negative turbidity values due to calibration error
07/15/97 09:15:00 Turbidity spike > 1000 NTU
07/15/97 09:30:00 to 11:30:00 Small negative turbidity values due to calibration error
07/15/97 13:30:00 Small negative turbidity values due to calibration error
07/15/97 15:00:00 to 20:00:00 Small negative turbidity values due to calibration error
07/15/97 20:30:00 to 23:45:00 Small negative turbidity values due to calibration error
07/16/97 00:30:00 to 00:45:00 Small negative turbidity values due to calibration error
07/16/97 01:15:00 to 05:45:00 Small negative turbidity values due to calibration error
07/16/97 06:15:00 to 06:30:00 Small negative turbidity values due to calibration error
07/16/97 07:00:00 to 07:15:00 Small negative turbidity values due to calibration error
07/16/97 07:45:00 to 08:15:00 Small negative turbidity values due to calibration error
07/16/97 08:45:00 to 13:15:00 Small negative turbidity values due to calibration error
07/16/97 13:45:00 to 14:45:00 Small negative turbidity values due to calibration error
07/30/97 10:15:00 Small negative turbidity values due to calibration error

August 1997:
TC:

08/05/97 14:00:00 to 08/06/97 12:45:00 DO membrane puncture; data deleted
08/19/97 06:30:00 Small negative turbidity values due to calibration error
08/20/97 14:30:00 to 08/21/98 12:00:00 DO membrane puncture; data deleted

September 1997:
TC:
09/12/97 13:00:00 Very low depth due to low tide
09/12/97 22:30:00 Small negative turbidity values due to calibration error
09/23/97 10:45:00 to 09/30/97 23:45:00 Suspect DO data because of high DO charge
and negative readings which are characteristic of biofouled anodes. Also probe recorded
supersaturated readings in air before deployment (163%); data deleted

October 1997:
TC:
10/01/97 00:00:00 to 10/06/97 15:15:00 Suspect DO data because of high DO charge
and negative readings which are characteristic of biofouled anodes. Also recorded
supersaturated readings in air before deployment (163%); data deleted

10/06/97 16:30:00 to 10/23/97 11:15:00 Depth was adjusted by subtracting 0.51m from the depth
data. The 0.51m adjustment was determined by taking the mean difference in depth values from
this deployment compared to the previous and post deployed data loggers.

October 1997:
GI:
10/26/97 11:15:00 Turbidity spike > 500 NTU
10/26/97 11:30:00 Small calibration error with turbidity; could be rollover
from turbidity spike

November 1997:
TC:
11/27/97 01:00:00 to 03:45:00 Negative depths due to low tide

November 1997:
GI:
11/01/97 02:45:00 Small calibration error with turbidity
11/02/97 19:15:00 to 20:00:00 Spcond drops suddenly; unknown cause
11/02/97 20:45:00 to 21:30:00 Spcond drops suddenly; unknown cause
11/03/97 16:00:00 Turbidity spike > 400 NTU
11/03/97 16:15:00 to 16:30:00 Small calibration error with turbidity; could be rollover
from turbidity spike
11/03/97 21:45:00 Turbidity spike > 800 NTU
11/25/97 22:15:00 to 11/26/97 01:30:00 Negative depths due to low tide

11/26/97 10:45:00 to 15:00:00 Negative depths due to low tide
11/26/97 21:15:00 to 22:30:00 Negative depths due to low tide
11/26/97 22:30:00 to 11/27/97 02:30:00 Instrument out of water due to extremely low
tide
11/27/97 02:30:00 to 03:45:00 Negative depths due to low tide
11/27/97 11:00:00 to 11:45:00 Negative depths due to low tide
11/27/97 12:00:00, 12:30:00-14:15:00 Instrument out of water due to extremely low tide
11/27/97 14:30:00 to 15:30:00 Negative depths due to low tide
11/27/97 22:45:00 to 23:15:00 Negative depths due to low tide
11/27/97 23:30:00 to 11/28/97 02:30:00 Instrument out of water due to extremely low
tide
11/28/97 02:45:00 Instrument out of water due to extremely low tide
11/28/97 03:00:00 to 03:15:00 Negative depths due to low tide
11/28/97 12:00:00 to 12:30:00 Negative depths due to low tide
11/28/97 12:45:00 to 15:00:00 Instrument out of water due to extremely low tide
11/28/97 15:15:00 to 16:00:00 Negative depths due to low tide
11/29/97 00:30:00 to 02:30:00 Negative depths due to low tide

December 1997:
TC:
No anomalous data.

December 1997:
GI:
12/04/97 16:30:00 to 19:45:00 Negative depths due to low tide
12/06/97 19:00:00 to 22:15:00 Negative depths due to low tide
12/07/97 07:00:00 to 07:45:00 Negative depths due to low tide
12/07/97 08:00:00 to 09:30:00 Instrument out of water due to extremely low tide
12/07/97 09:45:00 to 10:30:00 Negative depths due to low tide
12/07/97 19:45:00 to 21:00:00 Negative depths due to low tide
12/07/97 21:15:00 to 21:30:00 Instrument out of water due to extremely low tide
12/08/97 08:30:00 to 10:30:00 Instrument out of water due to extremely low tide
12/08/97 20:45:00 to 23:00:00 Instrument out of water due to extremely low tide
12/08/97 23:15:00 to 23:30:00 Negative depths due to low tide
12/15/97 16:15:00 Instrument out of water due to extremely low tide
12/16/97 16:00:00 to 17:30:00 Negative depths due to low tide
12/17/97 04:15:00 to 04:45:00 Negative depths due to low tide
12/30/97 01:30:00 to 05:00:00 Negative depths due to low tide
12/30/97 13:30:00 to 17:45:00 Negative depths due to low tide
12/31/97 01:00:00 to 02:00:00 Negative depths due to low tide
12/31/97 02:15:00 to 05:00:00 Instrument out of water due to extremely low tide
12/31/97 05:15:00 to 06:00:00 Negative depths due to low tide
12/31/97 14:00:00 Negative depths due to low tide
12/31/97 14:15:00 to 19:00:00 Instrument out of water due to extremely low tide

12. Missing data

Missing data is either the result of
  1) the YSI not deployed
  2) YSI out of the water (negative depth with salinity of zero)
  3) a probe not attached
  4) a probe malfunction
  5) maintenance

January 1997:
TC:
01/01/97 00:00:00 to 01/31/97 23:45:00 No turbidity probe deployed

February 1997:
TC:
02/01/97 00:00:00 to 02/28/97 23:45:00 No turbidity probe deployed

March 1997:
TC:
03/01/97 00:00:00 to 03/31/97 23:45:00 No turbidity probe deployed
03/10/97 14:15:00 Maintenance
03/10/97 14:30:00 to 03/11/97 17:30:00 DO mg/L values incorrect due to incorrect
spcond values; data deleted
03/10/97 14:30:00 to 03/31/97 23:45:00 Salinity/Spcond too high for site, could have
been a calibration error or probe malfunction; data deleted
03/11/97 17:45:00 to 03/31/97 23:45:00 DO membrane puncture early in study; data
deleted

Note: YSI told us that only the DO mg/L values were affected by the incorrect spcond
calibration. DO % saturation should be correct since it is not calculated from conductivity
values.

April 1997:
TC:
04/01/97 00:00:00 to 04/08/97 14:45:00 No turbidity probe deployed
04/01/97 00:00:00 to 04/08/97 14:45:00 DO membrane puncture early in study; data
deleted
04/01/97 00:00:00 to 04/08/97 14:45:00 Salinity/Spcond too high for site, could have
been a calibration error or probe malfunction; data deleted
04/13/97 18:00:00 Missing data due to time skip
04/20/97 23:00:00 Missing data due to time skip
04/21/97 02:00:00 Missing data due to time skip
04/21/97 11:45:00 Missing data due to time skip
04/30/97 16:30:00 to 23:45:00 Negative DO values probably due to a membrane
puncture prior to deployment; data deleted

May 1997:
TC:
05/01/97 00:00:00 to 05/30/97 16:30:00 Negative DO values probably due to a
membrane puncture prior to deployment; data deleted
05/30/97 16:45:00 to 05/31/97 23:45:00 Maintenance

June 1997:
TC:
06/01/97 00:00:00 to 06/02/97 11:00:00 Maintenance
06/11/97 11:30:00 to   12:15:00 Negative DO values; data deleted
06/11/97 15:15:00   Negative DO values; data deleted
06/11/97 20:45:00 to 21:15:00   Negative DO values; data deleted
06/11/97 23:45:00 to 06/12/97 00:45:00 Negative DO values; data deleted
06/12/97 01:15:00 to 02:00:00   Negative DO values; data deleted
06/12/97 02:30:00 to 02:45:00   Negative DO values; data deleted
06/12/97 03:45:00 to 08:15:00   Negative DO values; data deleted
06/12/97 08:45:00 to 09:45:00   Negative DO values; data deleted
06/12/97 12:00:00 to 15:45:00   Negative DO values; data deleted
06/12/97 16:45:00 to 18:00:00   Negative DO values; data deleted
06/12/97 21:15:00 to 21:45:00   Negative DO values; data deleted
06/13/97 00:30:00 to 00:45:00   Negative DO values; data deleted
06/13/97 01:30:00 to 02:00:00   Negative DO values; data deleted
06/13/97 04:30:00 to 11:15:00   Negative DO values; data deleted
06/13/97 13:00:00 to 13:45:00   Negative DO values; data deleted
06/13/97 14:15:00 to 16:30:00   Negative DO values; data deleted
06/13/97 17:45:00 to 23:45:00   Negative DO values; data deleted
06/14/97 01:30:00   Negative DO values; data deleted
06/14/97 02:00:00   Negative DO values; data deleted
06/14/97 03:00:00   Negative DO values; data deleted
06/14/97 04:00:00 to 04:15:00   Negative DO values; data deleted
06/14/97 05:45:00 to 10:00:00   Negative DO values; data deleted
06/14/97 14:15:00 to 15:00:00   Negative DO values; data deleted
06/14/97 15:45:00   Negative DO values; data deleted
06/14/97 16:15:00   Negative DO values; data deleted
06/14/97 16:45:00 to 17:00:00   Negative DO values; data deleted
06/14/97 17:45:00 to 18:00:00   Negative DO values; data deleted
06/14/97 18:45:00 to 19:30:00   Negative DO values; data deleted
06/14/97 20:15:00   Negative DO values; data deleted
06/14/97 21:30:00 to 23:30:00   Negative DO values; data deleted
06/15/97 03:30:00 to 05:45:00   Negative DO values; data deleted
06/15/97 06:45:00 to 11:30:00   Negative DO values; data deleted
06/15/97 13:45:00 to 19:00:00   Negative DO values; data deleted
06/15/97 20:00:00 to 20:30:00   Negative DO values; data deleted
06/15/97 21:00:00 to 21:15:00   Negative DO values; data deleted
06/15/97 23:30:00   Negative DO values; data deleted
06/16/97 00:00:00 to 01:15:00   Negative DO values; data deleted
06/16/97 01:45:00 to 03:45:00   Negative DO values; data deleted
06/19/97 05:15:00   Negative DO values; data deleted
06/19/97 05:45:00 to 06:00:00   Negative DO values; data deleted
06/19/97 09:45:00   Negative DO values; data deleted
06/20/97 03:30:00 to 03:45:00   Negative DO values; data deleted
06/20/97 04:30:00   Negative DO values; data deleted

06/20/97 05:15:00 to 05:30:00 Negative DO values; data deleted
06/20/97 06:00:00 Negative DO values; data deleted
06/20/97 06:45:00 to 07:00:00 Negative DO values; data deleted
06/20/97 07:45:00 Negative DO values; data deleted
06/20/97 11:15:00 Negative DO values; data deleted
06/20/97 11:45:00 Negative DO values; data deleted
06/20/97 16:15:00 to 16:30:00 Negative DO values; data deleted
06/22/97 13:15:00 to 06/25/97 14:45:00 DO problem-maybe membrane puncture; data
deleted

July 1997:
TC:
07/01/97 15:45:00 to 07/16/97 14:45:00 DO membrane puncture-data deleted
07/16/97 15:00:00 to 07/23/97 14:15:00 Maintenance

August 1997:
TC:
08/05/97 14:00:00 to 08/06/97 12:45:00 DO membrane puncture-data deleted
08/06/97 13:00:00 to 08/07/97 14:00:00 Maintenance
08/20/97 14:30:00 to 08/21/98 12:00:00 DO membrane puncture; data
deleted

September 1997:
TC:
09/23/97 10:45:00 to 09/30/97 23:45:00 Suspect DO data because of high DO charge
and negative readings which are characteristic of biofouled anodes. Also probe recorded
supersaturated readings in air before deployment (163%); data deleted

October 1997:
TC:
10/01/97 00:00:00 to 10/06/97 15:15:00 Suspect DO data because of high DO charge
and negative readings which are characteristic of biofouled anodes. Also probe recorded
supersaturated readings in air before deployment (163%); data deleted
10/06/97 15:30:00 to 16:15:00 Maintenance

October 1997:
GI:
10/01/97 00:00:00 to 10/21/97 13:00:00 Instrument not deployed

November 1997:
TC:
11/07/97 08:45:00 to 11/11/97 15:45:00 Battery died

November 1997:
GI:
11/18/97 09:15:00 Maintenance
11/26/97 22:30:00 to 11/27/97 02:30:00 Instrument out of water due to extremely low
tide

11/27/97 12:00:00 - 12:30:00 to 14:15:00 Instrument out of water due to extremely low tide
11/27/97 23:30:00 to 11/28/97 02:30:00 Instrument out of water due to extremely low
tide
11/28/97 02:45:00 Instrument out of water due to extremely low tide
11/28/97 12:45:00 Instrument out of water due to extremely low tide
11/28/97 13:00:00 to 15:00:00 Instrument out of water due to extremely low tide

December 1997:
TC:
12/03/97 13:00:00 Maintenance

December 1997:
GI:
12/02/97 03:15:00 to 12/04/97 13:30:00 Battery died
12/07/97 08:00:00 to 09:30:00 Instrument out of water due to extremely low tide
12/07/97 21:15:00 to 21:30:00 Instrument out of water due to extremely low tide
12/08/97 08:30:00 to 10:30:00 Instrument out of water due to extremely low tide
12/08/97 20:450:00 to 23:00:00 Instrument out of water due to extremely low tide
12/15/97 16:15:00 Instrument out of water due to extremely low tide
12/31/97 02:15:00 to 05:00:00 Instrument out of water due to extremely low tide
12/31/97 14:15:00 to 19:00:00 Instrument out of water due to extremely low tide

12. Remarks
Any regions of data with negative depth values due to low tides or low-pressure systems
should be viewed with caution. In some instances the probes are clearly out of water and have
been noted. Depth data should be considered relative depth. From September 1995 to
September 1997 at Taskinas Creek, the instruments were deployed on a rope that was tied to
a tree branch, during which the instrument may have been deployed at a slightly different
depth for each deployment. In September 1997 at Taskinas Creek, a permanent structure
was placed inside of 4-inch PVC housing at a fixed depth from the bottom. Problems with
exposure from low tides and currents have been resolved. In October 1997, a permanent
structure was also installed at the Goodwin Islands where the datalogger is deployed inside 4-
inch PVC pipe at a fixed depth from the bottom.

Please note that in December of 1997, construction work began and is ongoing at the York

River State Park in an effort to reduce erosion problems from the steep banks into the creek.
This may be effecting the Taskinas Creek deployment readings, especially for turbidity. All
construction work is taking place about 75 feet upstream from the deployment site.

The time clock in the dataloggers was off during the following times:

November 1997:
TC:
11/11/97 16:01:33 to 11/21/97 10:16:33 Time clock was off +1min 33sec; was
corrected.

November 1997:
GI:
11/04/97 13:35:33 to 11/18/97 09:05:33 Time clock was off +5 min 33 sec; was
corrected.