

Sapelo Island (SAP) NERR Water Quality Metadata
(January - December, 1997)
Latest update: November 12, 2001

I. Data set and Research Descriptors:

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2. Entry Verification:

The data are downloaded to an IBM compatible computer from the Hydrolab Datasonde I, Hydrolab Datasonde III, Hydrolab Recorder, or YSI 6000UPG as a raw file. The YSI 6000 data are reviewed using the YSI computer program PC6000 that accompanies the YSI 6000 data logger. After the file is uploaded from the datalogger, PC6000 is used to plot the data and perform basic statistical analysis (i.e., min., max., mean, std. dev.) This information is printed out and attached to the Field Log for the particular deployment. The information obtained from this printout is used during file review to detect any gross outliers such as data taken when the datalogger was removed from the water or those caused by instrument failure. Georgianne Coker, Research Technician, was responsible for the data collection, management, and monitoring of the three sites. The data are imported into a Microsoft Excel file that contains the current month's cumulative recordings. When a complete month of data has been recorded the file is ready for review. The data review includes several steps.

The first step is to format the data so that the parameter columns are in the correct order and the data has the correct number of decimal place holders by using the Column Reformat CDMO Excel 5.0 Macro. Secondly, the Date Hour Count CDMO Excel 5.0 macro is used to determine if there are any dates and times that data was not recorded due to maintenance, battery failure, or other causes. Missing dates and times are inserted into the file and a period is inserted into the cells where data would normally be. The reason for the missing data is recorded on the Water Quality Editing Log. Next, the data are filtered using the Find Variable Outlier CDMO Excel 5.0 macro to find readings outside the instrument measurement range and the "normal" range for the site in question. Data outside the instrument range is/are removed from the file and a period is inserted to the cell(s). An explanation for the missing dates and times are recorded onto the Water Quality Editing Log. Data that was outside the "normal" range of water quality for a particular site is investigated for validity based on weather data, field observations, QC checks, PC6000 printouts, and instrument diagnostics. If the data is/are rejected from the file a period is inserted to the cell(s) and an explanation for the missing dates and times are recorded onto the Water quality Editing Log. The information recorded on the Water Quality Editing Log is transferred to the Metadata form. The Metadata form is submitted with the data file to the CDMO. Stacey Webb, reserve fellow, was responsible for the QA/QC of the database.

3. Research Objectives:

The purpose of research was only to perform long term water quality monitoring and not a specific experiment. Sapelo Island is only accessible by passenger ferry. Due to its isolation, the salt marsh and tidal waters of the SINERR show little evidence of human impact. The Marsh Landing site receives a large amount of boat traffic, as it is the primary access point for the approximately 200-300 residents, commuters and daily visitors plus barge off

loading. The Barn Creek site receives moderate boat traffic, and is near a mechanic shop on land and several residences. The Flume Dock site is a relatively isolated location compared to the other two sites.

4. Research Methods:

The monitoring program began in August of 1986 at the Flume Dock and Marsh Landing sites. The Barn Creek site was added in May 1995. The units are hung vertically from a float or floating dock so they hang two meters below the surface. Thus, depth was considered fixed and not measured. Hydrolab units were used exclusively until May 1995. Beyond that point, YSI units were used as well as the Hydrolabs. The probes are cleaned three times weekly during the warmer months. No pre- or post-calibrations were performed. The Dissolved Oxygen probes are cleaned once weekly with a cotton swab soaked in methanol, while the other probes are cleaned with cotton swabs or pipe cleaners and de-ionized water. After two weeks the units are returned to the lab for downloading, cleaning and recalibration, according to the manufacturers manual. Before each YSI PC6000 datalogger is deployed, calibration and maintenance is performed following the manufacturer's instructions. Calibration standards are only required for pH, conductivity, and turbidity, all other parameters are done as described in the manual. Buffer solutions for 2 point calibration (pH 7 and 10) are purchased from a scientific supply house. The conductivity standard is made using a 0.2 M solution of KCl (24.82mS/cm=14.92 g/L). The turbidity calibration uses distilled water made by the University of Georgia-Athens Marine Institute. The dissolved oxygen membranes are replaced before deployment and are allowed to sit at least 24 hours prior to deployment.

The datalogger is placed inside a length of PVC pipe attached to the dock. Every 30 minutes during the sampling period measurements are taken for temperature, specific conductance, salinity, pH, dissolved oxygen concentration, depth and turbidity. During the stage of deployment the datalogger is checked for fouling and cleaned. This can be one to three times a week depending on the

time of year. At the end of the sample period the datalogger is retrieved and immediately replaced by another calibrated datalogger. The datalogger is then taken to the lab where the data is uploaded, and the probe is cleaned.

5. Site Location and character:

The Sapelo Island Natinal Estuarine Research Reserve is located in a tidal estuary on the western side of Sapelo Island on the coast of Georgia. The Duplin River, actually a tidal lagoon, that receives little fresh water and opens into Doboy Sound, ca. 5 km inland from the Atlantic Ocean. The marsh is inundated twice daily by unequal tides with a mean range of 2.1m. Salinity ranges from 10 to 25 ppt. The surrounding area vegetation is dominated by salt marsh with *Spartina alterniflora* being the predominate flora. There are three monitoring stations located within the reserve.

- 1) Marsh Landing: located on the lower Duplin River on Sapelo Island (Latitude: 31° 25' 4"N, Longitude 81° 17' 46"W). Water passing the Marsh landing site during flood tide originates from the Doboy Sound. The Doboy receives input from the Atlantic Ocean, and the Altamaha River via the Intra-Coastal Waterway. The water is pushed up the river or up smaller tidal creeks and some is pushed onto the marsh surface by the flood tide and recedes into the main channel during ebb tide. The dock itself is used as the main dock to the island where the ferry makes several daily runs. There are also several small boats that are docked there.
- 2) Barn Creek: located on a tributary of the Duplin river between the Marsh Landing and Flume Dock sites (Latitude: 31° 26' 21N, Longitude 81° 16' 43"W). It is impacted by a small boat dock, a mechanic shop nearby on land, as well as several houses near its marshes.
- 3) Flume Dock: located on the upper Duplin River on Sapelo Island (Latitude: 31° 28' 58N, Longitude 81° 17' 3"W). It is influenced by tidal currents which

flood the marsh on high tides and recede into the channel of the river and its side creeks. It receives far less boat traffic than the Marsh Landing site.

6. Data collection period:

Although data has been collected at the Marsh Landing and Flume Dock sites since 1986, an additional site, Barn Creek was added and all sites started May 1995 for the NERRS SWMP.

7. Associated researchers and projects:

Sapelo Island has a long history of maintaining research. In 1953, the University of Georgia Marine Institute (UGAMI) was formed and the island became a working laboratory for many. Given UGAMI's long history on Sapelo, a bibliographic list of over 800 articles of current and previous research can be found on the UGAMI website. (<http://www.uga.edu/UGAMI>).

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

Hydrolab Datasonde I

Variable Name	Range of measurement	Resolution	Accuracy
Date	1-12, 1-31, 00-99 (Mo., Day, Yr.)	1 month, 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 50 (C)	0.01 C	+/-0.15 C
Ph	2 to 14 (units)	0.01 unit	+/-0.2 units
SpCond	0 to 100 (mS/cm)	0.01 mS/cm	+/-of range 0.5%
Salinity	0 to 70 (ppt)	0.1 ppt	+/-0.2 ppt

Hydrolab Datasonde III

Variable Name	Range of measurement	Resolution	Accuracy
Date	1-12, 1-31, 00-99 (Mo., Day, Yr.)	1 month, 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 50 (C)	0.01 C	+/-0.15 C
SpCond	0 to 100 (mS/cm)	0.01 mS/cm	+/-of range 0.5%
Salinity	0 to 70 (ppt)	0.1 ppt	+/-0.2 ppt
DO	0-200 (%air Saturation)	0.1% @air sat	+/-2% @
air sat.			
DO	0-20 (mg/L)	0.01 mg/L	+/-0.2 mg/L
Ph	2 to 14 (units)	0.01 unit	+/-0.2 units

Hydrolab Recorder

Variable Name	Range of measurement	Resolution	Accuracy
Date	1-12, 1-31, 00-99 (Mo., Day, Yr.)	1 month, 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 50 (C)	0.01 C	+/-0.15 C
Ph	2 to 14 (units)	0.01 unit	+/-0.2 units
SpCond	0 to 100 (mS/cm)	0.01 mS/cm	+/-of range 0.5%
Salinity	0 to 70 (ppt)	0.1 ppt	+/-0.2 ppt
DO	0 to 20 (mg/L)	0.01 mg/L	+/-0.2 mg/L

YSI 6000 datalogger

Variable Name	Range of measurement (units)	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
SpCond	0-100 (mS/cm)	0.01 mS/cm	+/-0.5% of reading + 0.001 mS/cm
Salinity	0-70 (ppt)	0.01 ppt	+/- 1.0% of reading or 0.1ppt (which ever is greater)
DO	0-200 (% air saturation)	0.1% @ air sat.	+/-2% @air sat.
DO	200-500 (% air sat.)	0.1% @ air sat.	+/-6% @ air sat.
DO	0-20 (mg/L)	0.01 mg/L	+/-0. 2mg/L
DO	20-50 (mg/L)	0.01 mg/L	+/-0.6 mg/L
pH	2-14 units	0.01 units	+/-0.2 units
Turb	0-1000 (NTU)	0.1 NTU	+/-5% of reading or 2 NTU (which ever is greater)

9. Coded variable indicator and variable code definitions:

ML= Marsh Landing, FD = Flume Dock, BC = Barn Creek

File definitions: Deployment site/month/year (ex: ML0197 from January 1997).

10. Data anomalies:

January 1997:

FD: 1/1 00:00 - 1/3 13:00	DO, DO%	possible DO membrane fouling
FD: 1/3 13:30, 1/27 14:30	all	Out of water
BC: 1/1 00:00 - 1/2 14:30	DO, DO%	deployment out of calibration

February 1997:

FD: 2/26 13:30 - 14:00	all	out of water
BC: 2/27 14:00	all	out of water

March 1997:

ML: 3/4/97 11:00	all	out of water
ML: 3/7 09:00	turbidity	single negative number

ML: 3/7 10:00	turbidity	single negative number
ML: 3/10 20:00	turbidity	single negative number
BC: 3/25 03:00 - 3/25 03:30	DO, DO%	possible DO membrane fouling
FD: 3/25 15:00	all	out of water
April 1997:		
FD: 4/1 14:00 -- 4/8 12:30	DO, DO%	out of calibration after maintenance
May 1997:		
FD: 5/6 00:30 - 12:30	turbidity	erratic numbers removed
FD: 5/8 21:00	DO, DO%	high spike in data removed
BC: 5/11 05:30 - 5/20 13:30	turbidity	erratic negative numbers removed
BC: 5/16 14:30 - 5/23 09:30	DO, DO%	suspect data after maintenance removed
BC: 5/23 10:00 - 5/31 23:30	DO, DO%	data suspect: deployment > 100% saturation
June 1997:		
FD: 6/27 14:00 - 6/30 23:30	DO, DO%	suspect data after maintenance removed
BC: 6/1 00:00 - 6/6 13:30	DO, DO%	DO data suspect: deployment > 100%
BC: 6/4 12:00 - 6/6 13:00	turbidity	erratic numbers removed
BC: 6/6 13:30 - 6/20 13:00	turbidity	erratic number removed
BC: 6/14 00:00 - 6/20 13:00	DO, DO%	heavy fouling
July 1997		
ML: 7/9 13:30	all	out of water
FD: 7/3 00:00 -- 7/15 21:30	turbidity	erratic negative numbers removed
FD: 7/3 12:30 - 7/15 12:30	DO, DO%	deployment out of calibration
FD: 7/15 22:00 - 7/29 01:30	turbidity	erratic numbers removed
FD: 7/29 02:00 - 7/30 13:00	turbidity	erratic numbers removed, possible fouling
FD: 7/30 13:30 - 8/13 08:30	turbidity	erratic negative numbers removed
August 1997:		
ML: 8/2 00:00 - 8/4 14:30	DO, DO%	DO membrane fouling
ML: 8/6 13:30	all	out of water
ML: 8/16 00:00 - 8/18 15:00	DO, DO%	DO membrane fouling
ML: 8/18 16:00-8/20 14:00	pH	pH probe broken
ML: 8/28 00:00 - 8/31 23:30	DO, DO%	DO membrane fouling
FD: 8/13 09:00 - 8/25 08:00	turbidity	data suspect, sonde needed new wiper
FD: 8/23 00:00 - 8/25 08:00	DO, DO%	DO membrane fouling
FD: 8/25 08:30 - 8/31 23:30	turbidity	erratic numbers removed
FD: 8/31 00:00 - 8/31 23:30	all but temp	heavy fouling
BC: 8/18 15:30	DO, DO%	out of calibration after maintenance
BC: 8/23 04:00 - 8/25 07:30	DO, DO%	DO membrane fouling
BC: 8/25 08:00 - 8/31 23:30	turbidity	erratic + and - numbers removed

September 1997:

ML: 9/1 00:00 - 9/4 12:30	DO, DO%	DO membrane fouling
FD: 9/1 00:00 - 9/3 13:00	all but temp	heavy fouling
FD: 9/8 13:30	all	out of water
FD: 9/23 13:00 - 9/30 23:30	DO, DO%	data suspect: deployment > 400% saturation
BC: 9/1 00:00 - 9/3 13:30	DO, DO%	DO membrane fouling

October 1997:

ML: 10/1 10:00, 10/29 15:00	all	out of water
FD: 10/1 00:00 - 10/23 10:00	DO, DO%	data suspect: deployment > 300% saturation
FD: 10/7 22:30 - 10/8 17:30	turbidity	data suspect: high + and - numbers
BC: 10/9 03:00 - 10/13 12:00	DO, DO%	DO membrane fouling

December 1997:

BC: 12/17 11:00 - 12/23 21:00	DO, DO%	calibration error, sensor failure
FD: 12/16 14:00 - 16:00	DO, DO%	first 5 records are high; membrane not settled

11. Missing Data:

January 1997:

ML: 1/1 00:00 - 1/31 23:30	turbidity	sonde(s) not equipped with turbidity probe
FD: 1/1 00:00 - 1/3 13:00	DO, DO%	possible DO membrane fouling
FD: 1/1 00:00 - 1/31 23:30	turbidity	sonde(s) not equipped with turbidity probe
FD: 1/3 13:30	all variables	out of water between deployments
FD: 1/27 14:30	all variables	out of water between deployments
BC: 1/1 00:00 - 1/2 14:30	DO, DO%	deployment out of calibration
BC: 1/1 00:00 - 1/31 23:30	turbidity	sonde(s) not equipped with turbidity probe

February 1997:

ML: 2/1 00:00 - 2/3 13:30	turbidity	sonde(s) not equipped with turbidity probe
ML: 2/19 10:30 - 2/28 23:30	turbidity	sonde(s) not equipped with turbidity probe
FD: 2/1 00:00 - 2/28 23:30	turbidity	sonde(s) not equipped with turbidity probe
FD: 2/26 13:30 -14:00	all variables	out of water between deployments
BC: 2/1 00:00 - 2/28 23:30	turbidity	sonde(s) not equipped with turbidity probe
BC: 2/27 14:00	all variables	out of water between deployments

March 1997:

ML: 3/1 00:00 - 3/5 13:30	turbidity	sonde(s) not equipped with
turbidity probe		
ML: 3/4 11:00	all variables	out of water between
deployments		
ML: 3/18 14:00	all variables	maintenance
ML: 3/19 13:30 - 3/31 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
FD: 3/1 00:00 - 3/31 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
FD: 3/25 15:00	all variables	out of water between
deployments		
BC: 3/1 00:00 - 3/31 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
BC: 3/25 03:00 - 3/25 03:30	DO, DO%	possible DO membrane
fouling		

April 1997:

ML: 4/1 00:00 - 4/30 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
ML: 4/3 9:30	all variables	maintenance
ML: 4/17 12:30	all variables	maintenance
FD: 4/1 00:00 - 4/21 09:30	turbidity	sonde(s) not equipped with
turbidity probe		
FD: 4/1 13:30	all variables	maintenance
FD: 4/1 14:00 - 4/8 12:30	DO, DO%	out of calibration after
maintenance		
BC: 4/1 00:00 - 4/10 10:00	turbidity	sonde(s) not equipped with
turbidity probe		
BC: 4/1 14:00	all variables	maintenance
BC: 4/24 12:30 - 4/30 23:30	turbidity	sonde(s) not equipped with
turbidity probe		

May 1997:

ML: 5/1 00:00 - 5/31 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
ML: 5/26 15:00	all variables	maintenance
FD: 5/6 00:30 - 12:30	turbidity	erratic numbers removed
FD: 5/6 13:00 -- 5/31 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
FD: 5/8 9:30	all variables	maintenance
FD: 5/8 21:00	DO, DO%	high spike in data removed
FD: 5/16 13:30	all variables	maintenance
BC: 5/1 00:00 - 5/8 09:30	turbidity	sonde(s) not equipped with
turbidity probe		
BC: 5/11 05:30 - 5/20 13:30	turbidity	erratic negative numbers removed
BC: 5/16 14:30 - 5/23 09:30	DO, DO%	suspect data after
maintenance removed		
BC: 5/21 13:30	all variables	maintenance
BC: 5/23 10:00 - 5/31 23:30	DO, DO%	data suspect: deployment >
100% saturation		

June 1997:

ML: 6/1 00:00 - 6/30 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
FD: 6/1 00:00 - 6/30 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
FD: 6/23 10:00	all variables	maintenance
FD: 6/27 13:30	all variables	maintenance
FD: 6/27 14:00 - 6/30 23:30	DO, DO%	suspect data after maintenance
removed		
BC: 6/1 00:00 - 6/6 13:30	DO, DO%	suspect data: deployment > 100%
BC: 6/4 12:00 - 6/6 13:00	turbidity	erratic numbers removed
BC: 6/6 13:30 - 6/20 13:00	turbidity	erratic numbers removed
BC: 6/14 00:00 - 6/20 13:00	DO, DO%	heavy fouling
BC: 6/25 8:30	all variables	maintenance

July 1997

ML: 7/1 00:00 - 7/31 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
ML: 7/9 13:30	all variables	out of water between
deployments		
ML: 7/14 13:30	all variables	maintenance
ML: 7/22 9:00	all variables	maintenance
FD: 7/1 00:00 -- 7/2 24:00	turbidity	sonde(s) not equipped with
turbidity prob		
FD: 7/1 00:00 - 7/3 12:00	DO, DO%	suspect data after
maintenance		
FD: 7/3 00:00 -- 7/15 21:30	turbidity	erratic negative numbers removed
FD: 7/3 12:30 - 7/15 12:30	DO, DO%	deployment out of
calibration		
FD: 7/15 22:00 - 7/29 01:30	turbidity	erratic numbers removed
FD: 7/28 13:30	all variables	maintenance
FD: 7/29 02:00 - 7/30 13:00	turbidity	erratic numbers removed, possible
fouling		
FD: 7/30 13:30 - 8/13 08:30	turbidity	erratic negative numbers removed
BC: 7/3 13:00 - 7/31 23:30	turbidity	sonde(s) not equipped with
turbidity probe		
BC: 7/14 13:00	all variables	maintenance
BC: 7/22 8:30	all variables	maintenance

August 1997:

ML: 8/1 00:00 - 8/31 24:00	turbidity	sonde(s) not equipped with
turbidity probe		
ML: 8/2 00:00 - 8/4 14:30	DO, DO%	DO membrane fouling
ML: 8/6 13:30	all variables	out of water between
deployment		
ML: 8/16 00:00 - 8/18 15:00	DO, DO%	DO membrane fouling
ML: 8/18 15:30	all variables	maintenance
ML: 8/18 16:00 - 8/20 14:00	pH	probe broken during maintenance
ML: 8/28 00:00 - 8/31 23:30	DO, DO%	DO membrane fouling
FD: 8/1 00:00 - 8/13 08:30	turbidity	erratic negative turbidity
numbers removed		
FD: 8/6 18:30 - 8/6 19:00	all variables	maintenance
FD: 8/7 13:00	all variables	maintenance

FD: 8/13 09:00 - 8/25 08:00 turbidity data suspect, sonde needed new wiper
 FD: 8/23 00:00 - 8/25 08:00 DO, DO% DO membrane fouling
 FD: 8/25 08:30 - 8/31 23:30 turbidity erratic numbers removed
 FD: 8/31 00:00 - 8/31 23:30 all but temp heavy fouling
 BC: 8/1 00:00 - 8/25 07:30 turbidity sonde(s) not equipped with turbidity probe
 BC: 8/8 13:30 all variables maintenance
 BC: 8/18 15:00 all variables maintenance
 BC: 8/18 15:30 DO, DO% out of calibration after maintenance
 BC: 8/23 04:00 - 8/25 07:30 DO, DO% DO membrane fouling
 BC: 8/25 08:00 - 8/31 23:30 turbidity erratic + and - numbers removed

September 1997:

ML: 9/1 00:00 - 9/4 12:30 DO, DO% DO membrane fouling
 ML: 9/1 00:00 - 9/30 23:30 turbidity sonde(s) not equipped with turbidity probe
 FD: 9/1 00:00 - 9/3 13:00 all but temp heavy fouling
 FD: 9/1 00:00 - 9/30 24:00 turbidity sonde(s) not equipped with turbidity probe
 FD: 9/8 13:30 all variables out of water between deployments
 FD: 9/12 13:30 all variables maintenance
 FD: 9/23 13:00 - 9/30 23:30 DO, DO% data suspect: deployment > 400% saturation
 BC: 9/1 00:00 - 9/3 13:30 DO, DO% DO membrane fouling
 BC: 9/1 00:00 - 9/26 9:00 turbidity sonde(s) not equipped with turbidity probe
 BC: 9/29 13:30 all variables maintenance

October 1997:

ML: 10/1 00:00 - 10/31 23:30 turbidity sonde(s) not equipped with turbidity probe
 ML: 10/1 10:00 all variables out of water between deployments
 ML: 10/8 23:30 - 10/16 14:30 all variables low battery, stopped logging
 ML: 10/29 15:00 all variables out of water between deployments
 FD: 10/1 00:00 - 10/3 12:30 turbidity sonde(s) not equipped with turbidity probe
 FD: 10/1 00:00 - 10/23 10:00 DO, DO% data suspect: deployment > 300% saturation
 FD: 10/7 22:30 - 10/8 17:30 turbidity data suspect: high + and - numbers
 FD: 10/23 10:30 - 13:00 all variables deployment time ran out too early
 FD: 10/23 13:30 - 10/31 18:00 turbidity sonde(s) not equipped with turbidity probe
 FD: 10/29 14:00 all variables maintenance
 BC: 10/3 18:30 - 19:00 all variables internal device error
 BC: 10/5 15:30 all variables internal device error
 BC: 10/9 03:00 - 10/13 12:00 DO, DO% DO membrane fouling
 BC: 10/11 04:30 - 5:00 all variables internal device error

BC: 10/13 12:30 - 10/24 9:00 turbidity sonde(s) not equipped with
turbidity probe
BC: 10/31 19:30 - 20:30 all variables internal device error

November 1997:

ML: 11/1 00:00 - 11/30 24:00 turbidity sonde(s) not equipped with
turbidity probe
FD: 11/1 00:00 - 11/20 13:30 turbidity sonde(s) not equipped with
turbidity probe
FD: 11/27 00:30 - 11/30 23:30 all variables dead battery
BC: 11/7 10:30 - 11/30 23:30 turbidity sonde(s) not equipped with
turbidity probe

December 1997:

ML: 12/1 00:00 - 12/16 11:30 turbidity sonde(s) not equipped with
turbidity probe
ML: 12/16 12:00 - 14:00 all variables deployment time ran
out too early
ML: 12/23 21:00 all variables internal device error
FD: 12/1 00:00 - 12/2 14:00 all variables dead battery
FD: 12/2 14:30 - 12/16 13:30 turbidity sonde(s) not equipped with
turbidity probe
FD: 12/16 14:00 - 16:00 DO, DO% first 5 records are
high; membrane not settled
BC: 12/1 00:00 - 12/23 21:00 turbidity sonde(s) not equipped with
turbidity probe
BC: 12/17 10:30 all variables maintenance
BC: 12/17 11:00 - 12/23 21:00 DO, DO% calibration error,
sensor failure
BC: 12/23 21:30 - 12/31 23:30 all variables power loss due to bad
connection

12. Other Remarks

Depth was absent from each monthly file due to the fixed depth off
the
dock. The following was a list of deployments for the year:

brand

location
month
day
year
ysi

bc
1
2
97
hydrolab

ml
1
3
97
hydrolab

fd
1
3
97
ysi

fd
1
13
97
ysi

bc
1
16
97
hydrolab

ml
1
17
97
hydrolab

fd
1
27
97
hydrolab

bc
1
29
97
ysisi

ml
2
3
97
ysi

fd
2
12
97
hydrolab

bc
2
13
97
ysi

ml
2
19
97
hydrolab

fd
2
26
97
hydrolab

bc
2
27
97
ysi

ml
3
5
97
hydrolab

fd
3
13
97
ysi

bc
3
13

97
ysi

ml
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