

North Inlet-Winyah Bay (NIW) NERR Site Water Quality Metadata
January - December 1998
Updated: August 24, 2001

I. Data Set & Research Descriptors

1. Principal investigator(s) & contact persons

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2. Entry verification

The .dat and .csv versions of the raw data files were uploaded to a PC from either YSI or Hydrolab dataloggers. Data plots were produced and examined for any anomalies using PC6000 software. Comma delimited files are opened in Microsoft EXCEL 5.0 and edited by removing unnecessary headers, footers and spaces. Suspect data were evaluated as to being either good or bad based on criteria outlined in the CDMO manual ver. 3.0. If the data were determined to be bad, they were deleted from the final edited .txt file and then documented in the metadata. If it could not be determined whether or not suspect data were bad (as was often the case with turbidity) the data was left in the final edited .txt file and noted in the metadata as anomalous. Missing data due to equipment failure or maintenance were deleted from the final edited .txt file and were replaced with periods (.). Edited (.txt) and raw (.csv) files were then FTP'd to our Sun Sparc II server and archived. The bi-weekly edited (.csv) files are merged to contain one full month of data. All 1998 Thousand Acre, Debordieu Creek and Oyster Landing data were verified using the CDMO 5.0 Microsoft Excel outlier macro which is designed to detect any outliers (values which fall outside the range that the instrument is designed to measure - see section II.8

of this document) and other erroneous data. Outliers were determined according to the instrument manufacturers' manual. After the CDMO macros were run, files with suspicious data were charted in Ecowatch to determine whether there were any problems with the probes. The dissolved oxygen (DO) and Turbidity (Turb) probes were the most problematic. In instances where data values increased or decreased in an exponential fashion and or intermittently went outside the accepted range for that instrument and never returned to normal, the data was considered suspect, noted in the metadata, and removed from the final edited data file. The date/hour and column reformat macros were then run on the data files before being saved in their final edited form (.txt). The most current CDMO macros are available on the NERRS CDMO home page. Christopher Aadland edited and archived the 1998 data for Thousand Acre, Debordieu Creek and Oyster Landing.

3. Research Objectives

The principal objective of this study is to record long-term water quality data for North Inlet/Winyah Bay in order to observe any physical changes or trends in water quality over time. Measurements were taken every 30 minutes over two week collecting periods at the Oyster Landing, Debordieu Creek and Thousand Acre sites.

4. Research methods (YSI and Hydrolab dataloggers)

YSI and/or Hydrolab dataloggers are currently mounted in a 4" diameter PVC pipe which is strapped to a treated 2" X 6" board; and then attached via stainless steel bands to a piling at both the Thousand Acre, Debordieu Creek and Oyster Landing sites. The PVC pipe which houses the data loggers has two large windows cut out near the bottom for the probes to have direct contact with the water column. A stop bolt placed through the PVC pipe below the cut out windows keeps the datalogger exactly one foot (30 cm) above the creek bottom. Every 30 minutes measurements of specific conductivity, salinity, percent saturation, dissolved oxygen, water temperature, pH, turbidity , and water level are

recorded. The two week sampling interval has been selected due to biofouling of the individual probes and expected battery life. At the end of each sampling interval, the dataloggers are brought back to the laboratory to be downloaded, cleaned and recalibrated. Before the instruments are cleaned and recalibrated a post calibration reading is taken from each instrument in fresh standard to see if any of the instruments exhibit drift. The Ph probe was calibrated using a two point method and either 4,7 or 7,10 standards. The turbidity probe calibration also used a two point method using 0 & 100 NTU standards. Specific Conductivity was calibrated using a one point method and a 10 ms/cm standard which was purchased through Fisher Scientific. These procedures were carried out according to the methods described in the YSI Operators Manual (see sections 3 and 7). After approximately 24 hours of down time for cleaning and overnight relaxing of the DO membrane, the YSI dataloggers were redeployed.

5. Site location and character

The North Inlet-Winyah Bay National Estuarine Research Reserve is located on the Southeastern Atlantic coast of the United States in two tidal estuaries, North Inlet and Winyah Bay, near Georgetown, South Carolina. The North Inlet estuary, located approximately 10 km east of Georgetown, is a bar-built Class C type estuary (Pritchard, 1955)¹. The North Inlet estuary is composed of numerous winding tidal creeks, and is considered a pristine tidal estuary due to minimal anthropogenic impacts. The watershed drains a 24.8 km² area of mostly pine forest and a moderately developed residential watershed to the north. The Winyah Bay estuary, classified as a Class B type estuary by Pritchard (1955)¹, which originates in the Blue Ridge Mountains of North Carolina, is one of the largest river-estuary ecosystems on the Eastern Seaboard. It is located 14.4 km south of North Inlet. Winyah Bay drains the sub-basins of 6 major rivers which are heavily impacted by agriculture, mining, and industry. The rivers drain approximately 46,736 km² of uplands and marshes. Descriptions of the two

sampling stations are as follows:

1) Thousand Acre (TA) - (lat. 33:18:22; long. 79:15:4) The Thousand Acre monitoring site is located in Thousand Acre marsh tidal creek approximately 30 meters northeast of the west bridge of Thousand Acre marsh. The creek empties into the northeastern side of the mid portion of Winyah Bay and directly drains pine forested upland and wetlands. Salinity ranges from 0 to 15 ppt. and tidal flux is approximately 1m. The bottom is most composed of fine sediments and detritus. Georgetown, 5 km upstream from the Thousand Acre site and on the southern side of Winyah Bay, is the home port for a number of heavy industries including a steel plant, paper mill, chemical plant, and a coal fired power plant. A public sewage treatment plant which discharges into the bay is also located in Georgetown.

2) Oyster Landing (OL) - (lat 33:21:03; long. 79:11:24). The Oyster Landing monitoring site is considered a fairly pristine and undisturbed area located at the end of the Oyster Landing pier which is also where the NI/Winyah Bay NERR weather station site is located. The pier stretches into the upper reaches of Crabhaul Creek in the mid western portion of North Inlet. Crabhaul Creek directly drains pine forested uplands and wetlands. Salinity can range from 0-32 ppt. and average tidal flux is approximately 1.4m. The bottom mostly is comprised of oyster shell hash with some fine sediment and detritus.

3) Debordieu Creek (DC) - (lat 33:21:33, long 79:10:05). The Debordieu Creek monitoring site is considered an impacted site which is located approximately 1k south of the Debordieu Colony which is a large development built on man made canals which drain directly into the northern portion of Debordieu Creek. The DC site is also located in an ocean-dominated *Spartina* marsh which was formerly surrounded by pine-dominated uplands. Salinity can range from 0 to full strength sea water and an average tidal flux of approximately 2 meters. The bottom is mostly comprised of oyster shell hash with some fine sediment and detritus.

6. Data collection period

Thousand Acre and Oyster Landing data collection both began January 1, 1995.

Debordieu Creek sampling began March 5, 1998. All sampling is ongoing.

7. Associated researchers and projects

A water chemistry program is associated with the NIW core monitoring program.

Variables sampled include: chlorophyll, dissolved organic carbon, nitrate-nitrite, orthophosphate, and ammonia. (See documentation on the NIW WWW home page for further details). Thousand Acre is our permanent monitoring station for the NERR monitoring program, but Oyster Landing and Debordieu Creek were also sampled during 1998. These stations are also included in our NIW core monitoring program.

II. Physical Structure Descriptors

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

YSI 6000 datalogger

Variable Name	Format	Range of Measurements (Units)	Resolution
DATE (MMDDYY)	1-12, 1-31, 00-99	(Month, Day, Year)	(1 month, 1 day, 1 yr)
NA			
HOUR (HHMMSS)	0-24, 0-60, 0-60	(Hr, Min, Sec)	(1 hr, 1 min, 1 sec)
NA			
WTEMP	-5 to 45 (C)	0.01C ±0.15C	
SPCOND	0-100 (mS/cm)	0.01mS/cm ±(0.5% of reading+0.001mS/cm)	
SALINITY	0-70 parts per thousand	(ppt)	0.01 ppt ±1.0% of reading or 0.1ppt, (or whichever is greater)
DO Sat	0-200 (% Saturation)	0.1% @air saturation	±2.0 % @air sat
DO Sat	200-500 (% Saturation)	0.1% @air saturation	±6% @air sat
DO mg 0-20 (mg/l)	0.01mg/l	±0.2mg/l	
DO mg 20-50 (mg/l)	0.01mg/l	±0.6mg/l	
Depth (shallow)	0-9.1(m)	0.001m	±0.018m
pH	2-14 units	0.01units	±0.2units
TURB	0-1000 NTU	0.1 NTU	±5% reading or 2.0 NTU (whichever is greater)

Data columns are separated by tabs.

9. Coded variable indicator and variable code definitions

Site definitions: OL = Oyster Landing; TA = Thousand Acre, DC = Debordieu Creek

10. Data anomalies (suspect data)

Any questionable outlying data points between January 1, 1998 and December 31, 1998, not addressed below, have been checked and correspond to probable rainfall or other weather related events. Much of the Turb. data (especially in the Fall) which was negative or greater than 1000 was probably due to the large amounts of detritus in the water.

DEBORDIEU CREEK (DC)

Date	Time	Variable	Reason
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3/10/98	00:00	3/10/98 01:00	depth negative depth
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3/28/98	15:30		depth low depth
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3/29/98	04:00		depth negative depth
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3/29/98	15:30	- 3/29/98 16:30	depth negative depth
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3/30/98	04:30	- 3/30/98 05:00	depth negative depth
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3/30/98	16:30	- 3/30/98 17:00	depth negative depth
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3/31/98	17:00	- 3/31/98 17:30	depth negative depth
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4/1/98	18:00		depth negative depth
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4/4/98	20:30		depth negative depth
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4/9/98	13:00	- 13:30	depth negative depth
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4/10/98	00:30	- 2:30	depth negative depth
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4/10/98	13:00		depth negative depth
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4/14/98	11:30	- 5/10/98 9:00	sal/ spec. cond. probe was calibrated in
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contaminated standard.

4/27/98	04:30		depth negative depth
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4/27/98	16:00	- 17:00	depth negative depth
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4/29/98	12:00	- 5/7/98	Instrument's mounting pipe was pulled up from the
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bottom during an extreme high tide and washed down stream several hundred yards.

This seems to

affect pH and sal/ spec. cond. the most.

5/10/98	09:30	- 11:30	depth low depth
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5/29/98	22:30		turb. turb. >1000
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6/19/98	04:30		turb. turb. >1000
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6/20/98	12:30		turb. turb. >1000
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6/23/98	08:00		turb. turb. >1000
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7/2/98	04:00		turb. turb. >1000
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8/8/98	04:30	- 8/19/98 10:30	turb. turb. >1000, values are intermittent.
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8/26/98 17:30 - 20:00 depth negative depth
 8/27/98 05:30 depth negative depth

9/3/98 08:00 - 9/21/98 09:00 turb. probe covered in algae
 9/16/98 10:00 - 10:30 DO%, DOmg negative
 9/16/98 12:30 - 13:30 DO%, DOmg negative

11/9/98 12:30 - 13:30 depth negative depth
 11/11/98 13:30 - 11/23/98 10:30 sal., spec. cond. unexplainable high
 salinity and specific conductivity.

OYSTER LANDING (OL)

Date	Time	Variable	Reason
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1/7/98	12:30	turb. turb.	negative
03/30/98	15:00 - 04/14/98 09:00	Very high salinity;	deleted DO mg/L, salinity and spcond
4/14/98	9:30 - 5/10/98 9:30	sal/ spec. cond.	probe was calibrated in contaminated standard; deleted DO mg/L, salinity and spcond
4/29/98	12:30 - 5/10/98 9:30	ph	ph data questionable due to corrosion of connector on probe.

6/6/98	04:00 - 6/25/98 09:00	turb. negative turb,	values were intermittent.
6/22/98	13:00 - 6/25/98 09:00	DO%, DOmg	DO data deleted

7/5/98	11:30	turb. turb.	>1000
7/7/98	14:00	turb. turb.	>1000
7/16/98	20:30	DO%, DOmg	negative
7/21/98	00:30 - 01:00	DO%, DOmg	negative
7/22/98	01:00 - 7/22/98 03:00	DO%, DOmg	negative
7/23/98	02:00 - 7/23/98 04:00	DO%, DOmg	negative
7/24/98	02:00 - 7/24/98 05:30	DO%, DOmg	negative
7/25/98	03:00 - 7/25/98 04:30	DO%, DOmg	negative
7/26/98	03:30 - 7/26/98 07:00	DO%, DOmg	negative
7/26/98	23:00	DO%, DOmg	negative
7/27/98	03:30 - 7/27/98 07:30	DO%, DOmg	negative

8/8/98	03:00	DO%	negative DO%
8/26/98	19:00 - 20:00	Depth	negative due to abnormal high tide.
8/31/98	08:00	DO%, DOmg	negative
8/31/98	10:00	DO%, DOmg	negative

9/3/98	14:00 - 9/28/98 05:30	turb. turb.	>1000, values are intermittent, fouled with algae.
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10/7/98	20:00 - 20:30	turb. turb	>1000
10/8/98	00:00 - 00:30	turb. turb	>1000
10/8/98	01:30	turb. turb	>1000

10/8/98 04:00 - 04:30 turb. turb >1000

11/01/98 00:00 - 11/09/98 12:00 Turbidity values questionable (very high compared to rest of the month) possible due to crabs or fish in probe guard cage.

11/10/98 15:30 - 11/23/98 10:30 sal/spec. cond. unexplained high spcond and sal; spcond/sal and DO mg/L data deleted

11/27/98 7:00 - 11/29/98 20:30 DO%, DOmg anomolous DO spike possibly due to crab or blenny in probe guard.

11/29/98 07:30 - 08:00 turb. turb >1000

12/01/98 00:00 - 12/09/98 11:00 Turbidity values questionable possibly due

to crabs or fish in probe guard cage.

12/01/98 07:00 - 12/22/98 21:00 turb. turb >1000, values are intermittent.

12/22/98 15:30 - 12/31/98 23:30 ph. ph probe would not calibrate.

12/22/98 21:00 turbidity value > 1000

12/23/98 18:30 turbidity value > 500. Possible fish or crab in probe guard cage.

THOUSAND ACRE (TA)

Date	Time	Variable	Reason
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1/19/98	00:00	turb. turb.	>1000
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1/1/98	17:30	turb. turb.	>1000
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1/3/98	08:30	turb. turb.	>1000
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1/4/98	08:30	turb. turb.	>1000
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1/4/98	13:00	turb. turb.	>1000
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2/6/98	15:30	turb. turb.	>1000
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2/7/98	21:30	turb. turb.	>1000
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03/30/98	11:00 - 04/15/98	09:00	DO suspect DO deleted
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4/29/98	12:30 - 5/11/98	9:00	sal/spec. cond. probe was calibrated in contaminated standard; sal/spec. cond and DO mg/L was deleted
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5/27/98	21:00 - 5/31/98	01:30	turb. turb. >1000, values are intermittent.
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05/27/98	21:00:00	2152	
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05/28/98	20:00:00	1060	
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05/30/98	13:00:00	1193	
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05/30/98	13:30:00	1059	
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05/30/98	14:00:00	1890	
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05/30/98	14:30:00	2149	
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05/30/98	15:00:00	2150	
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05/30/98	15:30:00	2154	
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05/30/98	16:00:00	1198	
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05/30/98	16:30:00	1010	
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05/30/98	17:00:00	1042	
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05/30/98	18:00:00	1369
05/30/98	19:00:00	1148
05/30/98	19:30:00	1589
05/30/98	20:00:00	1889
05/30/98	20:30:00	2153
05/30/98	21:00:00	2153
05/30/98	21:30:00	2151
05/30/98	22:00:00	1818
05/30/98	22:30:00	1208
05/30/98	23:00:00	1352
05/30/98	23:30:00	1412
05/31/98	00:00:00	2150
05/31/98	00:30:00	2151
05/31/98	01:00:00	2150
05/31/98	01:30:00	1127

6/2/98 14:00 - 6/30/98 09:30 turb. turb. >1000, values are intermittent.

6/27/98 12:30 DO%, D0mg negative or 0

6/28/98 01:00 - 01:30 DO%, D0mg negative or 0

7/1/98 03:00 - 7/22/98 18:00 turb. turb. >1000, neg., values are intermittent.

07/03/98	17:30:00	1041
07/02/98	14:30:00	1091
07/06/98	02:30:00	1404
07/22/98	18:00:00	1527
07/01/98	03:00:00	0000
07/01/98	06:00:00	0000
07/01/98	08:30:00	0000
07/01/98	10:00:00	0000
07/01/98	14:00:00	0000
07/01/98	16:30:00	0000
07/01/98	17:00:00	-0001
07/01/98	18:00:00	0000
07/01/98	18:30:00	0000
07/01/98	20:00:00	-0001
07/02/98	00:30:00	0000
07/02/98	01:30:00	0000
07/02/98	03:00:00	-0001
07/02/98	03:30:00	0000
07/02/98	04:00:00	0000
07/02/98	06:30:00	-0002
07/02/98	19:30:00	-0002
07/02/98	21:00:00	-0002
07/03/98	06:00:00	-0001
07/03/98	08:30:00	0000
07/03/98	11:00:00	-0002
07/03/98	16:00:00	0000
07/03/98	20:00:00	0000
07/03/98	20:30:00	0000
07/03/98	21:30:00	-0001
07/04/98	00:00:00	0000
07/04/98	00:30:00	0000
07/04/98	01:00:00	-0001

07/04/98	01:30:00	0000
07/04/98	02:00:00	0000
07/04/98	02:30:00	-0001
07/04/98	03:30:00	-0001
07/04/98	04:00:00	0000
07/04/98	04:30:00	0000
07/04/98	06:00:00	-0001
07/04/98	06:30:00	0000
07/04/98	07:00:00	0000
07/04/98	08:30:00	-0001
07/04/98	09:30:00	-0001
07/04/98	10:00:00	-0001
07/04/98	10:30:00	0000
07/05/98	00:00:00	-0001
07/05/98	01:00:00	-0001
07/05/98	03:00:00	0000
07/05/98	03:30:00	0000
07/05/98	04:00:00	0000
07/05/98	05:30:00	-0001
07/05/98	06:30:00	-0001
07/05/98	07:30:00	-0001
07/05/98	14:00:00	-0001
07/05/98	14:30:00	0000
07/05/98	15:00:00	-0001
07/06/98	00:30:00	-0001
07/06/98	01:00:00	-0001
07/06/98	01:30:00	-0001
07/06/98	05:00:00	0000
07/06/98	05:30:00	0000
07/06/98	06:00:00	0000
07/06/98	06:30:00	0000
07/06/98	07:00:00	0000
07/06/98	07:30:00	0000
07/08/98	02:30:00	0000

7/24/98 07:30 - 7/25/98 18:00 DO%, DOmg negative or 0

8/6/98 05:00 - 8/31/98 23:00 turb. turb. >1000, negative., values
are
intermittent.

08/06/98	05:00:00	1228
08/06/98	06:00:00	1477
08/06/98	12:30:00	1477
08/06/98	13:00:00	1479
08/12/98	14:30:00	1146
08/12/98	19:00:00	1348
08/12/98	09:30:00	1482
08/14/98	20:30:00	1294
08/14/98	19:30:00	1322
08/14/98	18:30:00	1381
08/14/98	17:30:00	1448
08/14/98	20:00:00	1477
08/14/98	19:00:00	1479
08/14/98	18:00:00	1481
08/14/98	17:00:00	1482

08/15/98	01:00:00	1262
08/15/98	00:30:00	1476
08/21/98	11:00:00	1055
08/24/98	00:30:00	1040
08/25/98	18:30:00	1056
08/30/98	09:00:00	1033
08/23/98	18:00:00	-0001
08/23/98	20:30:00	-0001
08/23/98	21:30:00	-0001
08/23/98	22:30:00	-0001
08/24/98	01:30:00	-0001
08/24/98	03:00:00	-0001
08/24/98	07:00:00	-0001
08/24/98	08:30:00	-0001
08/24/98	09:30:00	-0001
08/26/98	00:30:00	-0001
08/26/98	02:00:00	-0001
08/26/98	08:00:00	-0001
08/26/98	17:30:00	-0001
08/26/98	21:00:00	-0001
08/26/98	23:30:00	-0001
08/27/98	02:00:00	-0001
08/27/98	08:30:00	-0001
08/27/98	10:00:00	-0001
08/27/98	11:00:00	-0001
08/27/98	12:00:00	-0001
08/27/98	14:00:00	-0001
08/27/98	15:30:00	-0001
08/27/98	19:30:00	-0001
08/28/98	00:00:00	-0001
08/28/98	04:00:00	-0001
08/28/98	10:00:00	-0001
08/28/98	11:00:00	-0001
08/28/98	12:00:00	-0001
08/28/98	14:00:00	-0001
08/28/98	15:30:00	-0001
08/28/98	17:00:00	-0001
08/28/98	17:30:00	-0001
08/28/98	19:00:00	-0001
08/28/98	19:30:00	-0001
08/28/98	20:00:00	-0001
08/28/98	20:30:00	-0001
08/28/98	21:30:00	-0001
08/28/98	22:00:00	-0001
08/28/98	22:30:00	-0001
08/28/98	23:00:00	-0001
08/28/98	23:30:00	-0001
08/29/98	00:00:00	-0001
08/29/98	00:30:00	-0001
08/29/98	01:00:00	-0001
08/29/98	01:30:00	-0001
08/29/98	02:30:00	-0001
08/29/98	03:00:00	-0001
08/29/98	03:30:00	-0001

08/29/98	04:00:00	-0001
08/29/98	04:30:00	-0001
08/29/98	05:00:00	-0001
08/29/98	05:30:00	-0001
08/29/98	06:00:00	-0001
08/29/98	06:30:00	-0001
08/29/98	07:00:00	-0001
08/29/98	07:30:00	-0001
08/29/98	08:00:00	-0001
08/29/98	08:30:00	-0001
08/29/98	09:00:00	-0001
08/29/98	09:30:00	-0001
08/29/98	10:00:00	-0001
08/29/98	10:30:00	-0001
08/29/98	11:00:00	-0001
08/29/98	11:30:00	-0001
08/29/98	12:00:00	-0001
08/29/98	12:30:00	-0001
08/29/98	13:30:00	-0001
08/29/98	15:00:00	-0001
08/29/98	15:30:00	-0001
08/29/98	16:00:00	-0001
08/29/98	16:30:00	-0001
08/29/98	17:00:00	-0001
08/29/98	17:30:00	-0001
08/29/98	18:00:00	-0001
08/29/98	18:30:00	-0001
08/29/98	19:00:00	-0001
08/29/98	20:00:00	-0001
08/29/98	20:30:00	-0001
08/29/98	21:00:00	-0001
08/29/98	22:00:00	-0001
08/29/98	22:30:00	-0001
08/29/98	23:00:00	-0001
08/29/98	23:30:00	-0001
08/30/98	00:00:00	-0001
08/30/98	00:30:00	-0001
08/30/98	01:00:00	-0001
08/30/98	02:00:00	-0001
08/30/98	02:30:00	-0001
08/30/98	03:30:00	-0001
08/30/98	04:00:00	-0001
08/30/98	04:30:00	-0001
08/30/98	05:00:00	-0001
08/30/98	05:30:00	-0001
08/30/98	06:00:00	-0001
08/30/98	06:30:00	-0001
08/30/98	07:00:00	-0001
08/30/98	07:30:00	-0001
08/30/98	08:00:00	-0001
08/30/98	08:30:00	-0001
08/30/98	09:30:00	-0001
08/30/98	10:30:00	-0001
08/30/98	11:00:00	-0001

08/30/98	11:30:00	-0001
08/30/98	12:00:00	-0001
08/30/98	13:00:00	-0001
08/30/98	14:00:00	-0001
08/30/98	14:30:00	-0001
08/30/98	16:00:00	-0001
08/30/98	16:30:00	-0001
08/30/98	17:00:00	-0001
08/30/98	18:00:00	-0001
08/30/98	18:30:00	-0001
08/30/98	19:00:00	-0001
08/30/98	19:30:00	-0001
08/30/98	20:30:00	-0001
08/30/98	21:00:00	-0001
08/30/98	21:30:00	-0001
08/30/98	22:00:00	-0001
08/30/98	22:30:00	-0001
08/30/98	23:00:00	-0001
08/30/98	23:30:00	-0001
08/31/98	00:00:00	-0001
08/31/98	00:30:00	-0001
08/31/98	01:00:00	-0001
08/31/98	01:30:00	-0001
08/31/98	02:00:00	-0001
08/31/98	02:30:00	-0001
08/31/98	03:00:00	-0001
08/31/98	03:30:00	-0001
08/31/98	04:00:00	-0001
08/31/98	05:00:00	-0001
08/31/98	05:30:00	-0001
08/31/98	06:00:00	-0001
08/31/98	07:30:00	-0001
08/31/98	08:00:00	-0001
08/31/98	08:30:00	-0001
08/31/98	09:00:00	-0001
08/31/98	09:30:00	-0001
08/31/98	10:00:00	-0001
08/31/98	10:30:00	-0001
08/31/98	11:00:00	-0001
08/31/98	11:30:00	-0001
08/31/98	12:00:00	-0001
08/31/98	12:30:00	-0001
08/31/98	13:00:00	-0001
08/31/98	13:30:00	-0001
08/31/98	14:00:00	-0001
08/31/98	14:30:00	-0001
08/31/98	15:00:00	-0001
08/31/98	15:30:00	-0001
08/31/98	17:00:00	-0001
08/31/98	18:00:00	-0001
08/31/98	18:30:00	-0001
08/31/98	19:30:00	-0001
08/31/98	20:00:00	-0001
08/31/98	20:30:00	-0001

08/31/98	21:30:00	-0001
08/31/98	22:00:00	-0001
08/31/98	22:30:00	-0001
08/31/98	23:00:00	-0001

8/9/98 23:00 - 8/12/98 18:00 %DO, DOmg Anolmolous DO spike possibly due to

blenny or crab in probe guard.

8/24/98 20:00 - 8/24/98 22:30 DO%, DOmg negative or 0, possibly due to heavy fouling.

8/24/98 23:30 DO%, DOmg negative, possibly due to heavy fouling

8/25/98 09:30 - 10:00 DO%, DOmg negative, possibly due to heavy fouling

9/1/98 03:30 - 9/30/98 22:00 turb >1000 or negative, had high probe offset

message. values are intermittent.

09/04/98	13:30:00	1143
09/04/98	15:30:00	1071
09/04/98	16:00:00	1011
09/05/98	00:30:00	1344
09/05/98	02:00:00	1411
09/05/98	02:30:00	1427
09/05/98	03:00:00	1170
09/05/98	04:00:00	1078
09/05/98	12:30:00	1235
09/05/98	13:30:00	1126
09/05/98	14:00:00	1046
09/05/98	14:30:00	1073
09/05/98	15:30:00	1030
09/05/98	16:00:00	1124
09/05/98	16:30:00	1093
09/05/98	18:00:00	1345
09/05/98	18:30:00	1536
09/05/98	19:00:00	1435
09/05/98	22:00:00	1319
09/06/98	19:00:00	1003
09/06/98	22:30:00	1165
09/07/98	00:30:00	1070
09/07/98	05:00:00	1282
09/07/98	11:30:00	1208
09/07/98	14:30:00	1074
09/07/98	15:30:00	1138
09/07/98	16:00:00	1140
09/07/98	16:30:00	1210
09/07/98	17:00:00	1185
09/07/98	17:30:00	1244
09/07/98	18:00:00	1259
09/07/98	18:30:00	1136
09/07/98	19:00:00	1164
09/07/98	19:30:00	1045
09/07/98	20:00:00	1032
09/07/98	20:30:00	1062
09/07/98	21:00:00	1131

09/07/98	21:30:00	1147
09/07/98	22:00:00	1123
09/07/98	22:30:00	1078
09/09/98	04:00:00	1126
09/09/98	10:00:00	1298
09/10/98	07:30:00	1277
09/10/98	08:00:00	1249
09/10/98	08:30:00	1044
09/10/98	09:30:00	1137
09/10/98	23:00:00	1058
09/10/98	23:30:00	1032
09/11/98	03:00:00	1109
09/11/98	03:30:00	1301
09/11/98	04:00:00	1126
09/11/98	12:00:00	1506
09/11/98	20:00:00	1215
09/11/98	20:30:00	1345
09/11/98	23:30:00	1394
09/12/98	18:30:00	1015
09/13/98	05:00:00	1131
09/13/98	13:00:00	1064
09/14/98	08:30:00	1114
09/14/98	10:30:00	1160
09/14/98	11:30:00	1374
09/16/98	19:00:00	1308
09/29/98	06:30:00	1006
09/29/98	09:00:00	1423
09/29/98	20:00:00	1197
09/29/98	22:30:00	1464
09/30/98	01:30:00	1152
09/30/98	23:00:00	1164
09/01/98	03:30:00	-0001
09/01/98	04:00:00	-0001
09/01/98	05:00:00	-0001
09/04/98	14:30:00	-0002
09/06/98	07:30:00	-0002
09/06/98	08:00:00	-0002
09/06/98	23:00:00	-0002
09/07/98	02:00:00	-0002
09/07/98	02:30:00	-0002
09/07/98	07:00:00	-0002
09/07/98	07:30:00	-0002
09/07/98	12:30:00	-0002
09/07/98	23:00:00	-0002
09/08/98	14:30:00	-0002
09/08/98	20:30:00	-0002
09/09/98	06:30:00	-0002
09/09/98	07:30:00	-0002
09/09/98	08:00:00	-0002
09/09/98	08:30:00	-0002
09/09/98	09:00:00	-0002
09/09/98	09:30:00	-0002
09/10/98	16:00:00	-0002
09/10/98	16:30:00	-0002

09/10/98	21:00:00	-0002
09/10/98	21:30:00	-0002
09/10/98	22:00:00	-0002
09/11/98	00:00:00	-0002
09/11/98	04:30:00	-0002
09/11/98	05:00:00	-0002
09/11/98	12:30:00	-0002
09/11/98	13:00:00	-0002
09/11/98	13:30:00	-0002
09/11/98	14:00:00	-0002
09/11/98	21:00:00	-0002
09/11/98	21:30:00	-0002
09/11/98	22:00:00	-0002
09/11/98	22:30:00	-0002
09/11/98	23:00:00	-0002
09/12/98	00:00:00	-0002
09/12/98	00:30:00	-0002
09/12/98	01:00:00	-0002
09/12/98	01:30:00	-0002
09/12/98	02:00:00	-0002
09/12/98	02:30:00	-0002
09/12/98	03:00:00	-0002
09/12/98	03:30:00	-0002
09/12/98	04:00:00	-0002
09/12/98	04:30:00	-0002
09/12/98	05:00:00	-0002
09/12/98	05:30:00	-0002
09/12/98	06:00:00	-0002
09/12/98	06:30:00	-0002
09/12/98	07:00:00	-0002
09/12/98	07:30:00	-0002
09/12/98	08:00:00	-0002
09/12/98	08:30:00	-0002
09/12/98	09:00:00	-0002
09/12/98	09:30:00	-0002
09/12/98	10:00:00	-0002
09/12/98	10:30:00	-0002
09/12/98	11:00:00	-0002
09/12/98	12:00:00	-0002
09/12/98	18:00:00	-0002
09/12/98	19:00:00	-0002
09/12/98	19:30:00	-0002
09/12/98	20:30:00	-0002
09/12/98	21:00:00	-0002
09/12/98	21:30:00	-0002
09/13/98	04:00:00	-0002
09/13/98	04:30:00	-0002
09/13/98	05:30:00	-0002
09/13/98	07:00:00	-0002
09/13/98	07:30:00	-0002
09/13/98	10:00:00	-0002
09/14/98	04:00:00	-0002
09/14/98	04:30:00	-0002
09/14/98	05:00:00	-0002

09/14/98	06:00:00	-0002
09/14/98	06:30:00	-0002
09/14/98	07:00:00	-0002
09/14/98	12:00:00	-0002
09/14/98	12:30:00	-0002
09/19/98	10:00:00	-0002
09/19/98	10:30:00	-0002
09/29/98	00:00:00	-0002
09/29/98	00:30:00	-0002
09/29/98	01:00:00	-0002
09/29/98	02:00:00	-0002
09/30/98	03:30:00	-0002
09/30/98	12:00:00	-0002
09/30/98	22:00:00	-0002

10/01/98 01:00 - 10/31/98 23:30 turb. turb. >1000 or negative. values
are

intermittent.

10/01/98	11:30:00	1051
10/01/98	17:00:00	1368
10/01/98	20:00:00	1282
10/01/98	22:30:00	1266
10/02/98	02:30:00	1030
10/03/98	03:00:00	1311
10/05/98	21:30:00	1005
10/06/98	07:30:00	1351
10/06/98	08:00:00	1063
10/06/98	08:30:00	1238
10/06/98	09:00:00	1091
10/06/98	10:00:00	1132
10/06/98	11:00:00	1152
10/06/98	11:30:00	1009
10/06/98	14:00:00	1512
10/07/98	00:30:00	1436
10/07/98	02:00:00	1009
10/15/98	18:00:00	1725
10/15/98	18:30:00	1725
10/15/98	19:00:00	1725
10/16/98	18:30:00	1722
10/17/98	06:00:00	1713
10/17/98	22:30:00	1095
10/17/98	23:00:00	1626
10/17/98	23:30:00	1710
10/18/98	00:00:00	1708
10/18/98	00:30:00	1018
10/18/98	01:00:00	1705
10/18/98	01:30:00	1695
10/18/98	02:00:00	1423
10/18/98	03:30:00	1621
10/18/98	04:30:00	1665
10/18/98	05:00:00	1713
10/18/98	05:30:00	1713
10/18/98	06:00:00	1550
10/18/98	07:00:00	1032

10/18/98	09:00:00	1715
10/18/98	09:30:00	1715
10/18/98	10:00:00	1714
10/18/98	10:30:00	1713
10/18/98	11:00:00	1461
10/18/98	11:30:00	1409
10/18/98	14:00:00	1714
10/18/98	23:30:00	1033
10/19/98	04:30:00	1031
10/19/98	05:00:00	1035
10/19/98	05:30:00	1302
10/20/98	22:00:00	1720
10/20/98	22:30:00	1630
10/20/98	23:00:00	1720
10/21/98	02:00:00	1130
10/21/98	03:00:00	1714
10/21/98	03:30:00	1713
10/21/98	04:00:00	1713
10/21/98	04:30:00	1477
10/21/98	12:30:00	1450
10/21/98	13:30:00	1583
10/21/98	15:00:00	1343
10/21/98	16:00:00	1695
10/21/98	16:30:00	1200
10/21/98	17:00:00	1416
10/21/98	17:30:00	1566
10/21/98	18:00:00	1671
10/21/98	18:30:00	1671
10/21/98	19:00:00	1700
10/21/98	19:30:00	1431
10/21/98	20:00:00	1401
10/21/98	20:30:00	1714
10/21/98	21:00:00	1640
10/21/98	21:30:00	1651
10/21/98	22:00:00	1587
10/21/98	22:30:00	1676
10/21/98	23:00:00	1715
10/21/98	23:30:00	1652
10/22/98	00:00:00	1363
10/22/98	00:30:00	1595
10/22/98	01:00:00	1625
10/22/98	01:30:00	1677
10/22/98	02:00:00	1699
10/22/98	02:30:00	1705
10/22/98	03:00:00	1474
10/22/98	03:30:00	1685
10/22/98	04:00:00	1455
10/22/98	04:30:00	1701
10/22/98	05:00:00	1700
10/22/98	05:30:00	1540
10/22/98	06:00:00	1685
10/22/98	06:30:00	1581
10/22/98	07:00:00	1701
10/22/98	07:30:00	1645

10/22/98	08:00:00	1417
10/22/98	08:30:00	1704
10/22/98	09:00:00	1629
10/22/98	09:30:00	1140
10/31/98	03:00:00	1154
10/31/98	09:00:00	1189
10/31/98	10:30:00	1155
10/31/98	15:00:00	1315
10/31/98	22:30:00	1060
10/01/98	01:00:00	-0002
10/01/98	03:00:00	-0002
10/05/98	10:30:00	-0002
10/06/98	10:30:00	-0002
10/06/98	12:30:00	-0002
10/06/98	22:00:00	-0002
10/06/98	23:00:00	-0002
10/23/98	14:30:00	-0002
10/23/98	15:00:00	-0002
10/23/98	15:30:00	-0002
10/25/98	08:00:00	-0002
10/25/98	14:30:00	-0002
10/25/98	15:00:00	-0002
10/25/98	15:30:00	-0002
10/25/98	16:00:00	-0002
10/25/98	16:30:00	-0002
10/25/98	17:00:00	-0002
10/25/98	17:30:00	-0002
10/31/98	11:30:00	-0002
10/31/98	12:00:00	-0002
10/31/98	12:30:00	-0002
10/31/98	14:00:00	-0002
10/31/98	16:30:00	-0002
10/31/98	17:30:00	-0002
10/31/98	20:00:00	-0002
10/31/98	21:30:00	-0002
10/31/98	23:00:00	-0002
10/31/98	23:30:00	-0002

11/1/98 00:00 - 11/23/98 06:30 turb. turb. >1000 or negative. values
are
intermittent.

11/01/98	12:00:00	1040
11/02/98	04:30:00	1091
11/03/98	08:00:00	1016
11/06/98	10:00:00	1239
11/06/98	20:00:00	1192
11/07/98	20:00:00	1329
11/07/98	22:00:00	1308
11/08/98	04:30:00	1259
11/08/98	09:30:00	1344
11/09/98	09:30:00	1268
11/09/98	11:00:00	1058
11/13/98	23:30:00	1200
11/14/98	09:30:00	1249

11/14/98	12:00:00	1066
11/18/98	09:00:00	1080
11/18/98	10:00:00	1044
11/18/98	14:00:00	1090
11/18/98	15:30:00	1226
11/18/98	16:30:00	1027
11/18/98	18:30:00	1208
11/18/98	22:00:00	1219
11/19/98	00:30:00	1020
11/19/98	01:00:00	1253
11/19/98	02:30:00	1202
11/19/98	04:30:00	1160
11/19/98	06:00:00	1074
11/19/98	22:00:00	1012
11/20/98	00:00:00	1222
11/20/98	02:00:00	1013
11/20/98	02:30:00	1168
11/20/98	07:00:00	1124
11/20/98	07:30:00	1224
11/21/98	04:00:00	1314
11/21/98	10:30:00	1064
11/22/98	08:00:00	1287
11/22/98	15:30:00	1282
11/22/98	22:00:00	1019
11/22/98	23:30:00	1009
11/23/98	00:30:00	1094
11/29/98	07:30:00	1258
11/29/98	08:00:00	1775
11/01/98	00:00:00	-0002
11/01/98	00:30:00	-0002
11/01/98	01:00:00	-0002
11/01/98	01:30:00	-0002
11/01/98	02:00:00	-0002
11/01/98	02:30:00	-0002
11/01/98	03:00:00	-0002
11/01/98	03:30:00	-0002
11/01/98	04:00:00	-0002
11/01/98	05:00:00	-0002
11/01/98	05:30:00	-0002
11/01/98	06:00:00	-0002
11/01/98	06:30:00	-0002
11/01/98	07:00:00	-0002
11/01/98	08:00:00	-0002
11/01/98	08:30:00	-0002
11/01/98	09:00:00	-0002
11/01/98	09:30:00	-0002
11/01/98	10:00:00	-0002
11/01/98	10:30:00	-0002
11/01/98	11:00:00	-0002
11/01/98	15:30:00	-0002
11/01/98	16:00:00	-0002
11/01/98	16:30:00	-0002
11/01/98	17:00:00	-0002
11/01/98	17:30:00	-0002

11/01/98	18:00:00	-0002
11/01/98	18:30:00	-0002
11/01/98	19:00:00	-0002
11/01/98	19:30:00	-0002
11/01/98	20:00:00	-0002
11/01/98	20:30:00	-0002
11/01/98	21:00:00	-0002
11/01/98	21:30:00	-0002
11/01/98	22:00:00	-0002
11/01/98	22:30:00	-0002
11/01/98	23:00:00	-0002
11/01/98	23:30:00	-0002
11/02/98	00:00:00	-0002
11/02/98	00:30:00	-0002
11/02/98	01:00:00	-0002
11/02/98	01:30:00	-0002
11/02/98	02:00:00	-0002
11/02/98	02:30:00	-0002
11/02/98	03:00:00	-0002
11/02/98	03:30:00	-0002
11/02/98	04:00:00	-0002
11/02/98	06:00:00	-0002
11/02/98	06:30:00	-0002
11/02/98	07:00:00	-0002
11/02/98	07:30:00	-0002
11/02/98	08:00:00	-0002
11/02/98	08:30:00	-0002
11/02/98	10:30:00	-0002
11/02/98	11:00:00	-0002
11/02/98	11:30:00	-0002
11/02/98	12:00:00	-0002
11/02/98	12:30:00	-0002
11/02/98	13:00:00	-0002
11/02/98	13:30:00	-0002
11/02/98	14:00:00	-0002
11/02/98	14:30:00	-0002
11/02/98	15:00:00	-0002
11/02/98	15:30:00	-0002
11/02/98	16:00:00	-0002
11/02/98	16:30:00	-0002
11/02/98	17:00:00	-0002
11/02/98	17:30:00	-0002
11/02/98	18:00:00	-0002
11/02/98	18:30:00	-0002
11/02/98	19:00:00	-0002
11/02/98	19:30:00	-0002
11/02/98	20:00:00	-0002
11/02/98	20:30:00	-0002
11/02/98	21:00:00	-0002
11/02/98	21:30:00	-0002
11/02/98	22:00:00	-0002
11/02/98	22:30:00	-0002
11/02/98	23:00:00	-0002
11/02/98	23:30:00	-0002

11/03/98	00:00:00	-0002
11/03/98	00:30:00	-0002
11/03/98	01:00:00	-0002
11/03/98	01:30:00	-0002
11/03/98	02:00:00	-0002
11/03/98	02:30:00	-0002
11/03/98	04:00:00	-0002
11/03/98	04:30:00	-0002
11/03/98	05:00:00	-0002
11/03/98	05:30:00	-0002
11/03/98	06:00:00	-0002
11/03/98	08:30:00	-0002
11/03/98	09:00:00	-0002
11/03/98	09:30:00	-0002
11/03/98	10:00:00	-0002
11/03/98	10:30:00	-0002
11/03/98	11:00:00	-0002
11/03/98	11:30:00	-0002
11/03/98	12:00:00	-0002
11/03/98	12:30:00	-0002
11/03/98	13:00:00	-0002
11/03/98	13:30:00	-0002
11/03/98	14:00:00	-0002
11/03/98	14:30:00	-0002
11/03/98	15:00:00	-0002
11/03/98	15:30:00	-0002
11/03/98	16:00:00	-0002
11/03/98	16:30:00	-0002
11/03/98	17:00:00	-0002
11/03/98	17:30:00	-0002
11/03/98	18:00:00	-0002
11/03/98	18:30:00	-0002
11/03/98	19:00:00	-0002
11/03/98	19:30:00	-0002
11/03/98	20:00:00	-0002
11/03/98	20:30:00	-0002
11/03/98	21:00:00	-0002
11/03/98	21:30:00	-0002
11/03/98	22:00:00	-0002
11/03/98	23:30:00	-0002
11/04/98	00:00:00	-0002
11/04/98	00:30:00	-0002
11/04/98	01:00:00	-0002
11/04/98	01:30:00	-0002
11/04/98	02:00:00	-0002
11/04/98	04:00:00	-0002
11/04/98	04:30:00	-0002
11/04/98	05:00:00	-0002
11/04/98	05:30:00	-0002
11/04/98	06:00:00	-0002
11/04/98	06:30:00	-0002
11/04/98	07:00:00	-0002
11/04/98	08:00:00	-0002
11/04/98	08:30:00	-0002

11/04/98	09:00:00	-0002
11/04/98	09:30:00	-0002
11/04/98	10:00:00	-0002
11/04/98	10:30:00	-0002
11/04/98	11:30:00	-0002
11/04/98	21:30:00	-0002
11/06/98	11:00:00	-0002
11/06/98	16:00:00	-0002
11/06/98	17:30:00	-0002
11/06/98	22:30:00	-0002
11/07/98	00:30:00	-0002
11/07/98	01:00:00	-0002
11/07/98	16:00:00	-0002
11/07/98	21:00:00	-0002
11/08/98	01:30:00	-0002
11/08/98	10:00:00	-0002
11/08/98	10:30:00	-0002
11/08/98	11:00:00	-0002
11/08/98	11:30:00	-0002
11/08/98	12:30:00	-0002
11/08/98	22:30:00	-0002
11/08/98	23:00:00	-0002
11/08/98	23:30:00	-0002
11/09/98	00:00:00	-0002
11/09/98	00:30:00	-0002
11/09/98	01:00:00	-0002
11/09/98	03:00:00	-0002
11/09/98	03:30:00	-0002
11/09/98	04:00:00	-0002
11/09/98	04:30:00	-0002
11/09/98	05:00:00	-0002
11/09/98	08:30:00	-0002
11/09/98	09:00:00	-0002
11/09/98	10:00:00	-0002
11/06/98	03:30:00	-0002
11/06/98	04:30:00	-0002
11/07/98	17:00:00	-0002
11/07/98	20:30:00	-0002
11/08/98	03:00:00	-0002
11/08/98	03:30:00	-0002
11/08/98	04:00:00	-0002
11/09/98	05:30:00	-0002
11/09/98	06:00:00	-0002
11/09/98	06:30:00	-0002
11/09/98	07:00:00	-0002
11/09/98	07:30:00	-0002
11/09/98	08:00:00	-0002
11/13/98	21:30:00	-0001
11/13/98	22:00:00	-0001
11/14/98	02:30:00	-0001
11/14/98	05:30:00	-0001
11/14/98	06:30:00	-0001
11/14/98	08:30:00	-0001
11/14/98	10:30:00	-0001

11/14/98	11:00:00	-0001
11/14/98	12:30:00	-0001
11/14/98	13:00:00	-0001
11/14/98	13:30:00	-0001
11/14/98	14:30:00	-0001
11/14/98	15:00:00	-0001
11/15/98	16:00:00	-0001
11/16/98	22:30:00	-0001
11/18/98	15:00:00	-0001
11/18/98	16:00:00	-0001
11/18/98	17:30:00	-0001
11/18/98	18:00:00	-0001
11/18/98	19:00:00	-0001
11/18/98	20:30:00	-0001
11/18/98	21:00:00	-0001
11/18/98	22:30:00	-0001
11/19/98	01:30:00	-0001
11/19/98	05:00:00	-0001
11/19/98	06:30:00	-0001
11/19/98	07:30:00	-0001
11/19/98	08:00:00	-0001
11/19/98	08:30:00	-0001
11/19/98	09:00:00	-0001
11/19/98	09:30:00	-0001
11/19/98	10:00:00	-0001
11/19/98	10:30:00	-0001
11/19/98	11:00:00	-0001
11/19/98	11:30:00	-0001
11/19/98	12:00:00	-0001
11/19/98	12:30:00	-0001
11/19/98	13:00:00	-0001
11/19/98	13:30:00	-0001
11/19/98	16:00:00	-0001
11/20/98	01:30:00	-0001
11/20/98	03:00:00	-0001
11/20/98	03:30:00	-0001
11/20/98	04:00:00	-0001
11/20/98	04:30:00	-0001
11/20/98	05:30:00	-0001
11/20/98	06:00:00	-0001
11/20/98	08:00:00	-0001
11/20/98	08:30:00	-0001
11/20/98	09:00:00	-0001
11/20/98	10:30:00	-0001
11/20/98	11:00:00	-0001
11/20/98	12:30:00	-0001
11/20/98	13:30:00	-0001
11/20/98	15:00:00	-0001
11/20/98	18:00:00	-0001
11/20/98	18:30:00	-0001
11/20/98	19:30:00	-0001
11/21/98	00:30:00	-0001
11/21/98	01:00:00	-0001
11/21/98	01:30:00	-0001

11/21/98	02:00:00	-0001		
11/21/98	02:30:00	-0001		
11/21/98	03:00:00	-0001		
11/21/98	03:30:00	-0001		
11/21/98	04:30:00	-0001		
11/21/98	05:00:00	-0001		
11/21/98	05:30:00	-0001		
11/21/98	06:00:00	-0001		
11/21/98	06:30:00	-0001		
11/21/98	07:00:00	-0001		
11/21/98	07:30:00	-0001		
11/21/98	08:00:00	-0001		
11/21/98	08:30:00	-0001		
11/21/98	09:00:00	-0001		
11/21/98	09:30:00	-0001		
11/21/98	11:00:00	-0001		
11/21/98	11:30:00	-0001		
11/21/98	12:00:00	-0001		
11/21/98	12:30:00	-0001		
11/21/98	13:00:00	-0001		
11/21/98	14:00:00	-0001		
11/21/98	14:30:00	-0001		
11/21/98	15:30:00	-0001		
11/21/98	16:00:00	-0001		
11/21/98	16:30:00	-0001		
11/21/98	17:00:00	-0001		
11/21/98	17:30:00	-0001		
11/21/98	18:00:00	-0001		
11/21/98	18:30:00	-0001		
11/22/98	02:00:00	-0001		
11/22/98	02:30:00	-0001		
11/22/98	03:00:00	-0001		
11/22/98	04:30:00	-0001		
11/22/98	05:30:00	-0001		
11/22/98	07:30:00	-0001		
11/22/98	09:30:00	-0001		
11/22/98	13:00:00	-0001		
11/22/98	13:30:00	-0001		
11/22/98	16:00:00	-0001		
11/22/98	16:30:00	-0001		
11/22/98	19:30:00	-0001		
11/23/98	01:30:00	-0001		
11/23/98	02:30:00	-0001		
11/23/98	03:00:00	-0001		
11/23/98	04:00:00	-0001		
11/23/98	05:00:00	-0001		
11/23/98	06:30:00	-0001		
11/24/98	16:30 - 12/9/98 11:00	DO	suspect DO deleted	
11/24/98	16:00 - 11/30/98 02:00		sal., spec. cond.unexplainable	
high				
salinity and specific conductivity.				
11/27/98	07:00 - 11/29/98 20:30	DO	spikes over 100%. Could be puncture	
in DO				
membrane.				

12/1/98 00:00 - 12/30/98 10:00 turb. turb. >1000. values are intermittent.

12. Missing Data

Every two weeks at TA, DC and OL, there is a period of approximately 24 hours of missing data due to maintenance and calibration.

DEBORDIEU CREEK (DC)

Date	Time	Variable	Reason
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3/1/98	00:00 - 3/5/98 14:00	all	site had not been installed yet.
4/14/98	10:30 - 4/14/98 11:00	all	maintenance
4/14/98	11:30 - 5/10/98 9:00	sal/ spec. cond.	probe was calibrated in contaminated standard.
5/10/98	09:30 - 11:30	all	instrument pulled to recalibrate sal/spec. cond. with fresh standard.
5/10/98	9:30 - 5/10/98 11:30	all	instrument pulled to recalibrate sal/spec. cond. with fresh standard.
5/21/98	09:30 - 10:00	all	maintenance
6/23/98	09:00 - 6/25/98 09:30	all	maintenance
7/27/98	11:00 - 7/30/98 14:30	all	maintenance
9/3/98	08:00 - 08:30	all	maintenance
9/13/98	07:30 - 9/21/98 09:00	turb.	probe covered in algae
9/16/98	10:00 - 10:30	DO%, DOmg	deleted due to negative values.
9/16/98	12:30 - 13:30	DO%, DOmg	deleted due to negative values.
10/7/98	12:00 - 10/8/98 09:30	all	maintenance
10/21/98	09:30 - 10:30	all	instrument error
10/21/98	11:30	all	instrument error
10/21/98	21:00 - 10/23/98 10:00	all	maintenance
11/9/98	14:00 - 11/11/98 13:00	all	maintenance
11/23/98	11:00 - 11/25/98 10:00	all	maintenance
11/25/98	10:30 - 11/30/98 23:30	depth, pH, turb	instrument error
12/1/98	00:00 - 12/9/98 13:00	depth, pH, turb	instrument error
12/9/98	13:30 - 12/10/98 13:30	all	maintenance
12/21/98	10:30 - 12/22/98 11:00	all	maintenance
12/22/98	15:30 - 12/31/98 23:30	pH	pH probe would not calibrate

OYSTER LANDING (OL)

Date	Time	Variable	Reason
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1/5/98	08:30 - 1/7/98 12:00	all	maintenance
1/22/98	08:00	all	instrument error
1/22/98	09:00 - 1/27/98 14:30	all	maintenance
2/3/98	14:30 - 2/10/98 13:00	all	maintenance

2/26/98 11:30 all maintenance
 3/30/98 14:30 all maintenance
 03/30/98 15:00 - 04/14/98 09:00 Very high salinity; deleted DO mg/L, salinity and spcond
 4/14/98 9:30 - 5/10/98 9:30 sal/ spec. cond. probe was calibrated in contaminated standard; spcond, salinity and DO mg/L were deleted
 5/10/98 10:00 - 5/10/98 12:30 all instrument pulled to recalibrate sal/spec.
 cond. with fresh standard.
 5/19/98 09:00 - 11:00 all maintenance
 6/4/98 09:30 - 6/5/98 09:00 all maintenance
 6/22/98 13:00 - 6/25/98 09:00 DO%, DOmg data deleted due to negative values
 6/25/98 09:30 - 6/26/98 15:30 all maintenance
 7/13/98 13:00 - 7/16/98 12:00 all maintenance
 7/16/98 20:30 DO%, DOmg deleted due to negative values.
 7/21/98 00:30 - 01:00 DO%, DOmg deleted due to negative values.
 7/22/98 01:00 - 03:00 DO%, DOmg deleted due to negative values.
 7/23/98 02:00 - 04:00 DO%, DOmg deleted due to negative values.
 7/24/98 02:00 - 05:30 DO%, DOmg deleted due to negative values.
 7/25/98 03:00 - 04:30 DO%, DOmg deleted due to negative values.
 7/26/98 03:30 - 07:00 DO%, DOmg deleted due to negative values.
 7/26/98 23:00 DO%, DOmg deleted due to negative values.
 7/27/98 03:30 - 7:30 DO%, DOmg deleted due to negative values.
 7/27/98 11:00 - 7/30/98 15:00 all maintenance
 8/8/98 03:00 DO%, DOmg deleted due to negative values.
 8/17/98 09:30 - 8/19/98 15:30 all maintenance
 8/31/98 08:00 DO%, DOmg deleted due to negative values.
 8/31/98 10:00 DO%, DOmg deleted due to negative values.
 9/1/98 00:00 - 9/3/98 11:30 all maintenance
 9/21/98 09:30 - 9/22/98 15:30 all maintenance
 10/8/98 09:30 - 10/9/98 10:30 all maintenance
 10/22/98 09:30 - 10/23/98 14:00 all maintenance
 11/9/98 12:30 - 11/10/98 15:00 all maintenance
 11/10/98 15:30 - 11/23/98 10:30 sal/spec. cond. unexplained high spcond and sal; spcond/sal and DO mg/L data deleted
 11/23/98 11:00 - 11/24/98 15:30 all maintenance
 12/9/98 11:30 - 12/10/98 15:30 all maintenance
 12/21/98 11:00 - 12/22/98 15:00 all maintenance

THOUSAND ACRE (TA)

Date Time Variable Reason

1/5/98 08:30 - 1/7/98 11:00 all maintenance
 1/25/98 08:00 - 1/28/98 10:30 all maintenance
 2/9/98 12:30 - 2/10/98 14:00 all maintenance
 2/27/98 00:30 - 2/28/98 00:00 all maintenance
 03/30/98 11:00 - 04/15/98 09:00 DO suspect DO deleted
 4/15/98 09:30 - 4/15/98 10:00 all maintenance
 4/29/98 12:30 - 5/11/98 9:00 sal/spec. cond. probe was calibrated in contaminated standard; sal/spec. cond and DO mg/L was deleted

5/11/98 9:30 - 5/11/98 10:00 all instrument pulled to recalibrate
sal/spec.
cond. with fresh standard.

5/19/98 09:00 - 5/19/98 10:30 all maintenance

6/24/98 09:30 - 6/25/98 10:30 all maintenance

6/27/98 12:30 DO%, DOmg deleted due to negative values.

6/28/98 01:00 - 01:30 DO%, DOmg deleted due to negative values.

7/15/98 11:00 - 7/16/98 11:00 all maintenance

7/24/98 07:30 - 7/25/98 18:00 DO%, DOmg deleted due to negative
values.

7/27/98 09:00 - 7/30/98 15:30 all maintenance

8/17/98 10:30 - 8/19/98 15:00 all maintenance

8/24/98 20:00 - 22:30 DO%, DOmg deleted due to negative values.

8/24/98 23:30 DO%, DOmg deleted due to negative values.

8/25/98 09:30 - 10:00 DO%, DOmg deleted due to negative values.

9/1/98 08:30 - 9/3/98 12:30 all maintenance

9/3/98 13:00 - 9/21/98 10:00 DO%, DOmg deleted due to probe failure.

9/21/98 10:30 - 9/24/98 09:00 all maintenance

10/8/98 09:00 - 10/9/98 11:00 all maintenance

10/22/98 10:00 - 10/23/98 14:00 all maintenance

11/9/98 11:30 - 11/10/98 15:30 all maintenance

11/23/98 13:30 - 11/24/98 16:00 all maintenance

11/24/98 16:30 - 12/9/98 11:00 DO suspect DO deleted

12/9/98 11:30 - 12/10/98 15:30 all maintenance

12/21/98 13:00 - 12/22/98 15:00 all maintenance

Deployment and Retrieval Log

Oyster Landing

Retrieval Date/Time	Deployment Date/Time
1/5/98 8:30:00	1/7/98 12:00:00
1/22/98 9:00:00	1/27/98 14:30:00
2/3/98 14:30:00	2/10/98 13:00:00
2/26/98 11:30:00	2/26/98 11:30:00
3/16/98 16:00:00	3/16/98 15:30:00
3/30/98 14:30:00	3/30/98 14:30:00
4/14/98 9:30:00	4/14/98 9:00:00
4/29/98 12:30:00	4/29/98 12:00:00
5/19/98 9:00:00	5/19/98 11:00:00
6/4/98 9:30:00	6/5/98 9:00:00
6/25/98 9:30:00	6/26/98 15:30:00
7/13/98 13:00:00	7/16/98 12:00:00
7/27/98 11:00:00	7/30/98 15:00:00
8/17/98 9:30:00	8/19/98 15:30:00
9/1/98 13:30:00	9/3/98 11:30:00
9/21/98 9:30:00	9/22/98 15:30:00
10/8/98 9:30:00	10/9/98 10:30:00
10/22/98 9:30:00	10/23/98 14:00:00
11/9/98 12:30:00	11/10/98 15:00:00
11/23/98 11:00:00	11/24/98 16:00:00
12/9/98 11:30:00	12/10/98 15:30:00
12/21/98 11:00:00	12/22/98 15:00:00

Thousand Acre

Retrieval	Date/Time	Deployment	Date/Time
1/5/98	8:30:00	1/7/98	11:00:00
1/25/98	8:00:00	1/28/98	10:30:00
2/9/98	12:30:00	2/10/98	14:00:00
2/26/98	13:30:00	2/26/98	13:00:00
3/16/98	15:00:00	3/16/98	14:30:00
3/30/98	11:00:00	3/30/98	10:30:00
4/15/98	9:30:00	4/15/98	10:00:00
4/29/98	1:00:00	5/10/98	10:30:00
6/5/98	11:00:00	6/5/98	10:00:00
6/24/98	9:30:00	6/25/98	10:30:00
7/15/98	11:00:00	7/16/98	11:00:00
7/27/98	9:00:00	7/30/98	15:30:00
8/17/98	10:30:00	8/19/98	15:00:00
9/1/98	8:30:00	9/3/98	12:30:00
9/21/98	10:30:00	9/24/98	9:00:00
10/8/98	9:00:00	10/9/98	11:30:00
10/22/98	10:00:00	10/23/98	14:00:00
11/9/98	11:30:00	11/10/98	15:30:00
11/23/98	13:30:00	11/24/98	15:30:00
12/9/98	12:00:00	12/10/98	15:30:00
12/21/98	13:00:00	12/22/98	15:00:00

Other Remarks:

Raw data file 041401_csv was converted from Daylight savings time to Eastern Standard time.