

Old Woman Creek (OWC) NERR Water Quality Metadata
March through December 2002
Latest Update: July 1, 2021

1. Principal Investigator & contact person:

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2. Entry verification:

The data were directly downloaded from the YSI PC6600 data loggers into the YSI Ecowatch for Windows program in the PC. The data were graphed and visually checked for any obvious outliers. Notes are made of any unusual data or faulty probes. The data is then exported as a .csv file into an Excel spreadsheet. The data files were edited to remove headers, footers, and spaces. The CDMO cdmomac3.xls macro was used to QA/QC the data. The macro automatically formatted the column widths to the correct number of decimal places based on YSI sensor specifications. It QA/QC's the data file for missing data points and filled all cells without data with periods. It also compiled a list of all data that fell outside the stated range of the different data logger probes. In addition, in November 1999 a graphing capability was added to this macro allowing users to produce single parameter and missing data point graphs on a monthly basis. An explanation for the missing and the deleted data is included in this metadata sheet. The files were then transferred along with the associated metadata by disk to the CDMO. The files are archived at OWC. Dr. David Klarer is responsible for both data logger deployment and data management.

3. Research Objectives:

Measurements are taken every 15 minutes over approximately two-week periods at four sites within the Old Woman Creek- three in the estuary proper- one in the upper reaches at State Route 2 (SU), one near the mouth just south of State Route 6 (WM), and the third site is upstream from the WM site (OL). The final

site (BR) is just upstream of the first riffle zone above the estuary in Old Woman Creek proper. The purpose of this monitoring program is to document the role of this Great Lakes estuary in the Lake Erie ecosystem, particularly the estuary's role in mitigating storm flow that passes through it. The role of the OL site is to document the degree of intrusion by lake water during northerly winds and subsequent seiche events.

4. Research methods:

The YSI monitoring program began on 12 March 2002 at the Berlin Road (BR), State Route 2 (SU), and the State Route 6 (WM) sites. Sampling at the OL site did not begin until 23 April, 2002. The sampling at all sites ended for the year on 2 December, 2002, except site OL, which ended on 18 November, 2002. Prior to deployment of the data loggers, a 4-inch diameter PVC pipe was bolted to a metal 8-foot long metal post that had been driven into the sediment. Each pipe had 4 rows of holes or 4 vertical slits 3/4" wide drilled into it spanning the area of the probe guard on the data logger so that the probes would have direct contact with the surrounding waters. Dissolved oxygen, pH, temperature, turbidity, and specific conductance readings are taken when the instrument is pulled at each site. The data loggers are replaced in the field after a one, two, or three-week deployment, depending on temperature and degree of fouling of the data loggers. The data was retrieved from each data logger and each data logger was recalibrated (according to the directions in the YSI Operations Manual) before being returned to the field. Conductivity, pH (2 point calibration), and turbidity (2 point calibration) are calibrated using commercial standards. Formazin (Hach, 4000 NTU) was diluted to prepare the standards for turbidity. These standards were prepared prior to each deployment. The data loggers at sites WM and SU have water level sensors while the loggers at sites BR and OL have non-vented depth sensors.

5. Site Location and Character:

Old Woman Creek National Estuarine Research Reserve is located on the southern shore of Lake Erie, slightly east of the city of Huron, Ohio (Latitude 41(23'N; Longitude 82(33'W). Land use in the Old Woman Creek (OWC) watershed is primarily row crop agriculture. Other than the non-

point source pollutants coming into the estuary from these agricultural practices and from the town of Berlin Heights, there are no other major pollution sources in the estuary. Salinity in Old Woman Creek is normally 1 ppt. or less, although it will rise, on occasion, to nearly 2 ppt. The tidal range in Lake Erie (and therefore in the estuary) is on the order of 4 cm or less. Water levels in the estuary and in the creek are extremely variable, with changes occurring daily, seasonally and annually.

The data logger at the State Route 6 (WM) site (Latitude 41(22' 57" N, Longitude 82(30'54" W) is very close to the mouth of Old Woman Creek. In this portion of the Reserve, the creek is very shallow but extends over a large surface area. This site frequently experiences influx of Lake Erie waters. The bottom sediments at this site are silty clay. At the beginning of the deployment for 2002, there was no rooted aquatic vegetation directly adjacent to the site, although there was both emergent and submerged vegetation within 10 meters of the site. By mid September, *Phragmites australis* had grown up around the data logger trap. The data logger is about .24 meters above the bottom sediments. On August 26 at 09:15:00 the old guard on the sonde was changed to the new guard, so this effectively raised the logger 5 cm within the trap.

The data logger at the State Route 2 (SU) site (Latitude 41(22' 2" N, Longitude 82(30'26" W) is very near the southern boundary of the Reserve. This site is in the upper reaches of the estuary. The data logger is sited near a concrete piling of the eastbound Ohio State Route 2 bridge. At this site, the creek is relatively deep and narrow. Although water direction and flow is influenced at this site by changes in Lake Erie water levels, this site doesn't have direct contact with Lake Erie waters. The bottom sediments at this site are silty clay. There is no rooted aquatic vegetation near or upstream from this site. The data logger is about .25 meters above the bottom at this site. On June 24, sediment buildup (due to storm runoff activity) under the trap was removed.

The data logger at site OL (Latitude 41(22' 55" N, Longitude 82(30'51" W) is in the lower reaches of the estuary. This site is not in direct sight of the mouth, so northerly winds and resulting seiche activities should be less noticeable at this site. The bottom sediments are silty clay. This site is located at the northern tip of a *Nelumbo lutea* bed, so plants are immediately adjacent to the data logger. The base of data logger is about 11 cm above the sediment.

The data logger at site BR (Latitude 41(20'54" N, Longitude 82(30'30"W) is located in the lower portion of the creek proper. Just upstream from the data logger, Berlin Road crosses Old Woman Creek. The site is just upstream of the first riffle area above the estuary. Unlike the other three sites, Lake Erie water levels have no impact on this site. The bottom of the creek at this site is a combination of rocks interspersed with some clay-silt that has been washed in from upstream. There are no aquatic macrophytes at or near this site. The sonde is 24 cm above the bottom. On 24 June, 2002 at 14:10 the trap was lowered 8 cm due to low water levels. On July 15 at 11:05 the logger was lowered another 5 cm within the trap by using the old guard instead of the new guard.

6. Data collection periods:

Sampling at WM began on March 12, 2002 at 09:15:00. Sampling for 2002 ceased at WM site on December 2, 2002 at 09:30:00. Sampling at SU began on March 12, 2002 at 10:00:00. Sampling ceased at SU site on December 2, 2002 at 11:45:00. Sampling at OL began on April 23, 2002 at 09:45:00, and ceased on November 18, 2002 at 11:30:00. Sampling at BR began on March 12, 2002 at 10:00:00 and ceased on December 2, 2002 at 11:45:00. Specific deployment dates are listed below.

Site	Deployed	Pulled
WM	3/12/2002 (09:10)	4/02/2002 (08:40)
	4/02/2002 (08:40)	4/23/2002 (10:05)
	4/23/2002 (10:05)	5/07/2002 (09:10)
	5/07/2002 (09:10)	5/20/2002 (14:20)
	5/20/2002 (14:20)	6/3/2002 (12:40)
	6/03/2002 (12:40)	6/18/2002 (09:40)
	6/18/2002 (09:40)	6/24/2002 (15:05)
	6/24/2002 (15:05)	7/8/2002 (12:40)
	7/08/2002 (12:50)	7/15/2002 (13:50)
	7/15/2002 (13:50)	7/22/2002 (08:05)
	7/22/2002 (08:05)	7/30/2002 (08:35)
	7/30/2002 (08:35)	8/05/2002 (14:20)
	8/05/2002 (14:20)	8/12/2002 (13:20)
	8/12/2002 (13:20)	8/19/2002 (13:05)
	8/19/2002 (13:05)	8/26/2002 (08:50)
	8/26/2002 (09:05)	9/03/2002 (12:50)
	9/03/2002 (12:50)	9/09/2002 (09:35)
	9/09/2002 (10:55)	9/23/2002 (09:10)
	9/23/2002 (09:10)	9/30/2002 (09:05)
	9/30/2002 (09:05)	10/14/2002 (09:40)
	10/14/2002 (09:50)	10/28/2002 (10:35)
	10/28/2002 (10:35)	11/18/2002 (11:10)
	11/18/2002 (11:20)	12/02/2002 (09:35)
SU	3/12/2002 (09:50)	4/02/2002 (09:40)
	4/02/2002 (09:40)	4/23/2002 (07:50)
	4/23/2002 (08:10)	5/07/2002 (08:20)
	5/07/2002 (08:10)	5/20/2002 (13:10)
	5/20/2002 (13:20)	6/03/2002 (13:55)
	6/03/2002 (13:55)	6/18/2002 (08:20)
	6/18/2002 (08:20)	6/24/2002 (13:50)
	6/24/2002 (13:50)	7/08/2002 (9:10)
	7/08/2002 (9:20)	7/15/2002 (11:05)
	7/15/2002 (11:05)	7/22/2002 (07:05)
	7/22/2002 (07:20)	7/30/2002 (07:40)
	7/30/2002 (07:40)	8/05/2002 (10:20)
	8/05/2002 (10:20)	8/12/2002 (10:50)
	8/12/2002 (10:50)	8/19/2002 (08:10)

8/19/2002 (08:20)	8/26/2002 (07:55)
8/26/2002 (07:55)	9/03/2002 (08:40)
9/03/2002 (08:50)	9/09/2002 (09:35)
9/09/2002 (09:35)	9/23/2002 (08:05)
9/23/2002 (08:05)	9/30/2002 (08:05)
9/30/2002 (08:05)	10/14/2002 (08:35)
10/14/2002 (08:50)	10/28/2002 (09:20)
10/28/2002 (09:20)	11/18/2002 (09:35)
11/18/2002 (09:50)	12/02/2002 (11:50)

OL

4/23/2002 (09:40)	5/07/2002 (09:15)
5/07/2002 (09:15)	5/20/2002 (13:50)
5/20/2002 (13:50)	6/3/2002 (12:10)
6/03/2002 (12:10)	6/18/2002 (9:20)
6/18/2002 (09:20)	6/24/2002 (14:50)
6/24/2002 (14:50)	7/08/2002 (12:10)
7/08/2002 (12:10)	7/15/2002 (13:35)
7/15/2002 (13:35)	7/22/2002 (07:50)
7/22/2002 (07:50)	7/30/2002 (08:10)
7/30/2002 (08:10)	8/5/2002 (14:10)
8/05/2002 (14:10)	8/12/2002 (12:50)
8/12/2002 (12:50)	8/19/2002 (12:50)
8/19/2002 (12:50)	8/26/2002 (08:40)
8/26/2002 (08:40)	9/03/2002 (12:20)
9/03/2002 (12:20)	9/09/2002 (10:35)
9/09/2002 (10:35)	9/23/2002 (08:50)
9/23/2002 (08:50)	9/30/2002 (09:10)
9/30/2002 (09:10)	10/14/2002 (09:40)
10/14/2002 (09:40)	10/28/2002 (10:20)
10/28/2002 (10:20)	11/18/2002 (11:35)

BR

3/12/2002 (09:50)	4/02/2002 (09:20)
4/02/2002 (09:40)	4/23/2002 (08:10)
4/23/2002 (08:30)	5/07/2002 (08:10)
5/07/2002 (08:10)	5/20/2002 (13:10)
5/20/2002 (13:10)	6/03/2002 (13:50)
6/03/2002 (13:50)	6/18/2002 (08:25)
6/18/2002 (08:25)	6/24/2002 (14:10)
6/24/2002 (14:10)	7/08/2002 (09:20)
7/08/2002 (09:20)	7/15/2002 (11:05)
7/15/2002 (11:05)	7/22/2002 (07:05)
7/22/2002 (07:05)	7/30/2002 (07:40)
7/30/2002 (07:40)	8/05/2002 (10:25)
8/05/2002 (10:25)	8/12/2002 (10:50)
8/12/2002 (10:50)	8/19/2002 (08:10)
8/19/2002 (08:10)	8/26/2002 (07:50)
8/26/2002 (07:50)	9/03/2002 (08:55)
9/03/2002 (08:55)	9/09/2002 (09:35)
9/09/2003 (09:35)	9/23/2002 (08:10)
9/23/2002 (08:10)	9/30/2002 (08:10)
9/30/2002 (08:10)	10/14/2002 (08:40)
10/14/2002 (08:40)	10/28/2002 (09:25)
10/28/2002 (09:25)	11/18/2002 (09:40)

11/18/2002 (09:50)

12/02/2002 (11:55)

7. Distribution

NOAA/ERD retains the right to analyze, synthesize, and publish summaries of the NERRS System-wide Monitoring Program data. The OWC Research Coordinator (RC) retains the right to be fully credited for having collected and processed the data. Following academic courtesy standard, the RC and the NERR site where the data were collected will be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. The data set enclosed within this package/transmission is only as good as the quality assurance and quality control procedures outlined in the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government and the State of Ohio do not assume liability to the Recipient or third persons, nor will the Federal government or the State of Ohio reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data.

NERR water quality data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see section 1. Principal investigators and contact persons), from the Data Manager at the Centralized Data Management Office (please see personnel directory under general information link on CDMO homepage) or online at the CDMO homepage <http://cdmo.baruch.sc.edu>. Data are available in text tab-delimited format, Microsoft Excel spreadsheet format and comma-delimited format from the CDMO.

8. Associated projects: Replicate samples for chemical analysis of the water are collected at each site every time the data loggers are changed. Samples for phytoplankton determination are collected at the same time at sites near the data logger deployment sites. Additionally, a 26 hour sampling regime (samples are collected at 2 hour intervals over the 26 hours) is conducted at the WM site once during each month.

II. Physical Structure and Descriptors:

9) Variable Sequence, range of measurements, units, resolution, and accuracy:

YSI 6000/6600 datalogger

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)			

Data columns are separated by tabs. Each file contains a two line column header at the top of the page which identifies measurements and units for each column.

10. Coded variable indicator and variable code definitions:

SU- State Route 2

WM- State Route 6

OL- site in lower estuary above site WM

BR- Berlin Road site

File definitions: YSI deployment site/wq/month/year (e.g. suwq0802 (State Route 2, August, 2002) ("wq" identifies the file as a water quality data sets.)

11. Data anomalies

March 2002

WM:

All data deleted 03/23/2002 (07:45:00 - 16:45:00) due to specific conductivity probe being partially or completely out of the water. Sampling for this site began on March 12, 2002 at 09:15:00. Depth values were at or slightly below zero (probably because depth sensor was

at or slightly above water surface):

03/23/2002: (04:00:00-04:45:00); (10:15:00-18:45:00)

Specific conductivity and depth readings were 3X higher than normal from 3/23 615-730 possibly due to ice formation.

SU:

Sampling for this site began on March 12, 2002 at 10:00:00.

Turbidity values were above 1000 NTU probably due to storm activity

03/30/2002 (03:30:00); (04:00:00)

BR:

There was no data collected 3/15/2002 (14:30:00- 20:45:00) cause unknown.

All data deleted 03/23/2002 (04:45:00 - 09:45:00) due to specific conductivity probe being partially or completely out of the water.

Turbidity values were above 1000 NTU due to storm on dates:

3/30/2002 (00:00:00); (1:15:00 - 2:30:00); (3:45:00)

Depth sensor was at or above water surface:

3/12/2002 (13:15:00 through 3/15/2002 (14:15:00)

3/15/2002 (21:00:00) through 3/16/2002 (4:30:00)

3/17/2002 (14:00:00) through 3/18/2002 (6:30:00)

3/19/2002 (20:45:00) through 3/20/2002 (17:45:00)

3/21/2002 (2:00:00 - 14:45:00)

3/22/2002 (22:00:00) through 3/24/2002 (18:45:00)

3/26/2002 (4:15:00 - 17:00:00); (17:30:00 - 18:00:00)

April 2002

WM:

Turbidity values were at or above 1000 NTU due to either storm or biological

activity:

04/03/2002 (11:00:00); (20:45:00)

04/10/2002 (00:00:00)

04/11/2002 (17:15:00); (17:45:00)

04/12/2002 (09:15:00)

04/13/2002 (05:00:00); (06:00:00); (10:00:00)

04/14/2002 (15:15:00-15:30:00); (21:30:00-21:45:00); (23:15:00)

04/15/2002 (00:30:00); (18:45:00)

04/16/2002 (08:45:00); (11:00:00)

04/19/2002 (04:45:00)

04/20/2002 (09:00:00)

04/21/2002 (04:15:00); (11:15:00-11:30:00)
04/24/2002 (10:45:00)
04/25/2002 (00:30:00); (14:15:00)
04/26/2002 (17:15:00)

SU:

All data is missing 4/23/2002 (08:00:00) due to changing dataloggers.

Turbidity levels were above 1000 NTU due to storm or biological activity:

04/3/2002 (06:15:00)
04/13/2002 (13:15:00)
04/14/2002 (17:15:00-18:30:00); (19:00:00); (19:45:00)
04/15/2002 (11:00:00-11:15:00); (15:15:00); (18:15:00)
04/18/2002 (11:00:00)
04/20/2002 (22:30:00-23:15:00); (23:45:00)
04/21/2002 (00:00:00-00:15:00); (06:30:00-09:15:00); (09:45:00-
10:15:00);
(11:30:00- 12:15:00); (23:30:00) through 04/22/2002 (00:15:00);
04/22/2002 (08:30:00-09:15:00); (09:45:00-10:15:00); (10:45:00-11:15:00);
(18:30:00-21:15:00)
04/23/2002 (00:30:00-01:15:00)
04/25/2002 (17:00:00); (21:45:00)
04/26/2002 (06:45:00); (17:30:00); (18:30:00); (19:00:00-19:15:00);
(20:15:00); (21:15:00); (23:00:00); (23:45:00)
04/27/2002 (00:15:00); (01:00:00); (03:15:00); (04:15:00);
(05:15:00);
(06:15:00); (06:45:00-07:15:00); (09:00:00); (09:30:00); (10:15:00);
(10:30:00);
(12:30:00); (13:00:00); (13:30:00); (17:00:00); (18:00:00); (19:15:00);
(23:30:00)
04/28/2002 (00:15:00); (01:15:00); (04:45:00-05:00:00); (05:45:00);
(06:30:00); (08:00:00); (09:45:00); (11:00:00); (11:45:00); (12:15:00);
(13:45:00); (14:45:00); (18:15:00-19:00:00); (22:30:00); (23:15:00)
04/29/2002 (02:15:00-02:30:00); (03:45:00); (05:45:00); (07:00:00);
(09:30:00-10:00:00); (11:00:00-11:15:00); (11:45:00); (12:15:00-
12:30:00);
(13:15:00- 13:30:00); (14:45:00); (17:15:00); (19:00:00); (19:30:00-
20:00:00);
(21:00:00); (21:30:00)
04/30/2002 (00:15:00); (01:45:00); (03:15:00-04:00:00); (04:30:00-
04:45:00); (07:45:00); (08:45:00-09:00:00); (09:30:00-10:00:00);
(10:45:00);
(14:45:00-15:30:00); (16:45:00); (17:15:00-17:30:00); (18:00:00)

OL:

Sampling began for 2002 on 23 April, 2002 at 09:40

Water levels were at or below zero at the following times (due to
atmospheric

pressure changes as well as the water level sensor being at or above
water

surface):

04/28/2002 (10:45:00-12:15:00); (14:45:00-16:00:00); (17:30:00-
22:15:00)

BR:

All data missing 4/02/2002 at 09:30:00 due to changing dataloggers

All data missing 4/23/2002 at 08:15:00 due to changing dataloggers

Depth: depth sensor out of water

04/02/2002 (08:15:00-09:15:00)

04/18/2002 (22:30:00) to 04/19/2002 (07:15:00)

04/19/2002 (12:15:00) to (16:15:00)

04/21/2002 (17:15:00) to 4/22/2002 (10:45:00)

4/24/2002 (16:00:00) to 4/25/2002 (03:40:00)

4/27/2002 (19:00:00) to 4/30/2002 (23:45:00)

Turbidity: following dates and times were above 1500 NTU due to storms

4/13/2002 (18:15:00)

4/14/2002 (14:45:00 to 15:00:00); (16:15:00)

4/15/2002 (00:15:00)

Turbidity: following dates and times were above 1000 NTU due to storms

4/03/2002 (02:00:00); (03:45:00); (04:30:00)

4/12/2002 (23:15:00) to 4/13/2002 (00:45:00)

4/13/2002 (02:00:00 to 02:15:00); (07:15:00); (11:00:00); (14:00:00)

4/14/2002 (14:30:00); (15:15:00-17:45:00)

4/22/2002 (18:45:00-19:15:00)

May 2002

WM:

Turbidity values were at or above 1000 NTU due to either storm or biological

activity:

5/05/2002 (09:30:00)

5/06/2002 (05:15:00); (15:00:00); (19:45:00); (20:45:00)

5/11/2002 (15:30:00-15:45:00)

5/12/2002 (16:15:00)

5/30/2002 (09:30:00)

No salinity data from 5/20/2002 (14:30:00) through 5/31/2002 (23:45:00) due to programming error.

SU:

All data missing on 05/20/2002 (13:15:00) changing datalogger

All turbidity values were deleted from 05/08/2002 (13:30:00) through 05/20/2002

(13:00:00). The negative values interspersed with very high values suggest that

the sensor is not working properly or that there is a problem at the site with

siltation.

The following dates had turbidity values greater than 1000 NTU due to either

storms or biological activities;

05/01/2002 (00:00:00); (02:00:00-02:15:00); (02:45:00); (05:30:00); (06:45:00); (07:15:00-08:30:00); (09:00:00-10:30:00); (13:00:00-13:15:00);

(13:45:00-14:00:00); (15:00:00-15:45:00); (19:15:00); (22:15:00);
(23:00:00-
23:15:00)
05/02/2002 (00:00:00-01:15:00); (03:45:00); (06:30:00); (13:00:00);
(20:15:00-20:30:00)
05/03/2002 (00:15:00-00:30:00); (13:45:00); (15:15:00); (18:15:00);
(19:15:00-19:30:00)
05/04/2002 (22:45:00-23:00:00)
05/05/2002 (01:00:00-01:15:00); (02:45:00); (06:30:00); (08:45:00-
09:15:00); (14:30:00-16:15:00)
05/06/2002 (03:45:00-04:00:00)
05/07/2002 (02:30:00-02:45:00)
05/20/2002 (17:30:00); (19:15:00)
05/21/2002 (01:45:00); (02:15:00); (05:15:00-06:00:00); (18:15:00-
18:30:00); (19:45:00)
05/30/2002 (14:30:00-15:15:00); (21:30:00)
05/31/2002 (13:00:00-13:15:00)

OL:

Water level data was zero or negative due to changing barometric pressure and

the sensor was at or above the water surface:

05/02/2002 (08:45:00-09:30:00); (10:30:00-12:15:00); (13:00:00-
14:00:00)

05/03/2002 (01:15:00-03:00:00)

05/09/2002 (15:15:00-18:15:00); (18:45:00-19:00:00)

Turbidity values were above 1000 NTU due to storm or biological activity:

05/02/2002 (09:15:00)

05/03/2002 (09:00:00)

05/05/2002 (14:45:00)

BR:

Turbidity values were at or slightly below 0 for the following dates
(calibration error?)

5/5/2002 (8:45:00-20:00:00); (20:30:00-21:00:00); (21:30:00-
21:45:00);

(22:15:00); (23:00:00) through 5/6/2002 (00:15:00)

5/6/2002 (2:30:00); (8:00:00-14:45:00)

5/7/2002 (6:45:00- 8:00:00)

Turbidity values were above 1000 NTU due to storm or biological activity

5/2/2002 (17:00:00)

5/13/2002 (10:15:00 -17:15:00); (17:45:00) through 5/14/2002
(2:45:00)

5/28/2002 (14:30:00)

5/30/2002 (13:30:00)

Depth sensor was at or above the water surface on:

5/1/2002 (00:00:00) through 5/2/2002 (6:45:00)

5/6/2002 (8:00:00-8:30:00); (9:15:00) through 5/7/2002 (9:15:00)

5/8/2002 (15:15:00) through 5/9/2002 (2:45:00)

5/9/2002 (8:15:00-20:15:00)

5/12/2002 (10:15:00-20:00:00)

5/16/2002 (12:15:00-19:30:00)

5/22/2002 (14:30:00) through 5/30/2002 (2:00:00)
5/30/2002 (11:00:00- 20:00:00)
5/31/2002 (7:30:00-23:45:00)

June 2002

WM:

Turbidity values were above 1000 NTU due to storm or biological activities:

6/04/2002 (17:45:00-18:00:00); (18:30:00); (19:45:00); (20:45:00);
(21:15:00);
(21:45:00); (22:15:00)

6/05/2002 (00:45:00)

6/12/2002 (18:00:00-21:45:00); (23:30:00) through 6/13/2002 (03:00:00)

All salinity data is missing from 6/01/2002 (00:00:00) through 6/18/2002 (09:30:00) due to programming error

DO concentration was deleted for the following dates and times due to programming error. DO charge was recorded by error.

06/03/2002 12:45:00 - 06/18/2002 09:30:00

SU:

Turbidity data deleted from 6/03/2002 (14:15:00) through 6/24/2002 (13:45:00)

and from 6/26/2002 (11:00:00) through 6/30/2002 (23:45:00) due to negative

numbers and concern on the validity of the other data. The cause of this problem is unknown.

The following dates had turbidity values of greater than 1500 NTU (storms or

biological activity?):

06/01/2002: (03:30:00); (17:45:00- 18:15:00); (20:15:00)

06/02/2002: (03:15:00); (16:30:00)

06/03/2002: (08:00:00-09:00:00)

Dissolved oxygen values questionable due to possible sediment buildup in the trap: 6/14/2002 (22:00:00) to 6/18/2002 (08:30:00)

6/21/2002 (21:15:00) to 6/24/2002 (13:45:00)

Dissolved oxygen values questionable due to cleaning out sediment under the trap on 6/24/2002 (14:00:00-14:30:00)

OL:

No missing or anomalous data

BR:

All the data was deleted on the following days because the datalogger was completely or partially out of water, evident from Sp. conductivity readings:

6/20/2002 (17:30:00) through 6/30/2002 (23:45:00)

All dissolved oxygen (mg/l) was deleted due to programming error from 6/24/2002

(14:15:00) through 6/30/2002 (23:45:00)

The following dates had turbidity values greater than 1000 NTU (probably due to

storm runoff):

6/4/2002 (08:00:00 -12:30:00); (17:45:00)
6/12/2002 (08:45:00 -11:30:00); (12:15:00 - 16:45:00); (17:15:00 -
19:30:00);
(20:45:00 - 23:00:00)

6/13/2002 (1:45:00); (3:15:00); (6:15:00-6:30:00); (8:00:00)

The water level sensor was at or above the water surface on the following
dates:

6/1/2002 (00:00:00) through 6/4/2002 (00:30:00)
6/9/2002 (16:45:00 - 21:00:00)
6/10/2002 (02:30:00 - 03:45:00); (11:30:00) through 6/12/2002
(08:00:00)
6/14/2002 (05:15:00 - 19:00:00)
6/15/2002 (00:15:00) through 6/18/2002 (4:30:00)
6/24/2002 (16:15:00 - 20:45:00)
6/25/2002 (1:45:00 - 2:45:00); (3:15:00-4:15:00); (4:45:00 -
5:15:00);
(12:00:00) through 6/28/2002 (22:45:00)
6/30/2002 (16:15:00-20:00:00); (20:30:00)

July 2002

WM:

All data is missing 07/08/2002 (12:45:00); changing data logger
Turbidity- The following dates had turbidity values of greater than 1000
NTU

(Probably due to biological or storm runoff activities):

7/04/2002 (15:45:00); (20:15:00)
7/06/2002 (02:45:00)
7/08/2002 (14:45:00)
7/09/2002 (02:15:00)
7/10/2002 (04:30:00)
7/11/2002 (02:45:00)
7/12/2002 (15:15:00); (22:00:00-22:30:00); (23:15:00-23:45:00)
7/13/2002 (00:15:00-00:30:00); (02:00:00); (03:15:00); (04:00:00);
(04:45:00-05:15:00); (05:45:00-06:00:00); (06:45:00); (07:30:00-07:45:00);
(12:00:00); (13:45:00); (14:15:00); (16:00:00-16:15:00); (16:45:00);
(18:30:00);
(19:30:00); (20:45:00); (21:45:00); (22:15:00); (23:00:00)
7/14/2002 (11:45:00); (12:15:00); (15:00:00)
7/15/2002 (17:15:00-17:30:00)
7/19/2002 (21:00:00)
7/25/2002 (00:45:00)
7/27/2002 (21:45:00)

SU:

All data missing 7/08/2002 (09:15:00) changing datalogger
All data missing 7/22/2002 (07:15:00) changing datalogger
Turbidity data deleted due to probe malfunction and/or siltation at the
site

7/01/2002 (00:00:00) through 7/02/2002 (17:45:00) siltation?

7/08/2002 (09:30:00) through 7/15/2002 (11:00:00) probe failure?

The following negative turbidity values were deleted :

7/03/2002 (00:15:00-00:30:00); (02:45:00-03:00:00); (07:30:00);
(08:45:00)

Turbidity values from 7/02/2002 (18:00:00) through 7/03/2002 (09:00:00)
questionable due to above negative values that were deleted.

Dissolved oxygen values from 7/10/2002 (01:30:00) through 7/15/2002
(11:00:00) questionable due to siltation of sensor.

The high turbidity value on 7/15/2002 (11:15:00) was probably an artifact
of
changing datalogger.

Depth- On 7/15/2002 (11:15:00) datalogger deployed had the longer sonde
guard,

so was 5 cm higher in trap- this is recorded in changing depth at this
time

from earlier.

OL:

No missing or anomalous data

BR:

All the data was deleted on the following days because the datalogger was
completely or partially out of water, evident from Sp. conductivity
readings:

7/01/2002 (00:00:00) through 7/8/2002 (09:15:00)

7/8/2002 (16:15:00) through 7/9/2002 (14:00:00)

7/10/2002 (19:00:00) through 7/15/2002 (11:00:00)

The water level sensor was at or above the water surface on the following
dates:

7/08/2002 (10:30:00) through (16:00:00)

7/09/2002 (14:15:00) through 7/16/2002 (00:45:00)

7/16/2002 (01:30:00-01:45:00); (02:30:00-03:15:00)

7/17/2002 (13:15:00) through 7/20/2002 (06:45:00)

7/20/2002 (18:00:00-18:30:00); (19:00:00)

7/21/2002 (05:15:00-05:30:00); (12:30:00-15:00:00); (15:00:00);

(15:45:00)

through 7/22/2002 (07:00:00); 7/28/2002 (03:00:00- 06:15:00); (13:45:00-
20:15:00)

Turbidity levels were above 1500 NTU:

7/25/2002 (00:15:00); (21:30:00); (22:30:00)

7/29/2002 (01:00:00-01:15:00)

Turbidity levels were above 1000 NTU:

07/22/2002 (20:15:00)

Turbidity levels were at or just below 0 (this could be a problem of
calibration):

07/26/2002 (11:45:00-12:15:00); (13:00:00)

DO spiked around 7/20-7/22 and should be considered suspect.

August 2002

WM:

All data missing 8/26/2002 (09:00:00) changing datalogger

Turbidity: The following turbidity values were above 1000 NTU due
probably to

biological and/or storm activity (However, the highly erratic nature of the data from 16 August (12:30:00) through 26 August (06:15:00) suggests that much

of this may be due to probe problems):

8/03/2002 (16:00:00); (22:15:00-22:45:00)
8/05/2002 (13:45:00)
8/10/2002 (16:15:00);
8/11/2002 (21:00:00)
8/12/2002 (00:30:00); (13:30:00); (14:15:00)
8/13/2002 (03:45:00); (04:30:00); (05:15:00); (05:45:00);
(06:45:00);
(07:30:00- 07:45:00); (12:30:00-12:45:00) (13:15:00-13:30:00)
8/14/2002 (06:45:00-07:00:00); (10:30:00); (12:30:00); (13:30:00);
(14:00:00); (15:00:00-15:15:00); (15:45:00); (17:15:00); (18:45:00)
8/15/2002 (05:45:00); (06:15:00)
8/16/2002 (09:00:00); (12:30:00-12:45:00); (13:15:00); (14:00:00);
(18:00:00-18:30:00); (19:00:00-19:30:00); (20:30:00); (21:00:00);
(22:00:00-
22:30:00); (23:00:00- 23:15:00); (23:45:00)
8/17/2002 (00:45:00-01:00:00); (02:45:00-03:00:00); (06:45:00);
(07:15:00); (10:45:00); (11:30:00-12:30:00); (13:30:00); (14:45:00-
16:30:00);
(17:00:00-19:45:00); (20:15:00) through 8/18/2002 (00:00:00)
8/18/2002 (00:30:00-01:15:00); (01:45:00-02:00:00); (02:45:00-
03:45:00);
(04:15:00- 04:30:00); (05:00:00-05:45:00); (06:15:00); (06:45:00);
(09:15:00-
11:15:00); (12:15:00-12:30:00); (13:00:00-16:00:00); (16:45:00-17:00:00);
(21:45:00-22:15:00)
8/19/2002 (00:45:00); (01:30:00); (05:15:00); (11:15:00-11:30:00);
(13:15:00-13:30:00); (14:15:00-14:30:00); (15:00:00) through 8/20/2002
(02:00:00)
8/20/2002 (03:15:00-03:30:00); (04:00:00); (05:00:00); (09:15:00);
(13:30:00); (14:00:00-14:15:00); (14:45:00-15:00:00); (15:30:00);
(16:15:00);
(17:00:00); (20:15:00-20:30:00); (21:30:00-21:45:00); (23:30:00)
8/21/2002 (00:15:00-01:45:00); (02:15:00-05:30:00); (06:15:00-
12:45:00);
(19:15:00); (19:45:00)
8/22/2002 (02:30:00-03:45:00); (04:15:00-04:30:00); (05:00:00);
(06:00:00-
07:00:00); (08:30:00); (09:00:00); (09:45:00); (11:30:00); (12:00:00);
(12:45:00-13:15:00); (13:45:00-16:45:00); (17:30:00-21:45:00); (23:30:00)
8/23/2002 (01:00:00-01:15:00); (02:45:00); (03:45:00); (05:00:00-
05:15:00); (05:45:00- 11:15:00); (11:45:00-14:45:00); (15:45:00);
(17:15:00);
(17:45:00); (18:30:00); (19:30:00); (21:15:00); (22:00:00-22:15:00);
(22:45:00);
(23:30:00)
8/24/2002 (00:30:00); (04:00:00); (04:45:00-05:00:00); (05:30:00);
(06:15:00-06:45:00); (07:15:00); (07:45:00-08:45:00); (09:15:00);
(16:15:00);
(20:45:00)

8/25/2002 (00:30:00); (05:30:00-05:45:00); (06:15:00-06:30:00);
(21:30:00)

8/26/2002 (03:45:00)

The following turbidity values were at or below zero suggesting either a calibration error or probe problems:

8/16/2002 (23:45:00) through 8/17/2002 (00:30:00)

8/17/2002 (13:45:00-14:00:00); (14:30:00)

8/18/2002 (07:15:00-07:30:00); (08:00:00-09:00:00); (11:15:00);

(17:15:00-

17:30:00); (18:00:00-21:30:00)

8/19/2002 (06:45:00-11:00:00); (11:45:00-13:00:00)

8/24/2002 (03:30:00); (13:30:00); (14:15:00); (14:45:00);

(15:15:00);

(16:00:00); (19:30:00)

8/25/2002 (13:30:00); (14:45:00-15:00:00); (18:00:00)

8/26/2002 (06:15:00)

SU:

All data 08/05/2002 (10:30:00) is missing due to changing data logger.

All the data 08/19/2002 (08:15:00) is missing due to changing data logger.

Water depth on 8/05/2002 (10:30:00) was below zero, cause unknown.

Specific conductivity dropped in middle of deployment at 08/24/2002

(07:15:00-08:30:00) and remained low for remainder of month- the cause for this is unknown because the post deployment calibration of the conductivity probe was good.

Turbidity readings were above 1000 NTU at the following times (due to storms or

biological activity:

8/01/2002 (19:15:00)

8/11/2002 (08:45:00)

8/12/2002 (08:30:00)

8/16/2002 (11:15:00)

8/17/2002 (20:30:00)

8/28/2002 (15:00:00-15:45:00); (16:15:00-17:45:00)

8/29/2002 (17:00:00-18:45:00); (19:15:00-21:45:00)

8/30/2002 (02:00:00-04:45:00); (08:00:00-08:45:00); (13:00:00)

through

8/31/2002 (00:45:00)

8/31/2002 (01:00:00-01:15:00); (08:00:00); (10:00:00-10:45:00);

(18:00:00-

18:45:00); (20:00:00); (21:00:00-21:45:00); (23:00:00-23:45:00)

Turbidity readings were at or slightly below zero on the following dates

(calibration error?)

8/30/2002 (10:00:00-10:30:00); (11:00:00-11:45:00)

8/31/2002 (03:00:00-03:45:00); (12:00:00-15:45:00)

The wide variations in the turbidity readings during August 30 and 31 suggest that there may be a probe or a deployment problem and that the readings are suspect.

OL:

The following dates had turbidity values above 1000 NTU due to biological activity:

8/25/2002 (19:00:00)

BR:

The following Dissolved oxygen was deleted due to puncture in sensor membrane:

8/19/2002 (08:15:00) through 8/26/2002 (07:45:00)

The following dates had turbidity values above 1500 NTU due to unknown causes

08/03/2002 (10:00:00)

08/09/2002 (12:00:00)

08/24/2002 (10:00:00)

The following dates the water level sensor was at or above the water surface:

08/10/2002: (17:00:00) through (20:30:00)

08/11/2002 (01:30:00) through (02:15:00); (15:15:00) through (23:45:00)

08/12/2002 (00:15:00) through (03:45:00); (16:00:00) through (20:15:00)

08/13/2002 (11:15:00) through 08/15/2002 (05:45:00)

08/15/2002 (13:45:00) through (21:00:00)

08/16/2002 (14:30:00-14:45:00); (15:15:00) through (17:30:00)

08/17/2002 (06:45:00-07:30:00) (08:00:00-08:15:00); (11:00:00)

through

08/19/2002 (20:30:00)

08/23/2002 (18:00:00-18:30:00)

September 2002

WM:

From 09/03/2002 (13:00:00) through 09/09/2002 (10:45:00) data was only collected

at an 11-hour interval due to a programming error.

Dissolved Oxygen values from 09/09/2002 (13:00:00) through 09/09/2002 (10:45)

deleted due to a probe failure.

Dissolved Oxygen deleted 09/23/2002 (09:15:00) through 09/30/2002

(09:00:00) due to puncture in membrane on sensor.

Turbidity values exceeded 1000 NTU on the following dates due probably to biological activity:

9/13/2002 (01:00:00)

9/21/2002 (14:30:00)

9/23/2002 (07:30:00)

SU:

All data is missing from 09/03/2002 (08:45:00) due to servicing the data logger

All data from 9/23/2002 (08:00:00) deleted due to changing data logger.

The turbidity values are at or below zero (cause error in calibration?):

9/01/2002 (03:00:00-04:45:00)

9/02/2002 (11:00:00-11:45:00)
The following turbidity values were above 1000 NTU (cause biological activity or storms or deployment problems, particularly from September 27-30):
9/01/2002 (05:15:00-23:45:00)
9/02/2002 (00:30:00-00:45:00); (01:15:00-01:45:00); (03:00:00-03:45:00);
(06:00:00- 07:45:00); (12:00:00-12:45:00); (17:00:00-17:45:00);
(23:00:00-23:45:00)
9/03/2002 (05:15:00-05:45:00); (06:45:00); (07:15:00-07:45:00); (09:00:00)
through 9/07/2002 (01:15:00)
9/07/2002 (16:45:00-21:15:00)
9/08/2002 (12:00:00)
9/09/2002 (05:15:00)
9/23/2002 (08:15:00) through 9/24/2002 (07:45:00)
9/26/2002 (17:45:00)
9/27/2002 (15:45:00); (16:15:00) through 9/28/2002 (02:15:00)
9/28/2002 (02:45:00-06:45:00); (07:30:00-09:15:00); (09:45:00-10:30:00);
(11:00:00- 15:30:00); (16:15:00-19:15:00); (19:30:00) through 9/29/2002 (14:15:00)
9/29/2002 (14:45:00); (15:15:00-17:00:00); (17:30:00-18:15:00); (18:45:00); (19:15:00- 22:45:00); (23:15:00) through 9/30/2002 (03:15:00)
9/30/2002 (03:45:00); (04:15:00); (04:45:00); (05:15:00-05:45:00); (06:15:00-08:00:00)

OL:

The following dates had turbidity values above 1000 NTU due to biological activity:

9/01/2002 (04:15:00)

BR:

Depth: Depth sensor was at or above the water surface:

9/2/2002 (13:30:00-14:45:00); (15:30:00) through 9/5/2002 (2:00:00)
9/5/2002 (18:45:00-19:30:00); (23:15:00) through 9/6/2002 (00:30:00)
9/6/2002 (3:45:00); (13:00:00) through 9/7/2002 (5:30:00)
9/7/2002 (15:30:00-16:30:00)
9/8/2002 (16:30:00-17:30:00); (18:15:00-19:00:00)
9/9/2002 (1:45:00-5:30:00); (11:45:00) through 9/20/2002 (21:00:00)
9/21/2002 (00:00:00- 4:45:00)
9/22/2002 (8:00:00-19:15:00)
9/26/2002 (18:30:00) through 9/27/2002 (8:30:00)

Turbidity values above 1000 NTU (storms and/or biological activity)

9/4/2002 (20:00:00)
9/27/2002 (15:00:00-16:30:00); (17:15:00-17:30:00)
9/28/2002 (3:45:00)

October 2002

WM:

All data missing 10/14/2002 (09:45:00) due to changing dataloggers
Oxygen -both percent saturation and mg/l deleted due to a puncture of the
oxygen
membrane 10/16/2002 (12:00:00) through 10/28/2002 (10:30:00). Since the
exact
time of the puncture is unknown, the data from 10/15/2002 (12:00:00)
through
10/16/2002 (11:45:00) must be considered questionable
DO data prior to membrane puncture should also be considered suspect.
Turbidity values were over 1000 NTU due to biological activity on
10/11/2002 (07:30:00)

SU:

All data deleted 10/14/2002 (08:45:00) due to changing data logger.
All turbidity data from 10/14/2002 (09:00:00) through 10/28/2002
(09:15:00) was
deleted due to either a malfunction of the probe or some other unknown
cause.
Turbidity values were above 1000 NTU due to biological or physical
factors:
10/05/2002 (17:30:00); (19:00:00)
10/28/2002 (09:30:00-09:45:00)

OL:

No missing or anomalous data

BR:

Depth: Depth sensor was at or above water surface:
10/4/2002 (4:00:00) through 10/5/2002 (4:30:00)
10/6/2002 (14:30:00) through 10/7/2002 (00:30:00)
10/14/2002 (23:00:00) through 10/21/2002 (00:15:00)
10/21/2002 (13:30:00-21:45:00); (22:30:00) through 10/22/2002
(6:30:00)
10/22/2002 (12:00:00-16:30:00)
10/25/2002 (11:45:00-19:15:00)
10/29/2002 (12:30:00) through 10/30/2002 (17:45:00)
Turbidity values were at or just below 0 (calibration problem)
10/14/2002 (9:00:00) through 10/15/2002 (17:30:00)
10/15/2002 (18:00:00-18:45:00); (19:15:00-20:15:00); (20:45:00);
(21:15:00); (23:15:00)
10/16/2002 (00:00:00); (00:30:00); (1:45:00-3:30:00); (3:45:00-
5:00:00);
(6:15:00- 12:45:00); (13:45:00); (14:15:00); (14:45:00); (15:15:00);
(16:00:00);
(16:30:00- 18:30:00); (19:00:00); (19:30:00-19:45:00); (20:15:00);
(21:00:00-
22:00:00); (22:30:00); (23:00:00); (23:30:00-23:45:00)
10/17/2002 (00:30:00); (2:30:00); (3:15:00); (3:45:00-4:00:00);
(4:30:00-
11:15:00); (11:30:00-12:15:00); (12:45:00); (13:15:00-13:30:00);
(14:00:00-

15:15:00); (16:30:00); (17:00:00); (17:30:00-17:45:00); (18:30:00);
(19:00:00);
(20:15:00- 20:30:00); (22:15:00); (23:00:00)
10/18/2002 (00:15:00)
10/26/2002 (4:45:00); (5:30:00-6:00:00); (6:30:00-8:00:00);
(10:00:00);
(11:00:00- 12:45:00); (14:45:00); (15:15:00) through 10/27/2002
(21:45:00)

November 2002

WM:

All data missing on 11/18/2002 (11:15:00) due to changing data loggers
All data was deleted for the following periods because the conductivity probe was partially or completely exposed to the atmosphere due to low water levels

11/11/2002 (23:45:00) through 11/12/2002 (01:00:00)
11/13/2002 (00:00:00-09:45:00); (14:45:00) through 11/14/2002
(00:00:00
11/14/2002 (04:15:00- 16:45:00); (17:30:00); (18:00:00); (18:45:00-
19:30:00); (20:30:00) through 11/15/2002 (03:45:00); 11/18/2002
(11:15:00).

All the data was deleted on the following days because the datalogger was completely or partially exposed to the atmosphere due to low water levels, evident from Sp. conductivity readings:

11/23/2002 (17:30:00) through 11/24/2002 (04:00:00)
11/24/2002 (11:15:00-16:30:00)
11/27/2002 (22:45:00) through 11/29/2002 (07:30:00)
11/29/2002 (08:45:00) through 11/30/2002 (12:15:00)
11/30/2002 (20:15:00) through 11/30/2002 (23:45:00)

Depth sensor was at or above water surface on the following dates and times:

11/18/2002 (11:30:00) through 11/19/2002 (07:45:00)
11/19/2002 (08:30:00); (11:00:00); (11:30:00); (13:00:00-13:30:00);
(14:00:00); (19:00:00-19:15:00); (19:45:00); (20:15:00-20:45:00);
(21:30:00-
22:15:00); (22:45:00- 23:45:00)
11/20/2002 (00:30:00-09:30:00); (13:15:00); (14:15:00); (15:15:00-
15:30:00)); (18:45:00-23:45:0)
11/21/2002 (00:30:00-01:15:00); (01:45:00-02:15:00); (02:45:00-
03:00:00);
(03:30:00- 10:15:00)
11/23/2002 (07:45:00-09:15:00); (10:15:00-10:30:00); (14:45:00-
15:15:00);
(16:15:00- 16:45:00); (17:15:00)
11/24/2002 (04:15:00-05:15:00); (07:30:00-10:00:00); (17:45:00-
21:15:00)
11/25/2002 (07:45:00-09:45:00); (16:15:00-22:30:00)
11/26/2002 (00:45:00-01:45:00); (02:15:00-03:15:00); (04:15:00);
(04:45:00-07:45:00)
11/27/2002 (18:15:00-21:00:00)

Turbidity values were above 1000 NTU because of biological activity;

11/11/2002 (22:45:00)

11/22/2002 (06:00:00)

SU:

All data missing 11/18/2002 (09:45:00) due to changing datalogger

All turbidity data was deleted from 11/18/2002 (10:00:00) through

11/30/2002

(23:45:00) (siltation problems during deployment?)

Turbidity values were greater than 1000 NTU due to storms, biological or physical causes: 11/12/2002 (08:00:00-08:45:00); (10:00:00); (10:30:00-10:45:00)

11/13/2002 (09:00:00-09:30:00)

11/14/2002 (09:00:00-09:45:00)

Water level values were at or slightly below zero because the depth sensor was

at or above the water surface

11/14/2002 (15:00:00-15:15:00); (15:45:00) through 11/15/2002 (08:00:00)

DO spike around 11/7-11/8 should be considered suspect.

OL:

The data logger was pulled on 11/18/2002 (11:30:00) to finish deployment at this

site for 2002.

All the data was deleted on the following days because the datalogger was completely or partially out of the water, evident from Sp. conductivity readings:

11/12/2002 (00:15:00 - 02:15:00)

11/12/2002 (10:30:00 - 18:15:00)

11/12/2002 (20:15:00) through 11/15/2002 (05:45:00)

11/18/2002 (00:15:00) through end of deployment (11/18/2002 at 11:30:00)

Water levels were zero or negative values because the water level sensor was out

of water:

11/15/2002 (06:00:00-07:00:00)

11/17/2002 (10:45:00-22:15:00)

BR:

No data collected 11/18/2002 (09:45:00) due to changing data loggers

Depth: Depth sensor at or above water surface:

11/2/2002 (12:30:00); (13:00-15:45:00)

11/3/2002 (17:45:00-18:45:00); (19:30:00) through 11/6/2002 (22:30)

11/7/2002 (17:30:00) through 11/14/2002 (15:15:00)

11/14/2002 (16:00:00-16:15:00); (16:45:00) through 11/15/2002 (6:45:00)

Turbidity values were above 1000 NTU due to storms and/or biological activity:

11/11/2002 (4:00:00); (5:00:00-6:30:00); (7:00:00-9:00:00); (9:45:00);

(10:45:00- 11:45:00); (12:15:00-12:30:00); (13:30:00); (14:30-15:00:00); (16:30:00); (17:00:00); (17:30:00); (18:30:00)

11/22/2002 (9:15:00); (9:45:00-10:00:00); (11:15:00); (11:45:00-12:15:00);

(14:45:00); (23:15:00)

11/23/2002 (4:45:00); (6:15:00); (8:00:00); (18:30:00)
 11/24/2002 (13:45:00)

12. Missing data:

Missing data are denoted by a period in the data set. Data are missing due to equipment failure when no probes deployed, maintenance/calibration of equipment, elimination of obvious outliers, or elimination of data due to calibration (both pre- and post-) problems. For more details on deleted data, see Anomalous Data Section (11). To find out more details about missing data, contact the Research Coordinator at the site submitting the data.

13. Post deployment information

End of Deployment Post-calibration Readings in Standard Solutions:
 Dissolved

oxygen standard is 100%, unless noted. Depth is always 0.0 meters. The specific conductivity standard is 1 mS/cm. The pH standard is 7.00. Any reading in parentheses refers to a reading made after cleaning the sensor.

Site	Date	Sp. Cond.	DO(%)	pH	Turb	Depth
WM	04/02/2002	.985	89.5	7.27	1.8	-.003
	04/23/2002	.977	102.1	7.12	0.8	0.00
	05/07/2002	.986	106.5	7.00	0.6	0.00
	05/20/2002	1.047	99.6	7.08	1.3	-.002
	06/03/2002	1.025	94.7	7.01	4.1 (0.3)	.002
	06/18/2002	1.033	94.9	7.09	1.4	.002
	06/24/2002	.954	95.3	7.07	0.3	.002
	07/08/2002	.955	72.4	7.03	3.2	0.00
	07/15/2002	1.067	111.7	7.00	0.3	.003
	07/22/2002	.946	88.4	7.16	6.7(0.7)	.005
	07/30/2002	1.003	84.6	7.09	3.4	0.00
	08/05/2002	1.011	87.5	7.20	2.0(0.1)	.001
	08/12/2002	1.009	88.8	7.07	0.3	.000
	08/19/2002	.992	97.2	7.17	-0.4	.001
	08/26/2002	.986	95.5	7.20	1.7	.000
	09/03/2002	1.048	missing	6.88	0.6	-.001
	09/09/2002	1.030	90.7	7.06	1.5	.000
	09/23/2002	1.008	90.8	7.12	3.6	-.001
	09/30/2002	1.043	0.2	7.32	1.6	.002
	10/14/2002	.990	97.7	6.98	1.4	.000
	10/28/2002	1.029	0.3	7.25	0.5	-.001
	11/18/2002	1.003	103.8	7.11	0.6	.006
	12/02/2002	.981	103.2	7.06	0.1	-.001
SU	04/02/2002	.985	101.6	7.18	0.5	.000

04/23/2002	.987	97.2	7.12	0.8	-.004
05/07/2002	1.002	104.0	7.15	0.9	-.004
05/20/2002	1.036	106.2	6.89	3.1	.004
06/03/2002	1.065	87.8	7.00	1.5	.001
06/18/2002	1.022	96.9	7.13	-.05	.006
06/24/2002	1.05	102.6	7.14	5.0	-.002
07/08/2002	1.05	102.3	7.17	0.5	.001
07/15/2002	1.039	95.3	6.99	0.9	.001
07/22/2002	.919	91.6	7.34	2.3	.002
07/30/2002	.972	81.4	7.32	1.5	-.002
08/05/2002	.986	89.4	7.15	0.9	.001
08/12/2002	.981	107.8	7.08	1.1	.003
08/19/2002	.973	96.8	7.07	0.6	.001
08/26/2002	.988	91.6	7.09	0.9	-.001
09/03/2002	.978	103.1	7.15	1.0	.000
09/09/2002	1.005	95.0	7.10	0	.001
09/23/2002	.980	82.0	7.20	0.6	-.001
09/30/2002	1.003	83.5	7.18	1.3	.000
10/14/2002	.995	98.8	7.23	0.1	-.002
10/28/2002	.978	95.6	7.22	4.2	.000
11/18/2002	.978	90.2	7.17	0.7	.000
12/02/2002	1.035	103.9	7.04	2.5	-.005

OL	05/07/2002	.990	103.1	7.43	2.3	-.041
	05/20/2002	1.038	100.0	7.03	-0.3	.126
	06/03/2002	1.038	96.7	7.21	2.0	-.335
	06/18/2002	1.045	89.9	7.03	3.1	.017
	06/24/2002	1.058	78.2	7.07	0.3	.051
	07/08/2002	1.043	104.8	7.23	3.3	-.019
	07/15/2002	1.019	91.6	7.15	1.6	-.060
	07/22/2002	.955	85.6	7.39	4.8	.022
	07/30/2002	.968	80.5	7.20	2.5	.030
	08/05/2002	1.008	101.5	7.02	3.2	.103
	08/12/2002	1.000	90.4	7.10	4.4	-.005
	08/19/2002	.991	93.8	7.11	2.0	-.063
	08/26/2002	.979	99.3	7.18	2.2	.016
	09/03/2002	1.037	93.5	6.98	1.3	-.023
	09/09/2002	1.07	102	7.18	3.1	-.019
	09/23/2002	1.002	95.4	7.10	6.3 (1.0)	.008
	09/30/2002	1.022	99.8	7.01	3.6	.061
	10/14/2002	1.005	99.5	7.03	5.1	.135
	10/28/2002	1.031	103.2	7.01	2.2	.016
	11/18/2002	1.014	95.3	7.07	2.2	.055

BR	04/02/2002	.733	103.7	7.07	0.4	-.143
	04/23/2002	.981	96.0	7.15	.05	.284
	05/07/2002	.995	101.5	7.13	-0.4	-.037
	05/20/2002	.989	99.7	7.19	5.2	.114
	06/03/2002	1.039	94.8	7.03	1.7	-.122
	06/18/2002	.999	104.7	7.25	5.9	.011
	06/24/2002	1.113	102.4	7.00	2.5	.042
	07/08/2002	1.075	111.	7.11	4.2	Missing

07/15/2002	1.035	106.3	7.08	1.0	-.051
07/22/2002	.975	83.5	7.16	3.5	-.049
07/30/2002	.974	93.5	7.29	2.4	.041
08/05/2002	.963	112.4	7.09	0.7	.103
08/12/2002	.981	99.3	7.11	3.9	.003
08/19/2002	1.002	98.4	7.04	4.6	-.049
08/26/2002	.972	missing	7.08	1.3	.013
09/03/2002	.975	99.4	7.13	-0.3	-.027
09/09/2002	.967	95.5	6.90	-.9	-.030
09/23/2002	.987	89.2	7.19	5.3	.007
09/30/2002	.907	81.6	7.29	15.7	.027
10/14/2002	.948	91.7	7.11	3.1	.98
10/28/2002	.970	93.3	7.30	21.6	-.014
11/18/2002	.921	90.4	7.10	6.9	.038
12/02/2002	.965	100.5	7.05	-0.1	.006

14. Other Remarks

On 07/01/2021 this dataset was updated to include embedded QAQC flags for anomalous/suspect data. System-wide monitoring data beginning in 2007 were processed to allow for QAQC flags and codes to be embedded in the data files rather than detailed in the metadata alone (as in the anomalous/suspect, deleted, and missing data sections above). Prior to 2006, rejected data were deleted from the dataset so they are unavailable to be used at all, but suspect data were only noted in the metadata document. Suspect data flags <1> were embedded retroactively in order to allow suspect data to be easily identified and filtered from the dataset if desired for analysis and reporting purposes. No other flags or codes were embedded in the dataset and users should still refer to the detailed explanations above for more information.

There was some kind of event that took place around the end of March (3/25-3/28) that caused higher than normal specific conductivity and depth readings at the WM, SU and BR sites.

Chemical Monitoring Program:

Replicate samples for chemical and chlorophyll analysis were collected at each of the data logger sites each time the data loggers were changed. The samples were collected prior to changing the data loggers, to insure that the samples for chemical analysis were undisturbed. Sample bottles, (previously washed with 10% HCl, rinsed six (6) times with distilled water and then allowed to air dry upside down prior to sampling), were rinsed with the sample water three times before the sample was collected for analysis. Temperature, dissolved oxygen, and pH values were determined on the samples at time of collection using field meters that were previously calibrated according to the manufacturer. If samples were not to be filtered and analyzed within the next hour, they were stored in the dark on ice.

Upon returning to the laboratory, each bottle was shaken and a 100 ml sub-sample for total P and metals (stored in a plastic bottle and

preserved with 1 ml 10% HCl) and a 25 ml sub-sample for alkalinity determination were removed. Also prior to filtering, turbidity and conductivity were determined using laboratory meters. Samples for chemical and chlorophyll analysis were filtered as quickly as possible using an aspirator/vacuum system. Samples for chlorophyll analysis: A sample of known volume (for chlorophyll analysis) was filtered through a Gelman 47 mm diameter A/E filter (1 micron). The filter was then removed, folded, cut into small pieces, and then placed into 10 ml. aqueous acetone (90% acetone, 10% saturated magnesium carbonate solution) in a 100 ml glass-stoppered bottle and stored in the freezer in the dark until analysis was conducted one week later. The procedure for chlorophyll analysis is described in Standard Methods for the Analysis of Water and Wastewater, 19th Edn. (1995) (Standard Methods) under "Spectrophotometric Determination of Chlorophyll", page 10-18.

Samples for chemical analysis: After filtration for chlorophyll analysis, the water used for chemical analysis was then filtered through a 47 mm diameter membrane filter (.45 micron) that had been prepared by soaking in distilled water as outlined in Standard Methods. The chemical procedures used were from Standard Methods:

Ammonia: 4500-NH₃ Phenate Method page 4-80

Nitrite: 4500-NO₂ Colorimetric Method page 4-83

Nitrate: 4500-NO₃ Cadmium Reduction Method page 4-87

Phosphorus: 4500-P Ascorbic Acid Method page 4-113

The complete protocol used in both the chlorophyll and chemical analysis of the water is described in the Old Woman Creek Standard Operating Procedures Manual (2001).