Tijuana River (TJR) NERR Water Quality Metadata
January to December 2008
Last Revised: March 1, 2022
I. Data Set and Research Descriptors

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2) Entry Verification

Deployment data are uploaded from the YSI data logger to a Personal Computer (IBM compatible). Files are exported from EcoWatch in a comma-delimited format (.CDF) and uploaded to the CDMO where they undergo automated primary QAQC; automated depth/level corrections for changes in barometric pressure (cDepth or cLevel parameters); and become part of the CDMO's online provisional database. All pre- and post-deployment data are removed from the file prior to upload. During primary QAQC, data are flagged if they are missing or out of sensor range. The edited file is then returned to the Reserve for secondary QAQC where it is opened in Microsoft Excel and processed using the CDMO's NERRQAQC Excel macro. The macro inserts station codes, creates metadata worksheets for flagged data and summary statistics, and graphs the data for review. It allows the user to apply QAQC flags and codes to the data, remove any overlapping deployment data, append files, and export the resulting data file for upload to the CDMO. Upload after secondary QAQC results in ingestion into the database as provisional plus data, recalculation of cDepth or cLevel parameters, and

finally tertiary QAQC by the CDMO and assimilation into the CDMO's authoritative online database. Where deployment overlap occurs between files, the data produced by the newly calibrated sonde is generally accepted as being the most accurate. For more information on QAQC flags and codes, see Sections 11 and 12. The person responsible for data management is Holly Bellringer.

3) Research Objectives

The Tijuana River National Estuarine Research Reserve is impacted heavily by periodic raw sewage outflows and urban development. About a quarter of the reserve's 2,531 acres are tidally influenced and few channels are deep enough for datalogger deployment. Two stations were originally set up: a treatment station was set up close to the mouth on the Southern end of the Oneonta Slough, while a control station was set up on the northern end of Oneonta Slough. The treatment station location was chosen because it would be the site most affected by sewage outflow. Deployment at the treatment station, however, was continually halted by both shifting sediment and massive wracks of kelp (*Macrocystis pyrifera*), which would often bury the deployment set-up on incoming tides. After a number of different deployment equipment designs were implemented, with no success, logging at this site was terminated.

Two YSI datalogger stations are installed at the Tijuana River reserve and two datalogger stations are located off the reserve. Station locations are designed to investigate spatial gradients of water quality parameters across the reserve as well as document the water quality changes over time to areas in the reserve which have been restored to increase tidal flushing. The original control station in the northern end of Oneonta Slough is still in place. The second station was located at the inlet to the Model Marsh, a constructed 20-acre restoration site in the southern arm of the estuary. The Model Marsh was opened to tidal flushing in February 2000 and data logging at the station began in October 2000**.** The site was discontinued in January 2008 due to heavy sedimentation. A third datalogger, Boca Rio was established in December 2004 and is located near the mouth of the Tijuana River. This station replaces the River Channel station, which was established in August 2002 to monitor the Tijuana River, the largest source of freshwater to the Reserve. This station was discontinued in November 2004 due to unusually heavy sedimentation from intense rainfall events. The South Bay datalogger was established in January 2008 and is located at the mouth of Otay River which flows into San Diego Bay. The last datalogger is located adjacent to the South Bay datalogger in a salt pond, Pond Eleven. This site was established in July 2008. The South Bay and Pond Eleven sites are not located on the reserve.

4) Research Methods (Dataloggers)

Dataloggers at the Model Marsh, Oneonta Slough, Boca Rio, South Bay, and Pond Eleven stations are deployed using a 4-inch diameter PVC pipe that is strapped vertically to two "rail" style fence posts driven into the sediment. Multiple 1.5 inch holes have been drilled around the bottom of the tube to permit unrestricted water flow to the

sensors. During deployment the datalogger units are then placed into and rest on a bolt fixed across the bottom of the tubes.

The sampling period is between two and four weeks, with measurements taken every 15 minutes. Measurements for specific conductivity, salinity, dissolved oxygen (percent saturation), dissolved oxygen (mg/l), temperature, turbidity, pH and water level are recorded. At the end of each sampling period, the YSI dataloggers are brought back to the laboratory for data downloading, cleaning and recalibration. They are usually redeployed in the field within 24 hours. These procedures are carried out according to the methods described in the YSI Operations Manual (see sections 3 and 7). Calibration standards for specific conductivity are purchased from the Aurical Company, turbidity is purchased from YSI, and pH standards (7 and 10) are purchased from Clarkson Scientific, a local supplier. The QA/QC procedures for the collected data are followed from the CDMO Operations Manual version 6.2.

A Sutron Sat-Link2 transmitter was installed at the Oneonta Slough station on 12/20/2006 and transmits data to the NOAA GOES satellite, NESDIS ID #3B0252F2. The transmissions are scheduled hourly and contain four (4) datasets reflecting fifteen minute data sampling intervals. The telemetry data is "Provisional" data and not the "Authentic" dataset used for long term monitoring and study. This data can be viewed by going to http://cdmo.baruch.sc.edu.

5) Site location and character

General site Characteristics (TRNERR)

a) Tidal exchange (extremes): approx. -2 +7 MLLW,
b) Salinity: 4 ppt (extreme rain events) to 38 ppt (except Pond Eleven and South Bay)
c) Latitude and longitude: 32 deg. 34 min. N, 117 deg. 07 min. W
d) Potential impacts include runoff from the adjacent military airfield and residential area and sewage spills from Mexico into the Tijuana River. Approximately 2/3 of the watershed for the Tijuana River estuary is in Mexico. Vegetation in the area is dominated by common pickleweed (*Salicornia virginica*) and Pacific cordgrass *(Spartina foliosa*).
e) The dominant freshwater source to the estuary is the Tijuana River, which drains a 4,483 sq. km watershed. Stream flows in the river vary considerably from season to season and year to year with no flow during many months with a mean annual discharge of .82 cubic meters per second (cms). Additional freshwater sources are storm drains located mostly in the northern arm of the estuary. The entire estuary is shallow and has a relatively small tidal prism (0.36 Mm^3) so even low freshwater flows result in reduced salinity throughout the reserve. Estimated residence times for freshwater entering the estuary vary from 7 hours to a few days depending on the tide and mouth conditions. Rainfall within the watershed accounts for most of the freshwater entering the reserve with 90% of the mean annual rainfall falling between November and April. Freshwater discharges with untreated sewage occur year round, although these have decreased with the construction of binational water treatment plant.

Specific Site Characteristics: Model Marsh (MM)

a) Orientation of site: The datalogger station is located in the middle of a

natural channel which runs north to south. The channel is approximately 20m north of a newly constructed 20 acre mudflat restoration area in the southern section or the reserve. Latitude is 32deg 32min 52.1sec longitude: 117deg 7min 22.5sec due to heavy sedimentation.
b) The elevation of the channel bottom: -.39 meters NGVD (date of last survey was 2001)
c) Channel width: 5 meters
d) Bottom type: Mostly mud with some sand

Specific Site characteristics: Oneonta Slough (OS)
a) Orientation of site: The datalogger station is located on the upper portion of Oneonta Slough. The channel runs north to south and is located on the northwestern edge of the reserve. Latitude is 32 deg 34 min 04.8 sec N, longitude is 117 deg 07 min 52.3 sec W.
b) The elevation of the channel bottom directly below the datalogger is approx. 0.55 meters NGVD (date of last survey was 2001).
c) Channel width is approx. 20 meters. Datalogger site is located 1km from the river mouth.
d) Bottom type: sand and sediment
e) Area adjacent to west side of channel is developed. There is a 50 meter buffer of natural vegetation between development and the channel. Area adjacent to east side of channel is relatively undisturbed.
f) Direct impacts may be runoff from streets into channel during rain events.

Specific Site characteristics: Boca Rio (BR)
a) Orientation of site: Datalogger station is located approximately 300 meters north of the Tijuana River in the middle of a channel which runs north to south. Latitude is 32 33 34.3 N and Longitude is 117 deg 07 min 43.7 sec W.
b) The elevation of channel bottom: No current survey data available
c) Channel width: Approximately 10 m
d) Bottom type: mostly sand, very little mud

Specific Site Characteristics: South Bay (SB)
a) Orientation of site: The datalogger is located at the mouth of Otay River where it flows into San Diego Bay. Latitude is 32 deg 36 min 0.49 sec N, longitude is 117 deg 06 min 56.49 sec W.
b) Salinity: 2 ppt (extreme rain event) to 40 ppt
c) The elevation of the channel bottom: No current survey data available
d) Channel width: Approximately 15m
e) Tidal Exchange (extremes): approximately -2 to +7 MLLW
e) Bottom type: very fine mud.

Specific Site Characteristics: Pond Eleven (PE)
a) Orientation of site: The datalogger is located on the eastern edge of the pond, approximately 6m from the shoreline at latitude 32 deg 36 min 03.54 N and longitude 117 deg 06 min 58.46 sec W.
b) Salinity: approximately 41 ppt to 50 ppt
c) The elevation of the channel bottom: No current survey data available
d) Tidal Range: approximately 0.5m
e) Bottom type: mostly sand with some mud.

6) Data Collection period

YSI model 6600 EDS dataloggers were used to collect data for the following dates and times.

Model Marsh

Deploy Date	Time	Retrieve Date	Time
12/20/2007	15:00	1/17/2008	15:00

Oneonta Slough

Deploy Date	Time	Retrieve Date	Time
12/20/2007	16:00	1/17/2008	15:45
1/17/2008	16:00	2/6/2008	16:30
2/6/2008	16:45	2/28/2008	11:15
2/28/2008	11:30	3/20/2008	15:45
3/20/2008	16:00	4/18/2008	12:15
4/18/2008	12:30	5/8/2008	10:00
5/8/2008	10:15	6/2/2008	14:30
6/2/2008	14:45	6/26/2008	8:15
6/26/2008	8:45	7/25/2008	7:30
7/25/2008	8:00	8/19/2008	16:00
8/19/2008	16:15	9/16/2008	14:30
9/16/2008	15:00	10/15/2008	14:30
10/15/2008	14:45	11/12/2008	15:00
11/12/2008	15:15	12/11/2008	14:45
12/11/2008	15:00	1/20/2009	11:15

Boca Rio

Deploy Date	Time	Retrieve Date	Time
12/20/2007	14:00	1/17/2008	14:00
1/17/2008	14:15	2/6/2008	16:45
2/6/2008	17:15	2/28/2008	10:45
2/28/2008	11:00	3/20/2008	15:15
3/20/2008	15:45	4/15/2008	13:45
4/15/2008	14:00	5/9/2008	8:15
5/9/2008	8:45	6/3/2008	14:30
6/3/2008	14:45	6/25/2008	7:00
6/25/2008	7:15	7/24/2008	7:00
7/24/2008	7:15	8/19/2008	16:30
8/19/2008	16:45	9/16/2008	15:15
9/16/2008	15:45	10/15/2008	15:15
10/15/2008	15:45	11/13/2008	15:30
11/13/2008	16:00	12/11/2008	14:00
12/11/2008	14:30	1/20/2009	12:15

South Bay

Deploy Date	Time	Retrieve Date	Time
1/2/2008	13:00	1/18/2008	14:00
1/18/2008	14:30	2/6/2008	15:30
2/6/2008	15:45	3/4/2008	14:30
3/4/2008	14:45	3/20/2008	14:30
3/20/2008	14:45	4/15/2008	12:30

4/15/2008	13:00	5/8/2008	9:00
5/8/2008	9:30	6/3/2008	13:15
6/3/2008	13:45	6/25/2008	8:15
6/25/2008	8:45	7/25/2008	13:00
7/25/2008	13:30	8/20/2008	15:45
8/20/2008	16:00	9/15/2008	14:30
9/15/2008	15:00	10/14/2008	14:30
10/14/2008	15:00	11/13/2008	14:15
11/13/2008	14:45	12/11/2008	15:30
12/11/2008	16:00	1/6/2009	12:00

Pond Eleven

Deploy Date	Time	Retrieve Date	Time
7/25/2008	13:15	8/20/2008	16:15
8/20/2008	16:45	9/15/2008	15:00
9/15/2008	15:15	10/14/2008	14:45
10/14/2008	15:00	11/13/2008	14:30
11/13/2008	15:00	12/11/2008	15:45
12/11/2008	16:15	1/6/2009	12:00

7) Distribution

NOAA/ERD retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The PI retains the right to be fully credited for having collected and processed the data. Following academic courtesy standards, the PI and NERR site where the data were collected will be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. Manuscripts resulting from this NOAA/OCRM supported research that are produced for publication in open literature, including refereed scientific journals, will acknowledge that the research was conducted under an award from the Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration. The data set enclosed within this package/transmission is only as good as the quality assurance and quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to the Recipient or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data.

NERR water quality data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see Principal Investigators and Contact Persons), from the Data Manager at the Centralized Data Management Office (please see personnel directory under the general information link on the CDMO home page) and online at the CDMO home page http://cdmo.baruch.sc.edu/. Data are available in text tab-delimited format

8) Associated researchers and projects

The research program at the TRNERR focuses on adaptive approaches to wetlands management, which involves coupling scientific investigation with management action. One focal area of research continues to be adaptive restoration, and the TRNERR has a long history of science-based restoration efforts. These programs incorporate descriptive and experimental approaches to investigate biotic and abiotic responses to marsh restoration, including ways to better achieve desired ecosystem responses. Two SWMP sites, based in South San Diego Bay, are associated with planned restoration of salt ponds in that area. Another active area of research is invasive species ecology and management. Although estuaries are typically invaded by a broad suite of species from many habitat types, current research is focusing on terrestrial and riparian invaders able to cross ecotones and invade salt marsh habitats. Researchers at the TRNERR are investigating mechanisms of invasions, impacts of invaders, and ecosystem recovery after exotic species control.

NERR SWMP water quality and weather data are used in a variety of reserve-based and external research and education programs. Water quality data from the Tijuana River, which rarely experiences mouth closure, provides an interesting contrast to data from other regional systems, which experience frequent closure events. Also, SWMP water quality data are incorporated into a high school curriculum developed at the reserve. Tier 1 nutrient sampling is being conducted at all water quality datalogger stations. NERR SWMP meteorological sampling is being conducted at 1 station which is located near the former Tidal Linkage water quality station. In addition, much of the reserve is used as a test bed for research related to adaptive marsh restoration, with recent attention on the Model Marsh.

II. Physical Structure Descriptors

9) Sensor Specifications

YSI 6600EDS V2-2 datasondes were used at all sites. A rapid pulse DO probe was used from January 2008 to November 2008 for all sondes except certain instances. A single ROX DO probe was used throughout the year until November 2008 when all of the sondes (except Boca Rio) were upgraded to V2-4 and had ROX probes. These are the sites and deployments in which the single ROX probe was used : South Bay 6/25/2008 – 7/25/2008, Pond Eleven 8/20/2008 – 9/15/2008, Pond Eleven 10/14/2008 – 11/13/2008, Boca Rio 12/11/2008 – 1/20/2009.

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

Parameter: Temperature

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

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

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

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

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

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

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature and salinity)
Units: milligrams/Liter (mg/L)

Sensor Type: Optical probe w/ mechanical cleaning
Model#: 6150 ROX
Range: 0 to 50 mg/L
Accuracy: 0-20 mg/L: +/-0.1 mg/l or 1% of the reading, whichever is greater
20 to 50 mg/L: +/- 15% of the reading
Resolution: 0.01 mg/L

Parameter: pH
Units: units
Sensor Type: Glass combination electrode
Model #: 6561 or 6579
Range: 0 to 14 units
Accuracy: +/- 0.2 units
Resolution: 0.01 units

Parameter: Turbidity
Units: nephelometric turbidity units (NTU)
Sensor Type: Optical, 90 ° scatter, with mechanical cleaning
Model #: 6136
Range: 0 to 1000 NTU
Accuracy: +/- 5 % reading or 2 NTU (whichever is greater)
Resolution: 0.1 NTU

Depth Qualifier:

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

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

In 2010, the CDMO began automatically correcting depth/level data for changes in barometric pressure as measured by the Reserve's associated

meteorological station during data ingestion. These corrected depth/level data are reported as cDepth and cLevel, and are assigned QAQC flags and codes based on QAQC protocols. Please see sections 11 and 12 for QAQC flag and code definitions.

10) Coded variable definitions

Sampling Station Name	Sampling Site Code	Station Code
Model Marsh	MM	tjrmmwq
Oneonta Slough	OS	tjroswq
Boca Rio	BR	tjrbrwq
South Bay	SB	tjrsbwq
Pond Eleven	PE	tjrpewq

11) QAQC flag definitions – This section details the automated and secondary QAQC flag definitions. Include the following excerpt**:**

QAQC flags provide documentation of the data and are applied to individual data points by insertion into the parameter's associated flag column (header preceded by an F_). During primary automated QAQC (performed by the CDMO), -5, -4, and -2 flags are applied automatically to indicate data that is missing and above or below sensor range. All remaining data are then flagged 0, passing initial QAQC checks. During secondary and tertiary QAQC 1, -3, and 5 flags may be used to note data as suspect, rejected due to QAQC, or corrected.

-5 Outside High Sensor Range
-4 Outside Low Sensor Range
-3 Data Rejected due to QAQC
-2 Missing Data
-1 Optional SWMP Supported Parameter
0 Data Passed Initial QAQC Checks
1 Suspect Data
2 *Open - reserved for later flag*
3 Calculated data: non-vented depth/level sensor correction for changes in barometric pressure
4 Historical Data: Pre-Auto QAQC
5 Corrected Data

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

QAQC codes are used in conjunction with QAQC flags to provide further documentation of the data and are also applied by insertion into the

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

General Errors

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

Corrected Depth/Level Data Codes

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

Sensor Errors

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

Comments

CAB*	Algal bloom
CAF	Acceptable calibration/accuracy error of sensor
CAP	Depth sensor in water, affected by atmospheric pressure
CBF	Biofouling
CCU	Cause unknown
CDA*	DO hypoxia (<3 mg/L)
CDB*	Disturbed bottom
CDF	Data appear to fit conditions
CFK*	Fish kill
CIP*	Surface ice present at sample station
CLT*	Low tide
CMC*	In field maintenance/cleaning
CMD*	Mud in probe guard
CND	New deployment begins
CRE*	Significant rain event
CSM*	See metadata
CTS	Turbidity spike
CVT*	Possible vandalism/tampering
CWD*	Data collected at wrong depth
CWE*	Significant weather event

13) Post deployment information

NP = no probe installed
NC = no calibration done
ND= no data
numbers in parentheses are used if standard differs from those stated.

Site	Date	SpCond Std(53)	DO % std(100)	pH std (7)	pH std(10)	Turb std (0)
Model Marsh	1/17/2008	53.12	108.60	6.32	9.46	1.70
Oneonta Slough	1/17/2008	51.79	99.50	7.04	9.77	0.30
	2/6/2008	49.13	92.10	7.07	9.80	0.60
	2/28/2008	54.99	67.00	7.03	10.17	-0.40

					-
3/20/2008	52.50	101.50	7.17	10.14	0.20
4/18/2008	52.97	115.90	7.05	10.05	0.00
5/8/2008	53.18	99.70	7.05	10.19	0.20
6/2/2008	52.24	97.70	6.98	9.88	0.80
6/26/2008	53.95	79.90	7.03	9.94	0.30
7/25/2008	54.11	110.40	6.91	9.86	0.20
8/19/2008	52.83	99.50	7.05	9.99	1.00
9/16/2008	52.42	97.70	7.08	9.87	0.80
10/15/2008	52.91	45.80	7.01	10.06	1.00
11/12/2008	53.31	72.20	7.08	10.02	0.50
12/11/2008	51.70	100.30	6.84	9.68	0.80
1/20/2009	53.59	99.80	7.07	9.92	3.90
Boca Rio					
1/17/2008	52.28	128.70	7.02	10.16	1.30
2/6/2008	49.55	95.10	7.09	9.80	0.90
					-
2/28/2008	55.62	95.70	7.01	10.15	0.50
					-
3/20/2008	52.80	93.70	7.10	9.96	0.40
4/15/2008	50.53	99.60	7.04	10.12	0.20
					-
5/9/2008	53.38	19.60	6.99	10.06	0.80
6/3/2008	52.57	99.20	7.02	9.96	0.20
6/25/2008	53.64	122.50	6.86	9.82	0.40
7/24/2008	49.72	ND	7.03	9.92	-0.20

						0
	8/19/2008	52.65	68.30	6.98	9.84	0.50
	9/16/2008	52.07	96.50	6.86	9.64	1.70
	10/15/2008	53.13	92.10	NP	NP	1.60
	11/13/2008	50.65	60.00	NP	NP	-0.20
	12/11/2008	53.66	99.50	6.93	9.84	0.40
	1/20/2009	52.33	97.00	7.06	9.78	8.30
South Bay	1/18/2008	51.83	99.70	7.01	10.22	0.90
	2/6/2008	48.66	113.20	7.05	9.76	0.50
	3/4/2008	54.30	50.50	7.16	10.08	1.10
	3/20/2008	52.80	96.50	6.93	9.89	0.60
	4/15/2008	52.43	40.50	7.07	9.68	2.40
	5/8/2008	52.76	ND	7.06	10.17	1.10
	6/3/2008	51.83	100.50	7.06	10.01	16.00
	6/25/2008	53.07	77.00	7.15	9.94	5.60
	7/25/2008	52.35	97.80	7.08	10.04	0.50
	8/20/2008	51.58	96.80	7.06	10.04	0.70
	9/15/2008	52.30	79.40	6.81	9.54	1.00
	10/14/2008	53.42	76.00	NP	NP	0.80
	11/13/2008	51.91	104.10	7.03	10.17	-0.10
	12/11/2008	52.41	100.10	6.98	10.07	-0.50
	1/6/2009	52.83	100.40	7.11	9.99	-4.00

Pond Eleven	8/20/2008	51.96	66.50	7.01	9.91	0.60
	9/15/2008	52.33	96.70	7.18	10.04	0.70
	10/14/2008	53.16	49.10	7.00	10.16	0.60
	11/13/2008	52.34	99.60	7.08	10.18	2.70
	12/11/2008	51.59	99.50	7.02	10.11	-0.90
	1/6/2009	53.12	100.40	7.02	9.88	-2.40

14) Other Remarks

Data are missing due to equipment or associated specific probes not being deployed, equipment failure, time of maintenance or calibration of equipment, or repair/replacement of a sampling station platform. Any NANs in the dataset stand for "not a number" and are the result of low power, disconnected wires, or out of range readings. If additional information on missing data is needed, contact the Research Coordinator at the reserve submitting the data.

During the 2008 field season the field readings included in the deployment logs were actually from the file itself. They cannot be used for comparisons.

Rain events during the month of December caused impacts to the TJR NERR visible in multiple parameters at all of the sites from 12/15 to the end of the year.

Depth Corrections:
In 2008 depth was originally calibrated using an offset of 0 instead of an offset based on the barometric pressure for the day. Because the barometric pressure was recorded for each deployment the reserve was able to correct depth using this information. All depth data at all sites was corrected in 2008.

MM
01/01/2008– 1/17/2008 - Conductivity, Salinity, pH levels, %DO saturation, DO mg/L, Depth, and high Turbidity exceeding two or three standard deviations may have been influenced by a rain event occurring on 1/5/2008, the sonde holder was filled with 50cm sediment, and the field wiper fell off.

Site was discontinued after this deployment.

OS
1/1/2008 – 1/17/2008 – an increase in river flow and rain event (1/6/2008), may have caused increased turbidity values. An abundance of *Macrocystis* sp. was around the holder when sonde

was retrieved which could have caused an increase in turbidity. There was river flow starting from 1/1/2008 during this time which could cause an increase in turbidity.

2/3/2008 04:30:00 – 2/6/2008 16:30:00 – Stopped logging due to insufficient memory on logger.

4/16/2008 13:45:00 – 14:30:00 – Instrument was out of water while trying to swap for a new logger. Reject data during this time.

11/12/2008 – 12/11/2008 – beginning at this deployment started using a new calibration and field log that included chlorophyll so there are two calibration and field logs for the year.

11/26/2008 – 12/31/2008 – significant rain events (11/26/2008 – 11/28/2008, 12/15/2008 – 12/31/2008) and increased river flow occurred during this time which could have caused increased turbidity readings.

BR

a) 01/01/2008 00:00 - 01/17/2008 14:00 - Higher than average turbidity values. Field wiper fell off while deployed, there were turbidity spikes and a rain event occurred on 1/6/2008. There was river flow starting from 1/1/2008 during this time which could cause an increase in turbidity.

02/6/2008 17:00:00 – Missing data from 1700 due to programming error.

06/03/2008 14:45:00 – 06/08/2008 10:45:00 - Field wiper fell off during deployment, turbidity spikes were observed during the beginning of deployment. Turbidity data are marked suspect.

09/16/2008 15:30:00 – 11/13/2008 15:45:00 – No pH deployed during this time.

11/12/2008 – 12/11/2008 – beginning at this deployment started using a new calibration and field log that included chlorophyll so there are two calibration and field logs for the year.

11/26/2008 – 12/31/2008 – significant rain events (11/26/2008 – 11/28/2008, 12/15/2008 – 12/31/2008) and increased river flow occurred during this time which could have caused increased turbidity readings and affected DO. It should also be noted 0.5cm of sediment was observed in the sonde guard which could have increased the turbidity and decreased the oxygen levels.

SB

04/05/2008 08:15:00, 08:30:00:00, 23:00:00 – Battery power failure occurred and did not record during this time.

07/25/2008 13:15:00 – 08/5/2008 08:20:00 – Sonde was outside of holder.

11/12/2008 – 12/11/2008 – beginning at this deployment started using a new calibration and field log that included chlorophyll so there are two calibration and field logs for the year.

b) Tijuana River Discharges Near the International Border - Discharge in cubic meters per second (m^3/s)

Date	m^3/s

1/2/2008	0.01
1/3/2008	0.03
1/4/2008	0.06
1/5/2008	5.05
1/6/2008	6.17
1/7/2008	10.30
1/8/2008	3.58
1/9/2008	1.25
1/10/2008	0.95
1/11/2008	0.81
1/12/2008	0.79
1/13/2008	0.75
1/14/2008	0.67
1/15/2008	0.62
1/16/2008	0.56
1/17/2008	0.60
1/18/2008	0.49
1/19/2008	0.06
1/20/2008	0.02
1/21/2008	0.01
1/22/2008	0.16
1/23/2008	0.11
1/24/2008	1.90
1/25/2008	0.64
1/26/2008	1.00
1/27/2008	7.62
1/28/2008	4.79
1/29/2008	1.84
1/30/2008	1.22
1/31/2008	1.05
2/1/2008	0.97
2/2/2008	0.89
2/3/2008	4.41
2/4/2008	5.57
2/5/2008	2.48
2/6/2008	1.36
2/7/2008	1.13
2/8/2008	1.06
2/9/2008	0.97
2/10/2008	0.96
2/11/2008	0.82
2/12/2008	0.79
2/13/2008	0.76
2/14/2008	2.94
2/15/2008	1.96
2/16/2008	1.13
2/17/2008	0.89

2/18/2008	0.85
2/19/2008	0.77
2/20/2008	0.83
2/21/2008	0.77
2/22/2008	1.03
2/23/2008	2.60
2/24/2008	1.46
2/25/2008	1.47
2/26/2008	1.27
2/27/2008	1.08
2/28/2008	0.98
2/29/2008	0.86
3/1/2008	0.81
3/2/2008	0.76
3/3/2008	0.68
3/4/2008	0.67
3/5/2008	0.55
3/6/2008	0.24
3/7/2008	0.20
3/8/2008	0.16
3/9/2008	0.03
3/16/2008	3.33
3/17/2008	0.74
3/18/2008	0.62
3/19/2008	0.23
3/20/2008	0.03
3/22/2008	0.01
5/23/2008	0.12
5/24/2008	0.22
7/13/2008	0.01
7/14/2008	0.11
11/9/2008	0.03
11/10/2008	0.04
11/26/2008	13.20
11/27/2008	5.03
11/28/2008	1.20
11/29/2008	0.95
11/30/2008	0.87
12/1/2008	1.91
12/2/2008	1.42
12/3/2008	2.87
12/4/2008	0.22
12/5/2008	0.29
12/6/2008	0.15
12/7/2008	0.20
12/8/2008	0.09
12/10/2008	0.03

12/11/2008	0.03
12/13/2008	0.16
12/14/2008	0.68
12/15/2008	30.40
12/16/2008	6.06
12/17/2008	133.00
12/18/2008	9.45
12/19/2008	2.68
12/20/2008	1.27
12/21/2008	1.09
12/22/2008	3.48
12/23/2008	2.45
12/24/2008	1.25
12/25/2008	1.90
12/26/2008	1.40
12/27/2008	1.04
12/28/2008	0.89
12/29/2008	1.19
12/30/2008	1.10
12/31/2008	0.94