

SDRWQCB

TIJUANA RIVER ESTUARY 911.11

270

It is recommended that the estuary also be listed for low dissolved oxygen.

Watershed Characteristics

The Tijuana River Watershed comprises a region of approximately 1,750 square miles that lies astride the California-Baja California border. Approximately one third of the watershed is in the United States and two thirds is in Mexico. The watershed contains the Tijuana River Estuary, a protected area containing one of the largest remaining functioning wetlands. The estuary encompasses an area of about 150 acres. Beneficial uses of the estuary include preservation of biological habitats of special significance, contact and non-contact water recreation, and commercial and sport fishing. The estuary supports marine, estuarine and wildlife habitats. The estuary also supports habitats necessary for the survival and maintenance of rare, threatened and endangered species. In addition, it supports habitats necessary for migration of aquatic organisms and habitats suitable for the collection of filter-feeding shellfish. The estuary is designated with the following beneficial uses: REC1, REC2, COMM, BIOL, EST, WILD, RARE, MAR, MIGR and SHELL.¹

Water Quality Objectives not Obtained

Parameters that exceeded the water quality objectives include dissolved oxygen and turbidity.

Evidence of Impairment

Attached is a summary of the DO and turbidity violations in the estuary. DO and turbidity measurements were collected every 30 minutes for the entire year of 1997 and 1998. Due to the large amount of data collected, only the months of January through May of 1998 were summarized. Data for the remaining of 1998 and 1997 were reviewed and followed similar trends.

DO concentrations violate the water quality objective almost every day of the month. The Basin Plan Standard for DO is 5 mg/L¹. DO concentrations generally dropped below the water quality standard for a portion of the day (typically between 10pm and 8am). Although it is typical for DO concentrations to drop during this time period, the DO levels in the estuary dropped to low concentrations (generally below 3mg/l). These low DO conditions are expected to impair the COMM, BIOL, EST, WILD, RARE, MAR and MIGR beneficial uses.

Average turbidity concentrations exceeded the water quality objective only during the rainy season.

Extent of Impairment

It is likely that low dissolved oxygen concentrations and high turbidity impact the entire estuary (150 acres).

Potential Sources

The most likely sources of high turbidity and low dissolved oxygen concentrations appear to be a result of renegade sewage flows and urban runoff from the City of Tijuana.

TMDL Priority

The Tijuana River Estuary is currently listed as a 303(d) impaired waterbody for eutrophic conditions, high coliform counts, lead, nickel, pesticides, thallium and trash. In addition to these parameters, it is recommended that the estuary also be listed for low dissolved oxygen (DO). As stated above, DO concentrations were below water quality standards almost everyday.

References

¹ Water Quality Control Plan for the San Diego Basin (9), 1994

National Estuarine Research Reserve, 2001. NOAA Data Logger Program: 1997-1998.
Electronic data submission. Tijuana Visitors Center, Chula Vista, California.

Volunteer Collected Estuary Water Quality Data (bacteria) 2000-2001. Electronic data
submission. Tijuana Visitors Center, Chula Vista, California.

**Tijuana Estuary Summary
(01/98 thru 05/98)**

Date	DO (mg/L)	Water Quality Standard Parameter	Value	Units
1/3/98	04.9	DO	5	mg/l
1/4/98	4.4	Turbidity	20	NTU
1/10/98	04.3			
1/17/98	04.8			
1/31/98	04.6			
2/3/98	04.7			
2/4/98	02.1			
2/7/98	04.4			
2/8/98	01.4			
2/9/98	00.3			
2/10/98	00.3			
2/11/98	04.1			
2/14/98	01.5			
2/15/98	00.2			
2/23/98	03.2			
2/24/98	01.7			
2/27/98	04.4			
2/28/98	04.2			
03/01/98	04.0			
03/02/98	03.7			
03/03/98	02.9			
03/04/98	02.5			
03/05/98	01.9			
03/06/98	01.8			
03/07/98	03.3			
03/08/98	01.7			
03/09/98	01.1			
03/10/98	00.2			
03/11/98	00.8			
03/14/98	03.6			
03/15/98	04.3			
03/16/98	02.8			
03/17/98	03.1			
03/18/98	02.8			
03/19/98	01.5			
03/20/98	02.7			
03/22/98	03.5			
03/25/98	04.4			
03/31/98	03.4			
04/01/98	03.4			
04/02/98	03.1			
04/03/98	03.6			
04/04/98	04.0			
04/05/98	03.3			

Date	Mean DO (mg/L)
Jun-98	3.8
Jul-98	2.7
Aug-98	4.1
Sep-98	3.8
Nov-98	4.7
May-97	4.5
Jul-97	4.4
Aug-97	2.6

(For 1997, no data for DO was available in September;
for Oct only one week of DO data was available)

Date	Mean Turbidity (NTU)
Oct-98	23
Feb-98	130
Mar-98	28.7
Apr-98	45.4
Dec-97	32

(For 1997 no turbidity data was available for Jan-April and Sept;
for July and Oct, data was only available for one week)

Date	DO (mg/L)	Water Quality Standard Parameter	Value	Units
04/06/98	03.1	DO		5 mg/l
04/07/98	02.7			
04/08/98	00.5			
04/09/98	00.4			
04/10/98	00.4			
04/11/98	00.4			
04/12/98	00.4			
04/13/98	00.3			
04/14/98	00.3			
04/17/98	03.1			
04/19/98	02.6			
04/20/98	03.0			
04/21/98	02.8			
04/22/98	03.7			
04/23/98	02.3			
04/24/98	01.0			
04/25/98	02.3			
04/26/98	01.7			
04/27/98	01.4			
04/28/98	01.9			
05/01/98	03.0			
05/02/98	04.4			
05/03/98	02.8			
05/04/98	01.9			
05/05/98	02.6			
05/06/98	01.0			
05/07/98	00.8			
05/08/98	01.6			
05/09/98	00.8			
05/10/98	00.8			
05/11/98	00.8			
05/12/98	00.8			
05/13/98	01.0			
05/14/98	00.9			
05/15/98	01.1			
05/16/98	01.0			
05/17/98	00.9			
05/18/98	00.7			
05/21/98	01.2			
05/22/98	00.8			
05/23/98	01.6			
05/24/98	00.9			
05/25/98	00.9			
05/26/98	00.9			
05/27/98	00.9			
05/28/98	00.8			
05/29/98	00.9			
05/30/98	01.0			
05/31/98	01.1			

Tijuana River Estuary

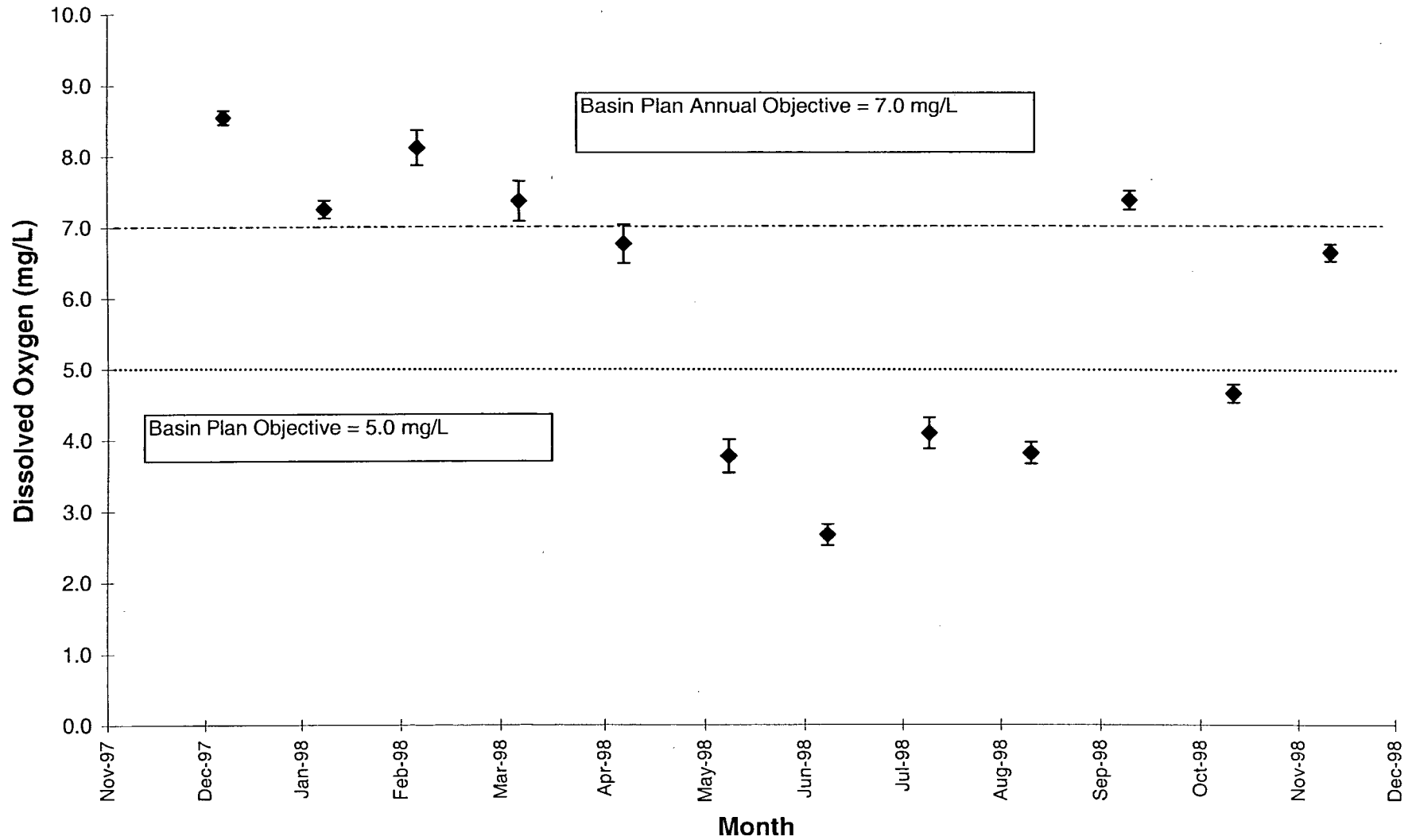
See K. Dorsey

Tijuana National Estuarine Research Reserve Dissolved Oxygen Data Summary
 Dissolved Oxygen

Month	Average (mg/L)	Median (mg/L)	Std Dev	count	95% CI	95% CI Range	Avg + 95% CI	Avg - 95% CI
Jan-98	8.5	8.3	1.8	1340	0.098	8.48 to 8.64	8.45	8.64
Feb-98	7.3	7.4	2.2	1150	0.125	7.13 to 7.38	7.13	7.38
Mar-98	8.1	7.0	4.5	1246	0.247	7.87 to 8.37	7.87	8.37
Apr-98	7.4	6.1	5.0	1219	0.282	7.09 to 7.65	7.09	7.65
May-98	6.8	6.0	5.2	1412	0.274	6.49 to 7.04	6.49	7.04
Jun-98	3.8	2.6	3.9	1074	0.232	3.54 to 4.00	3.54	4.00
Jul-98	2.7	1.2	2.6	1146	0.150	2.51 to 2.81	2.51	2.81
Aug-98	4.1	3.3	2.8	645	0.219	3.87 to 4.31	3.87	4.31
Sep-98	3.8	2.9	2.8	1286	0.152	3.66 to 3.97	3.66	3.97
Oct-98	7.4	7.3	2.5	1386	0.133	7.24 to 7.51	7.24	7.51
Nov-98	4.7	4.6	2.4	1360	0.129	4.53 to 4.79	4.53	4.79
Dec-98	6.6	7.2	2.3	1435	0.119	6.52 to 6.76	6.52	6.76

TJ
 River
 estuary

Tijuana Estuary Dissolved Oxygen 1998 Monthly Averages w/95% Confidence Intervals



last updated 1/30/02

S:\WQS\303dlist\Fact Sheets-2002 listing\911\TJNERR DO\chart