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Long Term Effectiveness Assessment MS4 Tables

Tijuana River Watershed Management Area MS4 Random Dry Weather 2009-2010

Analyte	Units	Water Quality Benchmarks	Benchmark References	MS4D-TJR-07 E-1B 6/1/2010
Physical Chemistry				
Conductivity	µS/cm	NA	NA	1,054
pH	pH Units	6.5-9.0	1. Basin Plan	8.07
Water Temperature	Celcius	NA	NA	20.9
General Chemistry				
Nitrate as N	mg/L	10	1. Basin Plan	4.27
Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	4.28
Nitrite as N	mg/L	1	1. Basin Plan	<0.007
Phosphorus, Total*	mg/L	0.1	1. Basin Plan	0.43
Total Kjeldahl Nitrogen	mg/L	NA	NA	1.7
Total Nitrogen*	mg/L	1	1. Basin Plan	6
Total Dissolved Solids (calculated)[1]	mg/L	2100 (a)	1. Basin Plan	738
Total Suspended Solids	mg/L	58	14. NSQD	<1
Bacteriological				
Enterococcus	MPN/100 mL	151	1. Basin Plan	170
Fecal Coliforms	MPN/100 mL	4,000	1. Basin Plan	<20
Total Coliforms	MPN/100 mL	NA	1. Basin Plan	800

<-Results less than the method detection limit.
NA indicate no criteria or published value was available or applicable to the matrix or program.
*Total Nitrogen and Total Phosphorus are narrative standards in the Basin Plan based on biostimulatory responses to nutrients.
[1] Total dissolved solids was calculated by multiplying the conductivity by a factor of 0.7 (TDS=Conductivity x 0.7) per SM1030F.
(a) Water Quality Benchmark for total dissolved solids is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).

Sources
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

Tijuana River Watershed Management Area MS4 Targeted Dry Weather (2009-2010)

Analyte	Unit	WQB CMC	WQB CCC	911.1	911.1	911.1	911.12	911.12	911.3
				E1B	DW227	DW322	DW304	DW304	TIJ02
				6/3/2010	7/13/2010	7/13/2010	6/14/2010	7/13/2010	6/22/2010
Conductivity	µS/cm	NA	NA	1,200	NS	NS	NS	NS	NS
pH	pH Units	NA	NA	8.6	NS	NS	NS	NS	NS
Temperature	Celcius	NA	NA	19.2	NS	NS	NS	NS	NS
Ammonia as N	mg/L	NA	NA	0.65	NS	NS	NS	NS	<0.1
Nitrate as N	mg/L	10	NA	1.26	NS	NS	NS	NS	0.75
Nitrite as N	mg/L	1	NA	NS	NS	NS	NS	NS	<0.05
Total Kjeldahl Nitrogen	mg/L	NA	NA	NS	NS	NS	NS	NS	<0.5
Total Nitrogen (calculated)	mg/L	1.0	NA	NS	<0.3	5.6	2.1	NS	0.8
Orthophosphate as P	mg/L	NA	NA	0.41	NS	NS	NS	NS	0.16
Total Phosphorus	mg/L	0.10	NA	NS	0.14	0.80	0.52	NS	0.38
Total Suspended Solids	mg/L	58	NA	NS	<10	13	30	NS	<20
Total Dissolved Solids	mg/L	500 (b)	NA	840	NS	NS	NS	NS	NS
Turbidity	NTU	20	NA	5.66	NS	NS	NS	NS	NS
MBAS	mg/L	0.5	NA	1.75	NS	NS	NS	NS	NS
Dissolved Oxygen	mg/L	5	NA	NS	4.80	<1	2.00	NS	NS
Oil & Grease	mg/L	10	NA	<5	NS	NS	NS	NS	NS
Enterococcus	MPN/100 mL	151	NA	1,300	80	18,000	320	NS	230
Fecal Coliform	MPN/100 mL	400	NA	5,000	78	3,300	68	NS	170
Total Coliform	MPN/100 mL	NA	NA	170,000	4,900	130,000	2,300	NS	1,700
Chlorpyrifos	µg/L	0.02	0.014	<0.05	<0.97	<0.96	<1	NS	NS
Diazinon	µg/L	0.08	0.05	<0.05	<0.97	<0.96	<1	NS	NS
Malathion	µg/L	0.43	NA	<0.05	NS	NS	NS	NS	NS
Total Hardness	mg $CaCO_3$/L	NA	NA	307.00	290.00	340.00	290.00	NS	NS
Cadmium, Dissolved	µg/L	(e)	NA	<10	<5	<5	<5	NS	NS
Copper, Dissolved	µg/L	(e)	NA	61.00	<10	<10	<10	NS	NS
Lead, Dissolved	µg/L	(e)	NA	<50	<5	<5	<5	NS	NS
Nickel, Dissolved	mg/L	(e)	NA	NS	<0.01	<0.01	NS	<0.01	NS
Thallium, Dissolved	µg/L	(e)	NA	NS	<10	<10	<10	NS	NS
Zinc, Dissolved	µg/L	(e)	NA	147.00	<20	36.00	42.00	NS	NS

<-Results less than the reporting limit.
NA indicates no criteria or published value was available or applicable to the matrix or program.
NS indicates no sample taken.
(b) Water Quality Benchmark for Total Dissolved Solids is based on then San Diego Regional Water Quality Control Plan by watershed for the San Diego region (Basin Plan), 1994 (w/ amendments affective prior to April 25, 2007).
(e) Water Quality Benchmark for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, Mat 18, 2000. The Criteria Maximum Concentration (CMC) was used.

Tijuana River Watershed Management Area MS4 Outfall Random Dry Weather 2008-2009

Group	Analytes	Units	Benchmarks	Source	MS4D-TJR-04	MS4D-TJR-08	MS4D-TJR-09
					80028762	E-1B	80028768
					6/10/2009	6/10/2009	6/10/2009
Flow	Flow	GPM	NA	NA	Ponded	Ponded	Ponded
Physical Chemistry	Conductivity	µS/cm	NA	NA	1,225	1,999	922
	pH	pH units	6.5-9.0	1. Basin Plan	8.74	7.26	9.34
	Temperature	°C	NA	NA	20.9	22.3	19.6
General Chemistry	Nitrate as N	mg/L	10	1. Basin Plan	<0.009	0.140	0.110
	Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	<0.009	0.170	0.130
	Nitrite as N	mg/L	1	1. Basin Plan	<0.007	<0.007	<0.007
	Phosphorus, Total*	mg/L	0.1	1. Basin Plan	0.09	0.60	0.52
	Total Kjeldahl Nitrogen	mg/L	NA	NA	1.8	1.8	3.0
	Total Nitrogen*	mg/L	1	1. Basin Plan	1.8	2.0	3.1
	Total Suspended Solids	mg/L	58	14. NSQD	<1.0	103	183
Bacteria	Enterococci	MPN/100 mL	151	1. Basin Plan	1,400	8,000	260
	Fecal Coliform	MPN/100 mL	400	1. Basin Plan	80	130,000	80
	Total Coliform	MPN/100 mL	NA	1. Basin Plan	300	1,600,000E	3,500

NA indicate no criteria or published value was available or applicable to the matrix or program.
< = Results less than the method detection limit
E = Result is an estimate
*Total N and Total P are narrative standards in the Basin Plan based on biostimulatory responses to nutrients

Source
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

Tijuana River Watershed Management Area Long Term Effectiveness Assessment Targeted MS4 Data Table (2008-2009)

Analyte	Unit	Benchmark	Source	CT-TIJ02	SD-DW227	SD-DW227	SD-DW303	SD-DW304	SD-DW322
				05/21/2009	06/15/2009	06/29/2009	06/09/2009	06/09/2009	07/06/2009
Flow									
Flow	GPM	NA	NA	405.27	Ponded	Ponded	Ponded	Ponded	Ponded
General Cheimistry									
pH	pH Units	6.5-9.0	1. Basin Plan	NS	NS	NS	NS	NS	7.34
Wet Chemistry									
Ammonia	mg/L	NA	NA	0.06	NS	NS	NS	NS	NS
Dissolved Oxygen	mg/L	NA	NA	NS	1.2	NS	8.3	4.7	1.1
Nitrate as N	mg/L	10	1. Basin Plan	0.52	NS	NS	NS	NS	NS
Nitrite as N	mg/L	NA	NA	< 0.01	NS	NS	NS	NS	NS
Organic Nitrogen	mg/L	NA	NA	0.44	NS	NS	NS	NS	NS
Total Kjeldahl Nitrogen	mg/L	NA	NA	0.5	NS	NS	NS	NS	NS
Total Nitrogen	mg/L	1	1. Basin Plan	1.03	2.93	NS	6.98	2.565	3.73
Orthophosphate as P	mg/L	NA	NA	0.01	NS	NS	NS	NS	NS
Total Phosphorus	mg/L	0.1	1. Basin Plan	0.01	0.34	NS	0.5	0.18	0.8
Total Suspended Solids	mg/L	58	NA	1	13	NS	42	< 10**	24
Total Hardness	mg/L	NA	NA	NS	320	270	330	290	380
Dissolved Metals									
Cadmium, Dissolved	mg/L	(a)	40 CFR 131.38	NS	< 0.005	NS	< 0.005	< 0.005	< 0.005
Copper, Dissolved	mg/L	(a)	40 CFR 131.38	NS	< 0.01	NS	< 0.01	< 0.01	< 0.01
Lead, Dissolved	mg/L	(a)	40 CFR 131.38	NS	< 0.005	NS	< 0.005	< 0.005	< 0.005
Nickel, Dissolved	mg/L	(a)	40 CFR 131.38	NS	NS	< 0.01	< 0.01	< 0.01	< 0.01
Thallium, Dissolved	mg/L	NA	NA	NS	< 0.01	NS	< 0.01	< 0.01	0.015
Zinc, Dissolved	mg/L	(a)	40 CFR 131.38	NS	< 0.02	NS	< 0.02	0.069	< 0.02
Pesticides									
Chlorpyrifos	µg/L	0.02	CA Dept of Fish Game 1998	NS	< 0.962**	NS	< 0.971**	< 0.98**	< 0.962**
Diazinon	µg/L	0.08	CA Dept of Fish Game 2000	NS	< 0.962**	NS	< 0.971**	< 0.98**	< 0.962**
Bacteria									
Enterococci	MPN/100 mL	151	1. Basin Plan	130	80 E	520	9,000	1,200	84,000
Fecal Coliform	MPN/100 mL	400	1. Basin Plan REC-1/REC-2	< 20	3,300	490	460	78	3,100
Total Coliform	MPN/100 mL	NA	NA	40	79,000	3,300	79,000	23,000	240,000
CMC Benchmarks for Dissolved Metals									
Cadmium, Dissolved	mg/L			NS	0.015	NS	0.016	0.014	0.018
Copper, Dissolved	mg/L			NS	0.040	NS	0.041	0.037	0.047
Lead, Dissolved	mg/L			NS	0.223	NS	0.230	0.201	0.266
Nickel, Dissolved	mg/L			NS	NS	1.085	1.286	1.153	1.449
Zinc, Dissolved	mg/L			NS	0.314	NS	0.322	0.289	0.363

E = Estimated

NA indicate no criteria or published value was available or applicable to the matrix or program.

NS=Not Sampled

< = results less than the reporting limit.

** Benchmark was below detection limit, and so detection level exceedance cannot be determined.

a) Water Quality Benchmark for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000. The Criteria Maximum Concentration (CMC) was used.

Sources

Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

Long Term Effectiveness Assessment Targeted Dry MS4 Table (2007-2008)

Tijuana River (TIJ02)			
Group	**Analyte**	**Units**	**7/30/2008**
General Chemistry	Total Nitrogen-N	mg/L	1.36
	Total Phosphate-P	mg/L	0.013
	Total Suspended Solids	mg/L	0.5
	Phosphorus, Total	mg/L	0.026
	Turbidity	NTU	NS
Bacteria	Enterococci	MPN/100mL	500
	Fecal Coliform	MPN/100mL	20
	Total Coliform	MPN/100mL	300

NS=Not Sampled

Long Term Effectiveness Assessment MS4 Tables

Tijuana River Watershed Management Area MS4 Random Wet Weather 2009-2010

Analyte	Units	Water Quality Benchmarks	Benchmark References	MS4W-TJR-05	MS4W-TJR-05	MS4W-TJR-07	MS4W-TJR-07	MS4W-TJR-08	MS4W-TJR-08
				80028768	80028768	E-1B-02	E-1B-02	15836	15836
				12/7/2009	2/27/2010	2/5/2010	2/27/2010	1/18/2010	3/7/2010
Physical Chemistry									
Conductivity	µS/cm	NA	NA	151	183.8	180.2	122.9	50.3	237
pH	pH Units	6.5-9.0	1. Basin Plan	8.75	8.46	7.56	7.88	7.83	7.03
Water Temperature	Celcius	NA	NA	12.7	18.2	15.8	18.7	14.5	13.9
General Chemistry									
Nitrate as N	mg/L	10	1. Basin Plan	0.7	0.5	0.63	0.43	0.19	0.19
Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	0.84	0.56	0.68	0.46	0.24	0.25
Nitrite as N	mg/L	1	1. Basin Plan	0.13	0.05	0.05	<0.007	<0.007	0.06
Phosphorus, Total	mg/L	2	1. Basin Plan	0.97	0.99	0.28	0.22	0.14	0.08
Total Kjeldahl Nitrogen	mg/L	NA	NA	1.3	1.5	1.6	0.6	<0.3	0.8
Total Nitrogen	mg/L	NA	NA	2.1	2.1	2.3	1.1	<0.5	1.1
Total Suspended Solids	mg/L	100	4. MSGP 2000	1,950	764	27	23	22	<1
Total Dissolved Solids (calculated)[1]	mg/L	2,100*	1. Basin Plan	106	129	126	86	35	166
Bacterialogical									
Enterococcus	MPN/100 mL	NA	NA	50,000	50,000	24,000	50,000	1,300	5,000
Fecal Coliforms	MPN/100 mL	400-4,000	1. Basin Plan	50,000	5,000	8,000	2,300	70	20
Total Coliforms	MPN/100 mL	NA	NA	140,000	130,000	60,000	80,000	3,000	2,800

<-Results less than the method detection limit
NA indicate no criteria or published value was available or applicable to the matrix or program.
*applies to hydrologic areas 911.12
[1] Total dissolved solids was calculated by multiplying the conductivity by a factor of 0.7 (TDS=Conductivity x 0.7) per SM1030F.

Sources
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations

Tijuana River Watershed Management Area MS4 Outfall Random Wet Weather 2008-2009

Group	Analyte	Units	Benchmarks	Source	MS4W-TJR-01	MS4W-TJR-02	MS4W-TJR-03	MS4W-TJR-08
					80028745	15836	80028739	E-1B
					12/15/2008	12/15/2008	2/5/2009	2/13/2009
Physical Chemistry	Conductivity	µS/cm	NA	NA	103.0	162.3	318.0	201.0
	pH	pH units	6.5-9.0	1. Basin Plan	6.07	6.77	7.55	7.37
	Temperature	°C	NA	NA	14.4	13.7	14.3	14.0
General Chemistry	Nitrate as N	mg/L	10	1. Basin Plan	-	-	1.00	0.69
	Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	0.48	1.01	1.20	0.72
	Nitrite as N	mg/L	1	1. Basin Plan	-	-	0.190	<0.007
	Phosphorus, Total	mg/L	0.1	1. Basin Plan	0.7	0.36	0.39	0.49
	Total Kjeldahl Nitrogen	mg/L	NA	NA	1.8	1.6	4.4	3.4
	Total Nitrogen	mg/L	1	1. Basin Plan	2.3	2.6	5.6	4.1
	Total Suspended Solids	mg/L	100	4. MSGP 2000	<1	<1	122	33
Bacteria	Enterococci	MPN/100mL	NA	NA	110,000	50,000	5,000	8,000
	Fecal Coliform	MPN/100mL	400	1. Basin Plan	8,000	130	300	500
	Total Coliform	MPN/100mL	NA	NA	300,000	140,000	5,000	17,000

NA indicate no criteria or published value was available or applicable to the matrix or program.
< = Results less than the method detection limit

Sources
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

Tijuana River WMA 2010-2011 MS4 Random Dry Weather

Analyte	Units	Water Quality Benchmarks	Benchmark References	MS4D-TJR-13 6176 5/16/2011
Physical Chemistry				
Conductivity	µmhos/cm	NA	NA	381
pH	pH units	6.5-9.0	1. Basin Plan	7.11
Temperature	Celsius	NA	NA	11.2
General Chemistry				
Nitrate as N	mg/L	10	1. Basin Plan	<0.05
Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	<0.05
Nitrite as N	mg/L	1	1. Basin Plan	<0.05
Total Kjeldahl Nitrogen	mg/L	NA	NA	2.4
Total Nitrogen*	mg/L	1	1. Basin Plan	**2.4**
Total Phosphorus*	mg/L	0.1	4. MSGP 2000	<0.05
Total Dissolved Solids (calculated)[1]	mg/L	500 (a)	1. Basin Plan	267
Total Suspended Solids	mg/L	58	4. MSGP 2000	<20
Bacteriological				
Enterococcus	MPN/100 mL	151	NA	**300**
Fecal Coliform	MPN/100 mL	400	1. Basin Plan (REC1)	40
Total Coliform	MPN/100 mL	NA	NA	800

< - results are less than the reporting limit.

*Total Nitrogen and Total Phosphorus are narrative standards in the Basin Plan based on biostimulatory response to nutrients.

[1]Total dissolved solids was calculated by multiplying the conductivity by a factor of 0.4 (TDS=Conductivity x 0.7) per SM1030F.

(a) Water Quality Benchmark for total dissolved solids is based on the San digeo Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with ammendments effective prior to

NA - No criteria or published value was available or applicable to the matrix or program.

Sources

Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations

Tijuana River WMA 2010-2011 MS4 Targeted Dry Weather

Analyte	Units	WQB CMC	WQB CCC	911.11 E-1B 8/15/2011	911.3 TIJ02 7/12/2011
Electrical Conductivity	µS/cm	NA	NA	12,030	NS
pH	pH units	NA	NA	8.06	NS
Water Temperature	Celsius	NA	NA	21.7	NS
Ammonia as N	mg/L	(a)	(a)	0.782	0.1
Nitrate as N	mg/L	10	NA	1.319	5.46
Nitrite as N	mg/L	1	NA	NS	0.009E
Total Kjeldahl Nitrogen	mg/L	NA	NA	NS	1.2
Total Nitrogen (calculated)	mg/L	1	NA	NS	**6.7**
Dissolved Phosphorus	mg/L	0.1	NA	NS	**0.27**
Orthophosphate as P	mg/L		NA	0.638	NS
Total Phosphorus	mg/L	0.1	NA	NS	**0.34**
Total Suspended Solids	mg/L	58	NA	NS	1E
Total Dissolved Solids	mg/L	2,100 (b)	NA	**8,421**	NS
Turbidity	NTU	20	NA	3.05	1
Surfactants (MBAS)	mg/L	0.5	NA	0.5	NS
Oil and Grease	mg/L	10	NA	<5	NS
Enterococcus	MPN/100 mL	151	NA	**300**	130
Fecal Coliform	MPN/100 mL	400/4,000	NA	2E	130
Total Coliform	MPN/100 mL	NA	NA	22,000	800
Chlorpyrifos	µg/L	0.02	0.014	<0.05	NS
Diazinon	µg/L	0.08	0.05	<0.05	NS
Total Hardness	mg $CaCO_3$/L	NA	NA	300	NS
Cadmium, Dissolved	mg/L	(e)	(e)	<0.01	NS
Copper, Dissolved	mg/L	(e)	(e)	**0.041E**	NS
Lead, Dissolved	mg/L	(e)	(e)	<0.05	NS
Zinc, Dissolved	mg/L	(e)	(e)	0.131	NS

<-Results less than the reporting limit.

NA indicates no criteria or published value was available or applicable to the matrix or program.

NS indicates no sample taken.

E indicates estimated result.

(a) Water Quality Benchmark is based on CMC (salmonids absent) and CCC (early life stages present) using water temperature and pH described in the U.S. EPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.

(b) Water Quality Benchmark for Total Dissolved Solids is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego region (Basin Plan), 1994 (with amendments affective prior to April 25, 2007).

(e) Water Quality Benchmark for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, Mat 18, 2000. The Criteria Maximum Concentration (CMC) was used.

Tijuana River WMA 2011-2012 MS4 Random Dry Weather

Analyte	Units	Water Quality Benchmarks	Benchmark References	911.60 MS4D-TJR-02 4177 5/24/2012
Physical Chemistry				
Conductivity	µmhos/cm	NA	NA	738
pH	pH units	6.5-9.0	1. Basin Plan	8.09
Temperature	Celsius	NA	NA	17.0
General Chemistry				
Nitrate as N	mg/L	10	1. Basin Plan	<0.05
Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	<0.05
Nitrite as N	mg/L	1	1. Basin Plan	<0.05
Total Kjeldahl Nitrogen	mg/L	NA	NA	1.1
Total Nitrogen*	mg/L	1	1. Basin Plan	**1**
Total Phosphorus*	mg/L	0.1	4. MSGP 2000	<0.05
Total Dissolved Solids (calculated)[1]	mg/L	500 (a)	1. Basin Plan	**517**
Total Suspended Solids	mg/L	58	4. MSGP 2000	<20
Bacteriological				
Enterococcus	MPN/100 mL	151	NA	**1,100**
Fecal Coliform	MPN/100 mL	400	1. Basin Plan (REC1)	20
Total Coliform	MPN/100 mL	NA	NA	230

< - results are less than the reporting limit.
NA indicate no criteria or published value was available or applicable to the matrix or program.
*Total Nitrogen and Total Phosphorus are narrative standards in the Basin Plan based on biostimulatory response to nutrients.
[1]Total dissolved solids was calculated by multiplying the conductivity by a factor of 0.4 (TDS=Conductivity x 0.7) per SM1030F.

(a) Water Quality Benchmark for total dissolved solids is based on the San digeo Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with ammendments effective prior to April 25, 2007).

Highlighted text – exceeds water quality benchmark.

Sources
Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations

Tijuana River WMA 2011-2012 MS4 Targeted Dry Weather

Analyte	Units	WQB CMC	WQB CCC	911.11 DW322 6/19/2012	911.11 E1B 5/24/2012	911.11 E1B 7/16/2012	911.82 TIJ13 6/22/2012
pH	pH units	NA	NA	7.48	NS	NS	NS
Ammonia as N	mg/L	(a)	(a)	NS	NS	NS	0.06E
Nitrate as N	mg/L	10	NA	NS	NS	NS	<0.05
Nitrate/Nitrite as N	mg/L	10	NA	NS	NS	NS	<0.05
Nitrite as N	mg/L	1	NA	NS	NS	NS	<0.05
Total Kjeldahl Nitrogen	mg/L	NA	NA	NS	NS	NS	0.9
Total Nitrogen (calculated)	mg/L	1	NA	**2.5**	NS	NS	0.9
Dissolved Phosphorus	mg/L	0.1	NA	NS	NS	NS	**0.5**
Total Phosphorus	mg/L	0.1	NA	**0.68**	NS	NS	**0.52**
Total Suspended Solids	mg/L	58	NA	44	NS	NS	4E
Total Dissolved Solids	mg/L	500 (b)	NA	NS	NS	NS	**682**
Dissolved Oxygen	mg/L	5	NA	**4.4**	NS	NS	NS
Oil and Grease	mg/L	10	NA	NS	<1	<5	NS
Enterococcus	MPN/100 mL	151 (e)	NA	**18,000E**	**700**	36	**2,100**
Fecal Coliform	MPN/100 mL	400	NA	NS	NS	NS	130
Fecal Coliform	MPN/100 mL	4000	NA	3,300	30	700	NS
Total Coliform	MPN/100 mL	NA	NA	920,000	30,000	2,800	2,800
Chlorpyrifos	µg/L	0.02	0.014	<0.96	<0.05	<0.05	NS
Diazinon	µg/L	0.08	0.05	<0.96	<0.05	<0.05	NS
Malathion	µg/L	0.43	0.1	NS	<0.05	<0.05	NS
Total Hardness	mg $CaCO_3$/L	NA	NA	320	325	256	NS
Cadmium, Dissolved	mg/L	(f)	(f)	<0.005	<0.001	<0.001	NS
Copper, Dissolved	mg/L	(f)	(f)	0.023	0.022	0.014	NS
Lead, Dissolved	mg/L	(f)	(f)	<0.005	<0.005	<0.005	NS
Nickel, Dissolved	mg/L	(f)	(f)	0.01	NS	NS	NS
Thallium, Dissolved	mg/L	NA	NA	<0.01	NS	NS	NS
Zinc, Dissolved	mg/L	(f)	(f)	0.028	0.06	0.056	NS

<-Results less than the reporting limit.

NA indicate no criteria or published value was available or applicable to the matrix or program.

E-Reported value is estimated.

NS-Not sampled.

(a) Water Quality Benchmark is based on CMC (salmonids absent) and CCC (early life stages present) using water temperature and pH described in the U.S. EPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.

(b) Water Quality Benchmark for total dissolved solids is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).

(e) Water Quality Benchmark for Enterococcus is based on the maximum criteria for infrequently used freshwater area by the San Diego Regional Water Quality Control Plan for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).

(f) Water Quality Benchmark for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000. The Criteria Maximum Concentration (CMC) and Continuous Criteria Concentration (CCC) were used.

Highlighted text – exceeds water quality benchmark.

Tijuana River WMA 2011-2012 MS4 Targeted Wet Weather

Analyte	Units	Water Quality Benchmarks	Benchmark References	911.12			
				MS4T-TJR-RISE	MS4T-TJR-PEAK	MS4T-TJR-FALL	MS4-TJR
				11/4/2011	11/4/2011	11/4/2011	EMC
Physical Chemistry							
Electrical Conductivity	µmhos/cm	NA		141.3	76	68.7	101.6
pH	pH units	6.5-9.0	1. Basin Plan	7.45	7.68	6.61	7.45
Water Temperature	Celsius	NA		15.8	14	13.1	14.6
Bacteriological							
Enterococcus	MPN/100 mL	NA		70,000	14,000	8,000	36,030
Fecal Coliform	MPN/100 mL	4,000	1.Basin Plan REC-1/REC-2	700	230	300	430
Total Coliform	MPN/100 mL	NA		7,000	5,000	8,000	6,203
General Chemistry							
Ammonia as N	mg/L	(a)	6. USEPA Water Quality Criteria (Freshwater)	0.32	0.24	0.15	0.26
Biochemical Oxygen Demand	mg/L	30	4. MSGP 2000, 8. McNeeley (1979)	11	3.5	3.3	6.5
Chemical Oxygen Demand	mg/L	120	4. MSGP 2000	**130**	83	24	94
Chloride	mg/L	NA (b)	1. Basin Plan	10	2.8	2.9	5.9
Dissolved Phosphorus	mg/L	2	4. MSGP 2000	0.09	0.055	0.048	0.069
Nitrate as N	mg/L	10	1. Basin Plan	1.1	0.2	0.18	0.59
Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	1.1	0.24	0.21	0.61
Nitrite as N	mg/L	1	1. Basin Plan	0.068J	0.037J	0.032J	0.050
Oil and Grease	mg/L	10	1. Basin Plan, 3. Anacostia River TMDL, 4. MSGP 2000	1.6J	<1.3	1.7J	1.2
Sulfate	mg/L	NA (c)	1. Basin Plan	8.8	3.1	2.5	5.5
Surfactants (MBAS)	mg/L	0.5	1. Basin Plan	**0.6**	0.036J	0.05	0.282
Total Dissolved Solids	mg/L	NA (d)	1. Basin Plan	80	46	40	60
Total Hardness	mg $CaCO_3$/L	NA		62	52	25	52
Total Kjeldahl Nitrogen	mg/L	NA		2.7	1.4	0.57	1.84
Total Nitrogen	mg/L	NA		3.8	1.6	0.79	2.43
Total Phosphorus	mg/L	2	4. MSGP 2000	0.37	0.33	0.1	0.31
Total Suspended Solids	mg/L	100	4. MSGP 2000, 1. Basin Plan	**390**	**350**	32	**319**
Turbidity	NTU	20	1. Basin Plan	**52**	**47**	**24**	**46**
Organophosphorus Pesticides							
Chlorpyrifos	µg/L	0.02 acute / 0.014 chronic	12. CA Dept. of Fish & Game, 2000	<0.014	<0.014	<0.0069	0.0065
Diazinon	µg/L	0.08 acute / 0.05 chronic	12. CA Dept. of Fish & Game, 2000, 11. Chollas Creek TMDL for Diazinon, 10. USEPA, Aquatic Life Ambient Water Quality Criteria Diazinon	<0.01	<0.01	<0.0052	0.0046
Malathion	µg/L	0.43	13. CA Dept. of Fish & Game, 1998, 5. Goldbook	<0.015	<0.015	<0.0076	0.0069
Total Metals							
Antimony, Total	mg/L	NA		0.0019	0.0014	0.00063	0.00150
Arsenic, Total	mg/L	NA		0.0022	0.0019	0.001	0.0019
Cadmium, Total	mg/L	NA		0.00057	0.00046	0.00018	0.00046
Chromium, Total	mg/L	NA		0.0094	0.008	0.0023	0.0077
Copper, Total	mg/L	NA		0.037	0.026	0.01	0.028
Lead, Total	mg/L	NA		0.057	0.044	0.007	0.0440
Manganese, Total	mg/L	NA		0.17	0.15	0.033	0.141
Nickel, Total	mg/L	NA		0.01	0.0073	0.0023	0.0077
Selenium, Total	mg/L	0.005	16. 40 CFR 131.38	0.00035J	<0.00028	<0.00028	0.00023
Zinc, Total	mg/L	NA		0.44	0.27	0.081	0.315
Dissolved Metals							
Antimony, Dissolved	mg/L	0.006	1. Basin Plan	0.0011	0.00056	0.00035J	0.00076
Arsenic, Dissolved	mg/L	0.34 (e)	16. 40 CFR 131.38	0.00097	0.00083	0.00081	0.00089
Cadmium, Dissolved	mg/L	(f)	16. 40 CFR 131.38	0.000098J	0.00003J	0.000054J	0.000063
Chromium, Dissolved	mg/L	(f)	16. 40 CFR 131.38	0.00071	0.00042	0.00033	0.00053
Copper, Dissolved	mg/L	(f)	16. 40 CFR 131.38	**0.012**	0.0049	**0.0046**	**0.0079**
Lead, Dissolved	mg/L	(f)	16. 40 CFR 131.38	0.00083	0.00029	0.00028	0.00052
Nickel, Dissolved	mg/L	(f)	16. 40 CFR 131.38	0.0032	0.00075J	0.00084	0.00182
Selenium, Dissolved	mg/L	NA		0.00039J	<0.00028	<0.00028	0.00025
Zinc, Dissolved	mg/L	(f)	16. 40 CFR 131.38	0.065	0.0096	0.021	0.0353

<-Results less than the method detection limit.

NA indicate no criteria or published value was available or applicable to the matrix or program.

(a) Water Quality Benchmark is based on CMC (salmonids absent) using pH described in the USEPA, 1999 Update of Ambient Water Quality Criteria for Ammonia, EPA-822-R-99-014, December 1999.

(b) Water Quality Benchmark for chloride is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).

(c) Water Quality Benchmark for sulfate is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).

(d) Water Quality Benchmark for total dissolved solids is based on the San Diego Regional Water Quality Control Plan by watershed for the San Diego Region (Basin Plan), 1994 (with amendments effective prior to April 25, 2007).

(e) Water Quality Benchmark for dissolved metal fractions are based on a default water effects ratios (WER) value of 1 and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000.

(f) Water Quality Benchmark for dissolved metal fractions are based on total hardness and are calculated as described by the USEPA Federal Register Doc. 40 CFR Part 131, May 18, 2000. The Criteria Maximum Concentration (CMC) was used.

H-Samples analyzed/and or received past recommended holding time.

J-Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.

Shaded text – exceeds water quality benchmark.

Sources

Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

Tijuana River WMA 2012-2013 MS4 Random Wet Weather

Analyte	Units	Water Quality Benchmarks	Benchmark References	911.41	911.60	911.60	911.70	911.70	911.70	TJR WMA 2012-2013 % Above Benchmark
				MS4W-TJR-16	MS4W-TJR-01	MS4W-TJR-13	MS4W-TJR-09	MS4W-TJR-11	MS4W-TJR-14	
				16655	4067	16602	4244	4272	4248	
				12/13/2012	3/8/2013	12/13/2012	1/25/2013	3/8/2013	3/8/2013	
Physical Chemistry										
Specific Conductivity	µS/cm	NA	NA	71.2	11.1	563	108	45.8	763	-
pH	pH units	6.5-9.0	1. Basin Plan	8.5	7.42	7.96	8.83	8.24	7.52	0%
Water Temperature	°C	NA	NA	9.5	6.1	11	12.9	4.7	7.7	-
General Chemistry										
Nitrate as N	mg/L	10	1. Basin Plan	0.25	<0.05	0.19	<0.05	0.1	0.06	0%
Nitrate/Nitrite as N	mg/L	10	1. Basin Plan	0.26	<0.05	0.21	0.09	0.1	0.06	0%
Nitrite as N	mg/L	1	1. Basin Plan	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	0%
Total Kjeldahl Nitrogen	mg/L	NA	NA	2.3	<0.5	1.5	2.9	<0.5	<0.5	-
Total Nitrogen	mg/L	NA	NA	2.6	<0.5	1.7	3	<0.5	<0.5	-
Total Phosphorus	mg/L	2	4. MSGP 2000	0.59	0.06	0.44	0.05	0.12	0.32	0%
Total Suspended Solids	mg/L	100	4. MSGP 2000	363	<20	84	<20	<20	70	17%
Bacteriological										
Enterococcus	MPN/100 mL	NA	NA	110,000	230	800	8,000	40	300	-
Fecal Coliform	MPN/100 mL	400/4000	1. Basin Plan (REC-1/REC-2)	17,000	<20	50,000	40	<20	40	33%
Total Coliform	MPN/100 mL	NA	NA	80,000	700	80,000	3,000	270	1,700	-

< - Results are less than the reporting limit.
(-) Unable to calculate because there is no criterion or published value available for the analyte.
NA - No criterion or published value was available or applicable to the matrix or program.
Shaded value - above water quality benchmark.
Sources - Please refer to the San Diego County Copermittee Regional Monitoring Program Benchmark Sources for benchmark source citations.

Tijuana River WMA 2013-2014 MS4 Outfall Discharge Transitional Wet Weather

Analyte	Units	911.11	911.12	911.12	911.41	911.82
		MS4-TJR-1	MS4-TJR-2	MS4-TJR-3	MS4-TJR-4	MS4-TJR-5
		12/7/2013	12/7/2013	10/9/2013-10/10/2013	10/29/2013	10/10/2013
Physical Chemistry						
Dissolved Oxygen	mg/L	9.56	9.69	9.86	9.89	10.43
pH	pH Units	8.53	7.93	7.24	8.79	6.86
Specific Conductivity	µS/cm	364	253	506	87	113
Temperature	^{o}C	15.78	14.22	16.5	9.51	10.3
Turbidity	NTU	40.5	35.8	107	17.8	75.6
Bacteriological						
Enterococcus	MPN/100 mL	130,000	240,000	920,000	9,400	49,000
Fecal Coliform	MPN/100 mL	22,000	7,900	350,000	330	14,000
Total Coliform	MPN/100 mL	110,000	170,000	920,000	3,300	49,000
General Chemistry						
Ammonia as N	mg/L	0.5	2.2	4.2	0.1	<0.10
Color	Color Units	35	20	40	10	20
Dissolved Organic Carbon	mg/L	12	12	92	4.8	11
Nitrate as N	mg/L	0.89	0.76	4.5	0.25	0.94
Nitrite as N	mg/L	0.030J	0.058J	0.057J	0.012J	0.027J
Orthophosphate	mg/L	0.35	0.59	0.71	0.052	0.23
Perchlorate	mg/L	0.0024	AE	<0.0020	<0.0020	0.0011J
Sulfate	mg/L	10	36	70	2.2	3.6
Surfactants (MBAS)	mg/L	0.24	0.16	1.8	0.14	0.3
Total Dissolved Solids	mg/L	120	180	480	46	76
Total Hardness	mg/L	37.3	62.3	158	21.1	44
Total Kjeldahl Nitrogen	mg/L	1.8	3.7	14	3.4	1.7
Total Organic Carbon	mg/L	14	15	110	7	13
Total Phosphorus	mg/L	0.49	0.72	0.96	0.1	0.48
Total Suspended Solids	mg/L	74	69	180	21	170
Total Metals						
Arsenic	mg/L	0.0016	0.0019	0.0043	0.00065	0.0015
Cadmium	mg/L	0.00016	0.00017	0.00066	0.000046J	0.00011
Chromium	mg/L	0.0046	0.003	0.0087	0.002	0.0046
Copper	mg/L	0.036	0.019	0.076	0.0051	0.011
Iron	mg/L	2.6	2.5	6.8	1.2	7.9
Lead	mg/L	0.0083	0.0096	0.037	0.0032	0.012
Manganese	mg/L	0.066	0.062	0.24	0.038	0.19
Nickel	mg/L	0.0054	0.0044	0.025	0.0017	0.0035
Selenium	mg/L	0.00020J	0.00029J	0.0011	0.00016J	0.0002J
Thallium	mg/L	<0.00020	<0.00020	0.00009J	<0.00020	0.00011J
Zinc	mg/L	0.22	0.21	0.68	0.041	0.096
Dissolved Metals						
Arsenic	mg/L	0.0011	0.0015	0.0027	0.00041	0.00071
Cadmium	mg/L	0.000060J	0.000060J	0.00031	<0.00010	<0.0001

Tijuana River WMA 2013-2014 MS4 Outfall Discharge Transitional Wet Weather

Analyte	Units	911.11	911.12	911.12	911.41	911.82
		MS4-TJR-1	MS4-TJR-2	MS4-TJR-3	MS4-TJR-4	MS4-TJR-5
		12/7/2013	12/7/2013	10/9/2013-10/10/2013	10/29/2013	10/10/2013
Chromium	mg/L	0.0016	0.00043	0.0021	0.00067	0.00039
Copper	mg/L	0.018	0.0094	0.056	0.0028	0.0044
Iron	mg/L	0.049	0.05	0.28	0.068	0.061
Lead	mg/L	0.0003	0.00034	0.0037	0.0002	0.00036
Manganese	mg/L	0.00092	0.0025	0.14	0.00074	0.024
Nickel	mg/L	0.0033	0.0026	0.019	0.00098	0.00092
Selenium	mg/L	0.00019J	0.00022J	0.00099	0.00011J	0.00018J
Thallium	mg/L	<0.00020	<0.00020	<0.0002	<0.00020	<0.0002
Zinc	mg/L	0.12	0.11	0.4	0.016	0.015
Pyrethroids						
Allethrin	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Bifenthrin	µg/L	0.0094	0.0032	0.0122	<0.002	<0.002
Cyfluthrin	µg/L	<0.002	<0.002	0.0092	<0.002	<0.002
Cyhalothrin-lambda	µg/L	<0.002	<0.002	0.0083	<0.002	<0.002
Cypermethrin	µg/L	0.0043	<0.002	<0.002	<0.002	<0.002
Danitol (Fenpropathrin)	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Deltamethrin/Tralomethrin	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Esfenvalerate	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Fenvalerate	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Fluvalinate	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Permethrin, cis-	µg/L	0.0105	<0.01	<0.01	<0.01	<0.01
Permethrin, trans-	µg/L	0.0282	<0.01	<0.01	<0.01	<0.01
Permethrin	µg/L	0.0387	<0.01	<0.01	<0.01	<0.01
Prallethrin	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Resmethrin	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01

< - Results are less than the reporting limit.

AE-Analysis error.

J-Analyte was detected at a concentration below the reporting limit and above the method detection limit. Reported value is estimated.