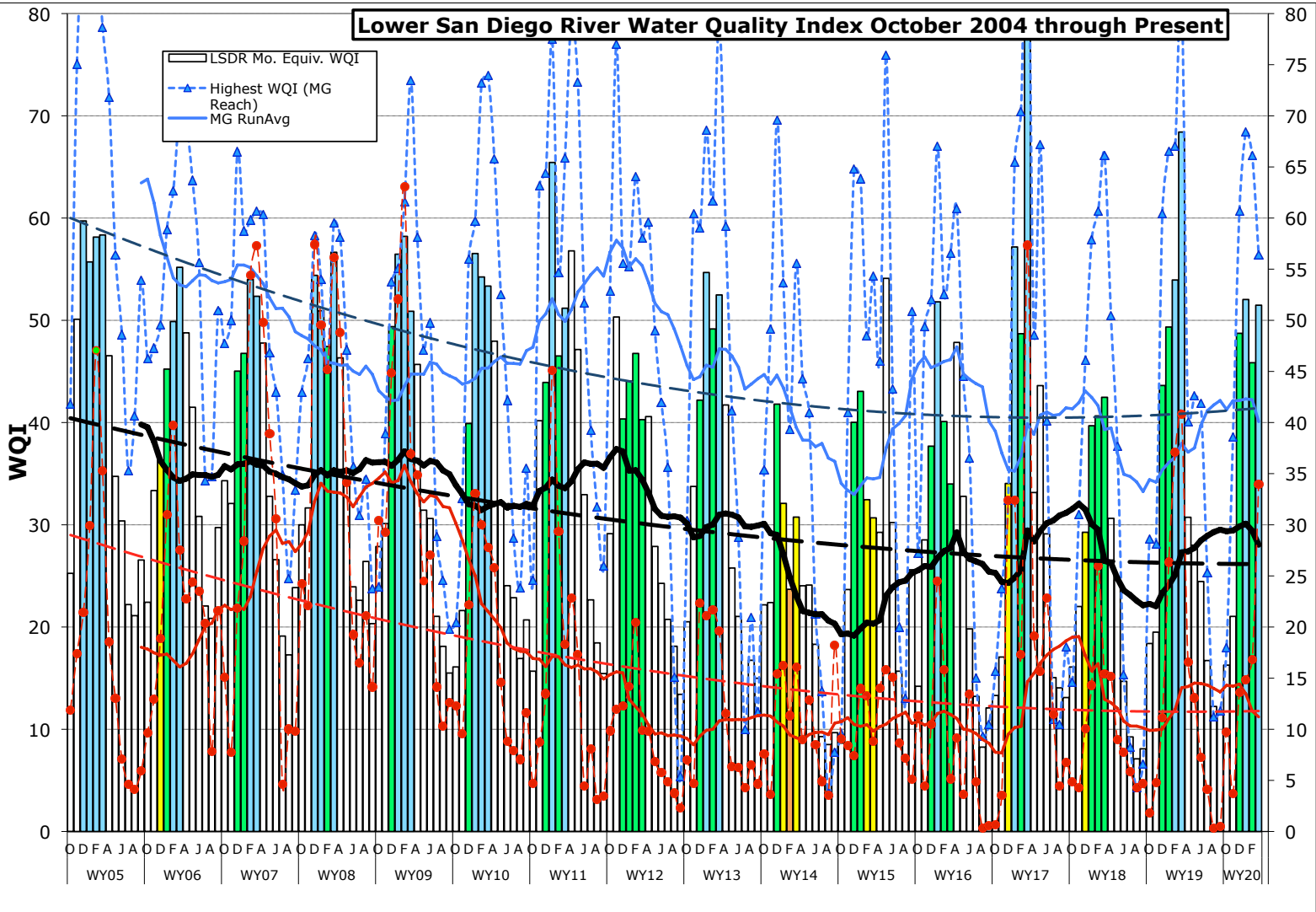


# Monthly WQM Report

## Lower San Diego River - March 2020

MWQR Cover Page

Lower San Diego River Water Quality Index October 2004 through Present



## Lower SDRWQ Monitoring Data Summary

**Table 1** presents a summary of water quality data monitored by the SDRPF RiverWatch Team within the Lower San Diego River sub-basin over the past two months (March and Feb.); the last two months of the wet-weather (winter) season. The March index rose five points from last month; three points above the 15-yr March average of 48. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) rose 12 percent from Fair (C) to Good (B-).

<b>Table 1 - March/February 2020 WQM Data Summary</b>							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Sites]	[1-7] Mar/Feb	[8-10] Mar/Feb	[11-15] Mar/Feb	[1-15] Mar/Feb	Last Mo (2'20)	Last Yr (3'19)	15-Yr Avg (March)
Temperature, oC	17.4/16.0	16.7/13.6	16.2/14.1	16.8/14.7	14%	16%	0%
Sp.Cond., mS/cm	1.09/2.39	1.07/1.55	1.03/1.69	1.10/1.96	-44%	-21%	-31%
DO, mg/L	6.62/6.17	8.54/10.36	6.58/6.03	6.64/6.71	1%	-24%	-2%
DO, % of Sat.	68/63	86/98	67/60	68/67			
pH	7.78/7.75	8.23/8.08	7.82/7.73	7.80/7.74	1%	3%	1%
3-day ADF, cfs	57/23	24/8	20/7.7	34/12	174%	91%	53%
WQ Index	52/47	58/66	46/35	51/46	12%	-25%	7%
<b>March/Feb</b>	<b>B-/C</b>	<b>B/B</b>	<b>C+/D</b>	<b>B-/C</b>			
March/ February '20	<b>Good/ Fair</b>	<b>Good/ Good</b>	<b>Fair/ Marginal</b>	<b>Good/ Fair</b>	<b>Index rose 5 points overall from last month</b>		

Negative variance (declines from norms) and DO depletion (< 5.0 mg/L) expressed in red.

LSDR **water temperatures** increased 2.1 degrees (14%) from last month to within 1% of the 15-yr March norm of 16.7 oC. Overall **specific conductivity** of 1.10 mS/cm constitutes a 44% decline from last month, 21% less than last March and 31% below the 15-yr norm of 1.60 mS/cm. The overall **dissolved oxygen** level of 6.64 mg/L (68%Sat.) is only 1% above last month and 24% less than last March and 2% below the 15-yr norm of 6.68 mg/L. **Streamflow** over the antecedent 3-day period of 34 cfs is up 174% from last month at 91% greater than a year ago and 53% above the 15-yr norm of 22 cfs. This month's LSDR **water quality index** (WQI) rose five points (12%) from last month to within seven percent of the 15-yr march norm of 48.

Monthly WQI values occurring over the past 26 months of record for the three main sections of the lower San Diego River system and the overall LSDR average, along with average 30-day antecedent flow (ADF) and rainfall (MRF), are expressed in **Table 2** on the next page.

<b>Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (1/2018 - 3/2020)</b>							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	MRF, in
Jan.'18	41(C)	58(B)	29(D)	40(C)	WW	13	1.78
Feb.	41(C)	61(B)	31(D)	41(C)	ww	4.4	0.36
<b>Mar. '18</b>	<b>42(C)</b>	<b>66(B)</b>	<b>31(D)</b>	<b>42(C)</b>	<b>WW</b>	<b>22</b>	<b>0.95</b>
April	31 (D)	50 (B-)	22 (E)	31 (D)	t	2.8	0.02
May	24 (E+)	37 (D+)	18 (E)	24 (E+)	t	2.3	0.12
June	12 (F+)	15 (E)	17 (E)	15 (E)	DW	1.3	0.00
July	12 (F+)	8 (F)	8 (F)	9 (F)	DW	0.7	0.00
Aug.	8 (F)	4 (F)	8 (F)	7 (F)	DW	0.3	0.02
Sept	9 (F)	7 (F)	8 (F)	8 (F)	DW	0.3	0.00
Oct	24 (D-)	29 (D)	9 (F)	18 (E)	t	3.2	0.57
Nov	21 (E+)	28 (D)	14 (E-)	19 (E)	t	9.6	0.81
Dec.	54 (B)	61 (B)	25 (D-)	44 (C)	WW	48	3.02
Jan.'19	47 (C)	66 (B)	43 (C)	49 (C+)	WW	39	2.80
Feb.	51 (B-)	67 (B)	51 (B-)	54 (B)	WW	179	2.98
<b>Mar. 19</b>	<b>76 (A-)</b>	<b>82 (A)</b>	<b>55 (B)</b>	<b>68 (B)</b>	<b>WW</b>	<b>25</b>	<b>1.28</b>
April	33 (D)	40 (C)	24 (E+)	31 (D)	t	8.6	0.46
May	28 (D)	43 (C)	21 (E)	28 (D)	t	14	0.51
June	21 (E)	42 (C)	20 (E)	24 (E+)	t	4.3	0.38
July	17 (E)	25 (D-)	13 (E-)	17 (E)	DW	1.2	0.01
Aug.	16 (E)	11 (F)	9 (F)	12 (F+)	DW	0.9	0.02
Sept	15 (E)	12 (F+)	8 (F)	11 (F+)	DW	1.2	0.03
Oct	18 (E)	18 (E-)	15 (E)	16 (E)	DW	0.9	0.00
Nov.	20 (E)	39 (C)	14 (E)	21 (E)	t	37	0.52
Dec.	60 (B)	61 (B)	31 (D)	49 (C+)	WW	67	3.51
Jan. '20	62 (B)	68 (B)	34 (D)	52 (B-)	WW	79	2.90
Feb.	47 (C)	66 (B)	35 (D)	46 (C)	ww	10	0.38
Mar '20	<b>52 (B-)</b>	<b>58 (B)</b>	<b>46 (C+)</b>	<b>51 (B-)</b>	<b>WW</b>	<b>52</b>	<b>1.97</b>

The **cover page** chart presents monthly WQI values and their range (high-low) for the Lower San Diego River sub-basin as determined over the past 15+ years of RiverWatch monitoring. The last four-month values (Dec.-March) for each year are expressed as color-shaded bars; blue B (50 or >) is Good, green C (38-49) Fair, yellow D (25-37) Marginal, brown E (13-24) Poor and pink F-(12 or <) Very Poor. Running average index values for LSDR (flow-weighted averages of all sites) are shown as a heavy black line. Monthly values for the consistently highest/best quality reach (Mission Gorge) are shown as a blue line while the consistently lowest/poorest reach (Upper Santee Basin) are shown in red. The generally downward slope in index over the 15-year period is primarily attributed to declining dissolved oxygen levels extending throughout protracted low-flow (dry-weather) periods of the year. The dashed black line represents an overall downward trend of -2.5% per annum in index value since late 2004. WY05 witnessed best overall water quality during the past 15+ years while poorest water quality was experienced during the summer months of WY14 extending through November.

Monthly WQI values extending from Oct. '04 through this March 2020 are presented in **Chart 1** (next page) together with 12-mo. running averages for each of the five principal reaches of the lower river system and overall (i.e., LSDR). The current running average WQI of 28 is eight percent below the 15-yr LSDR flow-weighted average index of 30.5, one index point above a year ago. The running average March low of 20 (-33% below the norm) occurred in 2015. The highest running average WQI for March of 36 (+17% above norm) occurred both in 2009. The overall LSDR running average (12-month trendline), shown dashed in black, has declined approximately ten index points over the span of 15 years.

Monthly and 12-mo. running average WQI values for the poorest reach (Upper Santee Basin) and best (Mission Gorge) are presented in **Chart 2**. Although water quality improved within the Upper Santee Basin over the past year, resurgent growth and subsequent decay of such invasives as floating primrose-willow (*Ludwigia peploides*) in conjunction with low-flow and increased benthic biomass are primary causes of deteriorated water quality both within this reach and deeper portions of Mission Valley (e.g., Kaiser Ponds). The greatest downward trend (red-dashed line) is associated with the poorest reach (Upper Santee Basin) encompassing monitoring sites 13 (Mast Park) and 14 (Magnolia Ave/RCP).

Spatial WQI values by monitoring site over the past three months are shown in **Charts 3, 4 and 5** on page 6. This month's results (color bars w/values in black) are higher than last month but lower than monitored in January at nearly all monitoring sites. In January 80% of the sites (12 of 15) were Good or Very Good; while last month only 40% (6 sites) were Good or better. This month nine sites (60%) were Good or Very Good (blue bars) while five (33%) were Fair (green bars). Of special note is site 13 (Mast Park) where extremely low DO values (<0.5 mg/L), recorded again this month, resulted in a very low WQI.

Although March represents a month of slightly improved water quality over last month, it is expected that the remainder of this water year may experience a decline from last year in overall water quality due to changing hydrology and continued eutrophication.

(JCK 3/29/20)

