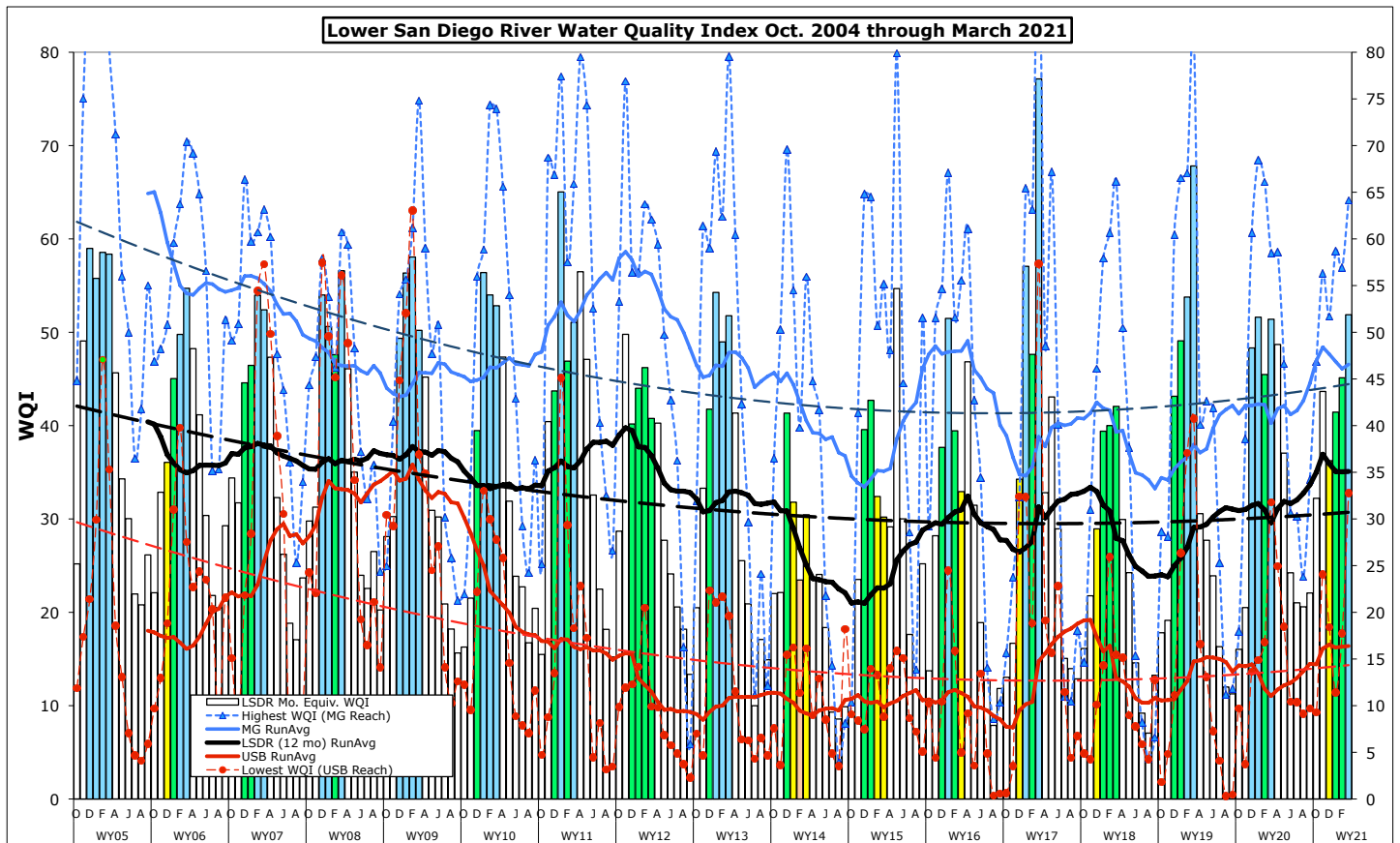


Monthly WQM Report

Lower San Diego River - March 2021



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 subbasin over the past two months (March/February). This month's overall index of 52 is seven points (15%) above last month, one point greater than last March and two points above the 17-yr average of 50. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) improved over the last four weeks rising from C (Fair) to B- (Good).

Table 1 - March/February 2021 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] Mrch/Feb	[8-10] Mrch/Feb	[11-15] Mrch/Feb	[1-15] Mrch/Feb	Last Mo (2'21)	Last Yr (3'20)	17-yr Avg (March)
Temperature, oC	14.7/14.5	11.9/10.8	13.5/12.4	13.7/12.9	6%	-18%	-18%
Sp.Cond., mS/cm	1.05/1.99	1.34/1.53	1.44/1.57	1.30/1.73	-25%	19%	-18%
DO, mg/L	7.01/6.60	11.1/8.21	6.93/5.62	7.60/6.54	17%	12%	9%
DO, % of Sat.	70/66	106/77	67/51	74/63			
pH	7.64/7.83	8.00/8.08	7.85/8.08	7.77/7.98	-3%	0%	0%
3-day ADF, cfs	75.5/13.0	19.7/7.0	13.5/6.4	36.3/12.4	193%	8%	55%
WQ Index	52/52	64/57	45/35	52/45	15%	1%	3%
Mar/February Grade	B-/B-	B/B	C/D	B-/C			
March/ Feb '21	Fair/ Good	Good/ Good	Fair/ Marginal	Good/ Fair	Index UP 7 points overall from last month		

Negative variance (declines from norms) and DO depletion (DO < 5.0 mg/L or 55% of Sat) expressed in red.

LSDR **water temperatures** rose 0.8 degree (6%) from last month to 18% below both a year ago and the 17-yr March norm of 16.7oC. Overall **specific conductivity** of 1.30 mS/cm constitutes a 25% decline from last month to 19% above a year ago and 18% below the 17-yr monthly norm of 1.59 mS/cm. The overall **dissolved oxygen** level of 7.60 mg/L (74%Sat.) is 17% above last month, 12% above a year ago and 9% greater than the 17-yr March norm of 6.85 mg/L (69%Sat). **Streamflow** over the antecedent 3-day period of 36 cfs is 193% greater than last month, 8% more than a year ago and 55% above the 17-yr norm of 23 cfs. This month's overall LSDR **water quality index** (WQI) is seven points (15%) greater than last month, one point more than a year ago and two points above the 17-yr March norm of 50.

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

Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (Feb.'19 - March'21)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
Feb. '19	51 (B-)	67 (B)	51 (B-)	54 (B)	WW	134	2.98
March	76 (A-)	82 (A)	55 (B)	68 (B)	WW	39	1.28
April	33 (D)	40 (C)	24 (E+)	31 (D)	t	9.5	0.46
May	28 (D)	43 (C)	21 (E)	28 (D)	t	10	0.51
June	21 (E)	42 (C)	20 (E)	24 (E+)	t	8.6	0.38
July	17 (E)	25 (D-)	13 (E-)	16 (E)	dw	1.6	0.01
Aug.	16 (E)	11 (F)	9 (F)	12 (F+)	dw	0.8	0.02
Sept	15 (E)	12 (F+)	8 (F)	11 (F+)	DW	1.0	0.03
Oct	18 (E)	18 (E)	15 (E)	16 (E)	DW	1.0	0.00
Nov.	20 (E)	39 (C)	14 (E)	21 (E)	t	3.2	0.52
Dec.	60 (B)	61 (B)	31 (D)	48 (C+)	WW	65	3.51
JAN '20	62 (B)	68 (B)	34 (D)	52 (B-)	WW	45	2.90
Feb.	47 (C)	66 (B)	35 (D)	45 (C)	ww	10	0.38
March	52 (B-)	58 (B)	46 (C)	51 (B-)	WW	38	1.97
April	47 (C)	59 (B)	45 (C)	49 (C+)	WW	167	3.58
May	38 (C-)	47 (C)	37 (D+)	37 (D+)	t	20	0.06
June	25 (D-)	31 (D)	21 (E)	24 (E+)	dw	6.5	0.02
July	18 (E)	30 (D)	21 (E)	21 (E)	DW	2.6	0.00
Aug	23 (E)	24 (E+)	18 (E)	21 (E)	DW	1.1	0.00
Sept	21 (E)	34 (D)	19 (E)	22 (E)	DW	1.1	0.00
Oct	32 (D)	47 (C)	26 (D-)	32 (D)	dw	2.3	0.21
Nov.	45 (C)	56 (B)	37 (D+)	44 (C)	t	7.2	0.11
Dec.	34 (D)	52 (B)	32 (D)	36 (D+)	t	3.0	0.06
JAN '21	46 (C)	59 (B)	29 (D)	41 (C)	ww	8.8	1.10
Feb.	52 (B-)	57 (B)	39 (D+)	45 (C)	ww	31	0.50
March	52 (B)	64 (B)	45 (B)	52 (B)	WW	33	2.32

The **cover page** chart presents monthly WQI values and their range (high/low) for the Lower San Diego River watershed as determined over the past 17 years of monitoring. March, the last month of winter, values for each year are expressed as color-shaded bars; blue (50 or >) B-Good, green (38-49) C-Fair, yellow (25-37) D-Marginal, brown (13-24) E-Poor and pink (12 or <) F-Very Poor. Running average index values for LSDR (weighted averages of all sites) are shown as a heavy black line. Running averages for the consistently highest (best) quality section (Mission Gorge) are shown as a blue line while the consistently lowest (poorest) reach (Upper Santee Basin) is expressed in red. The generally downward slope in index values, represented by the dashed trend lines, from WY05 through WY17 are primarily attributed to depleted dissolved oxygen levels extending throughout protracted low-flow periods of each water year at multiple sites throughout the subbasin. The dashed line represents an overall negative slope of -0.7% per annum in index value over the entire monitoring period. The irregular solid black line (12-month running average index value), generally rising since reaching a low of 21 in Dec. 2014, is currently at 35. This month's overall index of 52 is the 11th time in 17 years that the March value has been in the B (Good) water quality index range.

Monthly WQI values from Oct. '04 through March.'21 are presented in **Chart 1** (next page) together with 12-mo. running averages for each of the five reaches of the lower river system and overall (i.e., LSDR). The current running average WQI of 35 is 8% above the to-date LSDR weighted average index; running at a level last experienced in March 2011. The running average March low of 21 (36% below current norm) occurred in 2015. The highest March running average WQI of 38 (16% above norm) occurred in 2007. The fact that the river has experienced well below average rainfall and runoff during the initial six months of this water year suggests that WY21 may result in below average overall water quality index values.

Monthly and 12-mo. running average WQI values for the "poorest" (Upper Santee Basin) and "best" (Mission Gorge) reaches of the lower river system are presented in **Chart 2**. Although water quality improved somewhat within the uppermost reach over the last 24 months, resurgent invasive aquatic plants and subsequent decay of vegetation such as floating primrose-willow (*Ludwigia peploides*) in conjunction with minimal dry weather flows and increased benthic deposits throughout ponded portions are primary causes of sustained poor water quality within the upper reaches of both the Santee Basin and Mission Valley sections of the river. 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.). Mission Gorge (blue line) shows the least decline in water quality index values over the 17-year monitoring period.

Spatial WQI values by monitoring site over the past three months are shown in **Charts 3, 4 and 5** on page 6. March results (color bars w/values in black shown on Chart 5) exceed those from last month (Chart 4) and those in Jan. (Chart 3). Ten of 15 sites are rated Good (B), four Fair (C) and one Poor this month whereas eight were Good (blue) and eight Fair (green/yellow) last month. As shown in Chart 5, this month's index values (solid colored columns) are, in general, above a year ago (3/'20) dashed colored columns, last month (dashed red line) and the 17-yr running average (solid black line). The overall rating of 53 (B-) Good water quality grade, is two index points (3%) above the 17-year norm for the final month of the winter season.

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Chart 1 - LSDR Monthly WQI, Running Averages and Trendlines by River Reach (Sept. 2005 thru March 2021)

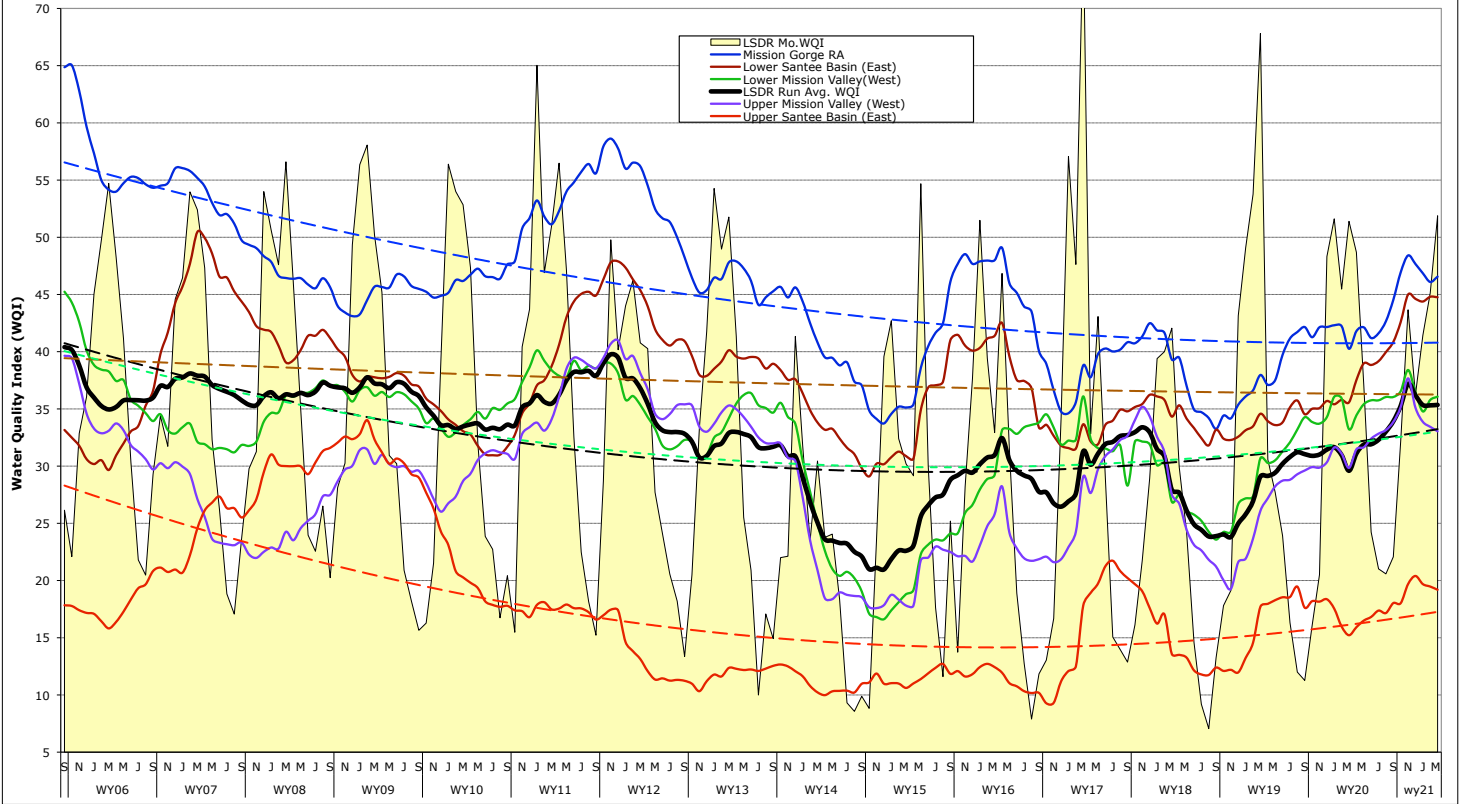


Chart 2 - Mast Park East (Site 13) and Mission Gorge (Sites 8-10) Monthly WQI, 12-mo Running Averages and 17-yr Trendlines

