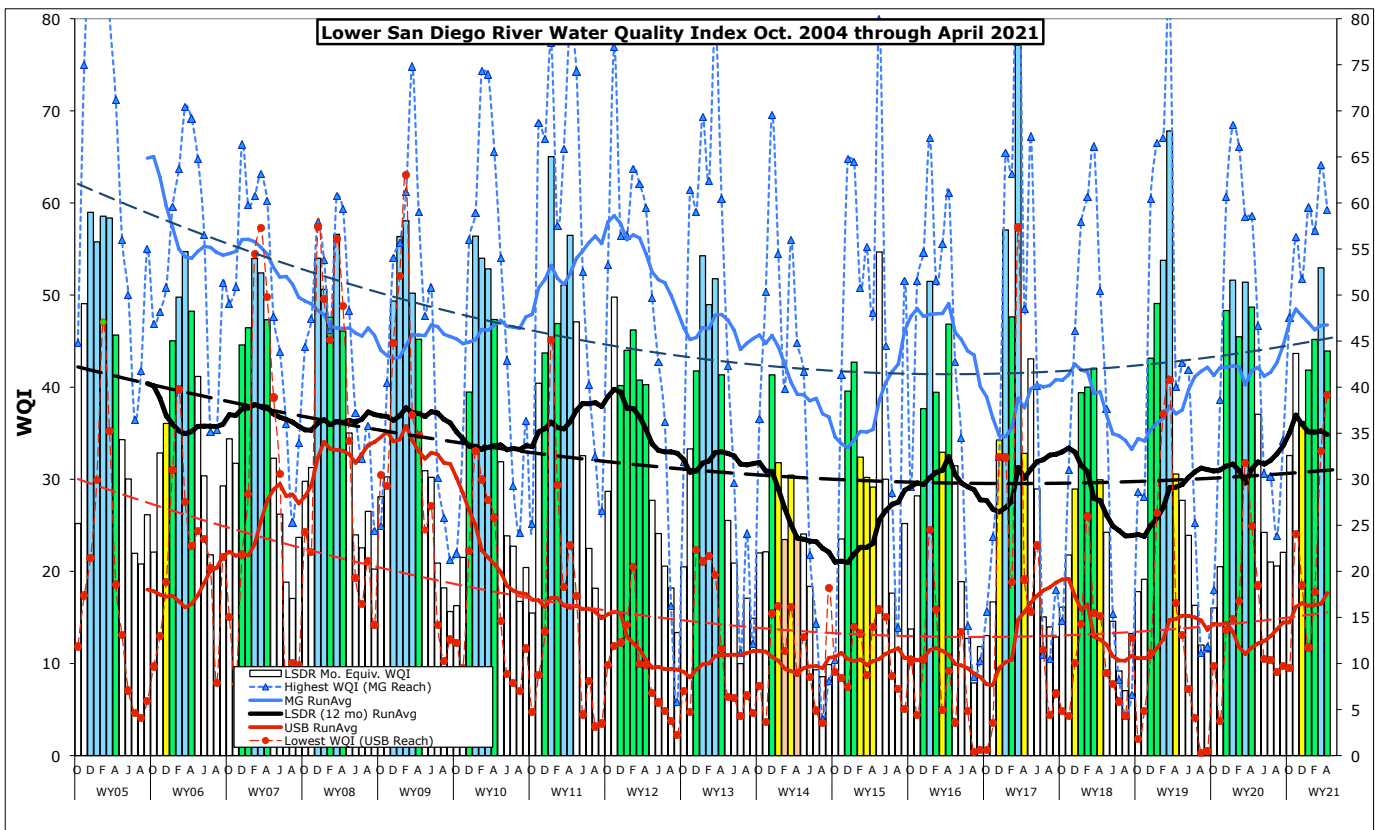


Monthly WQM Report

Lower San Diego River - April 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/April). This month's overall index of 44 is nine points (17%) below last month, five points less than last April and three points above the 17-yr average of 41. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) declined over the last month from B- (Good) to C (Fair).

Table 1 - March/April 2021 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] Mar/Aprl	[8-10] Mar/Aprl	[11-15] Mar/Aprl	[1-15] Mar/April	Last Mo (3'21)	Last Yr (4'20)	17-yr Avg (April)
Temperature, oC	14.7/18.6	11.9/16.1	13.5/15.7	13.7/17.3	26%	0%	-4%
Sp.Cond., mS/cm	1.05/2.66	1.34/1.63	1.44/1.95	1.30/2.16	66%	129%	12%
DO, mg/L	7.01/ 3.78	11.1/5.43	6.93/7.33	7.60/5.61	-24%	-10%	-2.5%
DO, % of Sat.	70/ 41	106/56	67/77	74/59			
pH	7.64./7.70	8.00/7.94	7.85/7.92	7.77/7.83	1%	1%	1%
3-day ADF, cfs	49/9.2	18/5.5	15/5.1	27/6.6	-78%	-93%	-58%
WQ Index	55/29	64/59	45/51	53/44	-17%	-10%	6%
Mar/ April Grade	B- D	B/ B	C/ B	B-/ C			
March/ April '21	Fair/ Marginal	Good/ Good	Fair/ Good	Good/ Fair	Index DOWN 9 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 3.6 degrees (26%) from last month to the same as last April and 4% below the 17-yr April norm of 18oC. Overall **specific conductance** of 2.16 mS/cm constitutes a 66% rise from last month to 129% above a year ago and 12% above the 17-yr monthly norm of 1.93 mS/cm. The overall **dissolved oxygen** level of 5.61 mg/L (59%Sat.) is 24% less than last month, 10% below a year ago and 2.5% under the 17-yr April norm of 5.80 mg/L (61%Sat). **Streamflow** over the antecedent 3-day period of 6.6 cfs is 76% less than than last month, 93% below a year ago and 58% under the 17-yr norm of 16 cfs. This month's overall LSDR **water quality index** (WQI) is nine points (17%) less than last month, five points (10%) below a year ago and three points above the 17-yr April norm of 41.

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 (Mar. '19 - April '21)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
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)	t	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)	60 (B)	29 (D)	42 (C)	WW	8.8	1.10
Feb.	52 (B-)	57 (B)	35 (D)	45 (C)	ww	32	0.50
March	55 (B)	64 (B)	45 (B)	53 (B-)	WW	31	2.32
April	29 (D)	59 (B)	51 (B-)	44 (C)	t	8.8	0.12

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. April, the first month of spring, 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 44 is the 12th time in 17 years that the April value has been in the C (Fair) water quality index range.

Monthly WQI values from Oct. '04 through April '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 April 2012. The running average April low of 23 (29% below current norm) occurred in 2015. The highest running average WQI of April of 37 (14% above norm) occurred in 2009. The fact that the river has experienced well below average rainfall and runoff during the first seven months of this water year indicates WY21 is likely to 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 two years, resurgent invasive aquatic plants and subsequent organic decay such as floating primrose-willow (*Ludwigia peploides*) in conjunction with minimal dry weather flows and accrual of benthic deposits in ponded portions are primary causes of sustained poor water quality within the upper portions 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. April results (color bars w/values in black shown on Chart 5) are less than those from last month (Chart 4) and those in Feb. (Chart 3). Four of 14 sites are rated Good (B), six Fair (C), two Marginal (D) and two Poor (E) this month whereas ten were Good (blue) and four Fair (green/yellow) last month. As shown in Chart 5, this month's index values (solid colored columns) are, in general, well below a year ago (4/'20, dashed columns), last month (dashed red line) and the 17-yr running average (solid black line) especially to the west. The overall rating of 44(C), Fair water quality grade, is three points (6%) above the 17-year April norm. (4/28/21)

