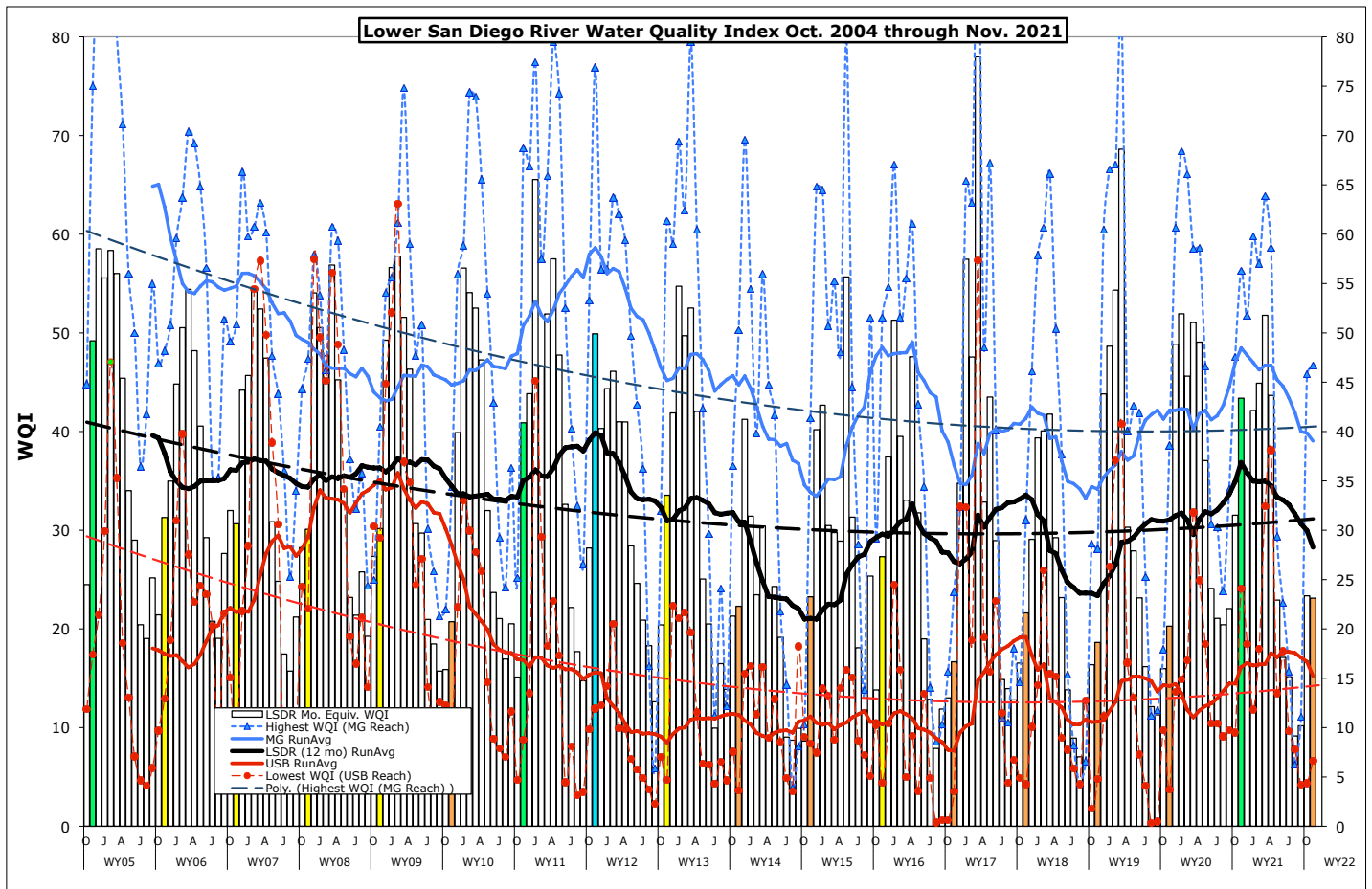


# Monthly WQM Report

## Lower San Diego River - November 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 (Sept/Oct). This month's overall index of 23 is the same as last month, 20 points lower than a year ago and ten points below the 17-yr average of 30. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) decreased approximately 1% from last month remaining with a grade of (E) Poor.

<b>Table 1 - Nov./Oct. 2021 WQM Data Summary</b>							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] Nov/Oct	[8-10] Nov/Oct	[11-15] Nov/Oct	[1-15] Nov/Oct	Last Mo (10/'21)	Last Yr (11/'20)	17-yr Avg (Nov.)
Temperature, oC	16.2/17.4	14.7/16.0	15.6/16.5	15.6/16.7	-6%	4%	5%
Sp.Cond., mS/cm	2.86/2.02	2.20/2.37	2.25/2.32	2.67/2.43	10%	11%	-3%
DO, mg/L	2.88/2.88	7.73/5.48	4.46/3.41	3.98/3.55	11%	-42%	-25%
DO, % of Sat.	23/30	76/56	45/35	40/37			
pH	7.65/7.88	7.98/7.75	7.92/8.02	7.80/7.96	-2%	-3%	1%
3-day ADF, cfs	3.8/2.6	2.4/2.3	2.2/2.3	2.8/2.3	19%	-37%	-47%
WQ Index	17/19	47/46	22/18	23/23	-1%	-47%	-23%
Nov/Oct Grade	E/E	C/C	E/E	E/E			
<b>Nov./ Oct. 2021</b>	<b>Poor/ Poor</b>	<b>Fair/ Fair</b>	<b>Poor/ Poor</b>	<b>Poor/ Poor</b>	<b>Index down 1% overall from last month</b>		

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

LSDR **water temperatures** declined 1.1 degrees (6%) from last month to 5% below the 17-yr monthly norm of 14.9 oC. Overall **specific conductance** of 2.67 mS/cm constitutes a 10% increase from last month and 11% above a year ago to 3% below the 17-yr monthly norm of 2.74 mS/cm. The overall **dissolved oxygen** level of 3.98 mg/L (40%Sat.) is 11% higher than last month, but 42% less than a year ago and 25% below the 17-yr norm of 5.44 mg/L (53%Sat). **Streamflow** over the antecedent 3-day period of 2.8 cfs is 19% higher than last month, but 37% below a year ago, and 47% less than the 17-yr norm of 5.2 cfs. This month's overall LSDR **water quality index** (WQI) of 23 decreased less than 1% from last month, to 47% below last Nov. and 23% under the 17-yr monthly norm of 30.

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, plus 30-day antecedent average daily streamflow (ADF) and total monthly rainfall (MRF) values, are expressed in **Table 2** on the next page.

<b>Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (Oct. '19 - Nov. '21)</b>							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TRF,in
Oct '19	18 (E)	18 (E)	15 (E)	16 (E)	DW	0.9	0.00
<b>Nov. '19</b>	<b>20 (E)</b>	<b>39 (C)</b>	<b>14 (E)</b>	<b>21 (E)</b>	<b>t</b>	<b>36</b>	<b>0.52</b>
Dec. '19	60 (B)	61 (B)	31 (D)	48 (C+)	WW	79	3.51
Jan.'20	62 (B)	68 (B)	34 (D)	52 (B-)	WW	18	2.90
Feb.	47 (C)	66 (B)	35 (D)	45 (C)	t	10.2	0.38
March	52 (B-)	58 (B)	46 (C)	51 (B-)	WW	48	1.97
April	47 (C)	59 (B)	45 (C)	49 (C+)	WW	181	3.58
May	38 (C-)	47 (C)	37 (D+)	37 (D+)	t	13	0.06
June	25 (D-)	31 (D)	21 (E)	24 (E+)	t	5.7	0.02
July '20	18 (E)	30 (D)	21 (E)	21 (E)	DW	2.1	0.001
Aug.'20	23 (E)	24(E+)	18 (E)	21 (E)	DW	1.3	0.00
Sept '20	21 (E)	34 (D)	19 (E)	22 (E)	DW	1.3	0.00
Oct.'20	32 (D)	48 (C)	26 (D-)	33 (D)	t	2.4	0.21
<b>Nov. '20</b>	<b>45 (C)</b>	<b>56 (B)</b>	<b>37 (D+)</b>	<b>44 (C)</b>	<b>t</b>	<b>7.6</b>	<b>0.11</b>
Dec. '20	34 (D)	52 (B)	32 (D)	36 (D+)	t	2.9	0.06
Jan. '21	46 (C)	60 (B)	30 (D)	42 (C)	WW	10.2	1.10
Feb.	52 (B-)	57 (B)	35 (D)	45 (C)	WW	35	0.50
March	55 (B)	64 (B)	45 (B)	53 (B-)	WW	28	2.32
April	29 (D)	59 (B)	51 (B-)	43 (C)	t	7.9	0.12
May	25 (D-)	29 (D)	20 (E)	24 (E+)	t	3.7	0.04
June	14 (E)	23 (E+)	19 (E)	17 (E)	DW	1.7	0.002
July '21	15 (E)	16 (E)	17 (E)	15 (E)	DW	0.8	0.004
Aug. '21	11 (F)	6 (F)	10 (F+)	9 (F)	DW	0.6	0.224
Sept '21	12 (F+)	11 (F)	9 (F)	10 (F+)	DW	0.6	0.004
Oct. '21	19 (E)	41 (C)	16 (E)	22 (E)	t	6.4	0.80
<b>Nov. '21</b>	<b>17 (E)</b>	<b>47 (C)</b>	<b>22 (E)</b>	<b>23 (E)</b>	<b>t</b>	<b>2.6</b>	<b>0.21</b>

The **cover page** of this report presents monthly WQI values and their range (high/low) for the Lower San Diego River watershed as determined over 17 years of monitoring. November, the second month of autumn, 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 trendlines, from WY05 through WY17, are attributed to depleted DO levels extending throughout protracted low-flow periods of the water year at multiple sites throughout the subbasin. The dashed lines present an overall negative slope of -0.71 points 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 33. This month's overall index value of 23 is the 8th time the Nov. index has been in the Poor (E) water quality range. The overall LSDR Nov. index reached a low of 16 in 2017.

WQI values extending from Oct. '04 through the current month 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 overall current running average WQI of 28 is 12 percent below the 17-yr to-date LSDR weighted average value of 32.2. The running average Nov. low of 21 (35% below the current norm) occurred in 2014. The highest running average WQI for the month of 40 (23% above norm) occurred in 2011. The fact the river has experienced well below average rainfall (and runoff) during the past 3 years suggests minimal improvement in the absence of significant precipitation.

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 upper reach over the last several years, resurgent invasive aquatic plants and subsequent decay in conjunction with very low dry-weather flows and accrual of organic deposits in ponded portions are principal causes of poor water quality. The greatest downward trend (red-dashed line) is associated with the poorest reach (Upper Santee Basin) encompassing Mast Park East and West (13E&W) and Magnolia Ave.(14) monitoring sites. The Mission Gorge (blue line) section continues to demonstrate the least decline in index values over the entire monitoring period.

Spatial WQI values determined over the past three months in order of occurrence upstream are shown in **Charts 3, 4 and 5** on page 6. Nov. results (color bars w/values in black shown on Chart 5) are well above those from last month (Chart 4) and September (Chart 3). Four out of 15 sites this month are graded Very Poor (F), another 4 Poor (E) and 4 more Marginal (D) while 3 are Fair (C). This month's index values (solid colored columns) are well below a year ago (dashed bars) and the 17-yr running averages shown as a solid black line. The overall water quality index for November of 23 is the fifth time over the last six years that the value has been in the Poor (E) range (13-24).

(11/24/21 jck)

