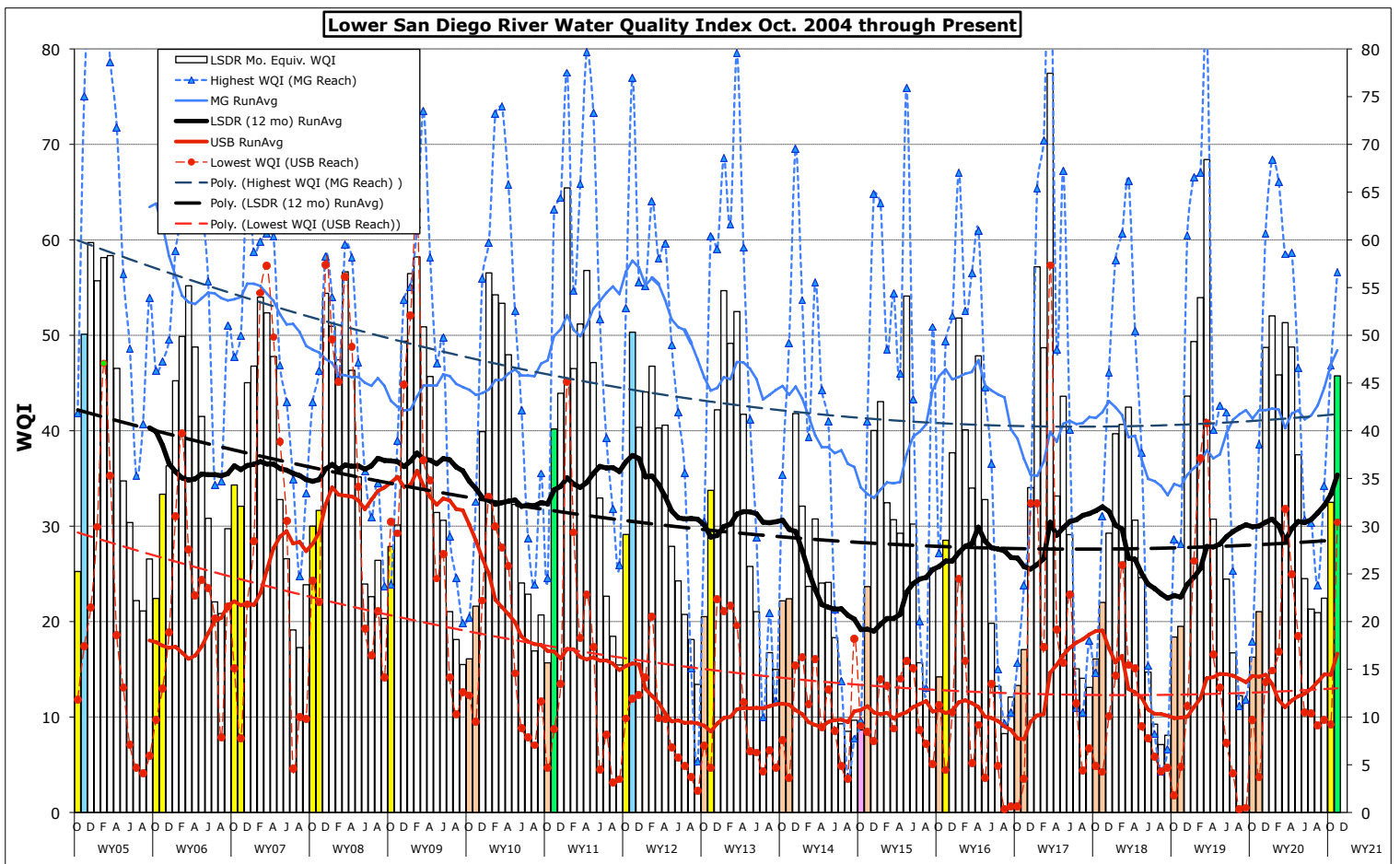


# Monthly WQM Report

## Lower San Diego River - November 2020



## 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 (Nov/Oct). This month's overall index of 46 is 12 points (41%) above last month and 18 points higher than the 16-yr monthly average of 28. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) rose from a full grade from Marginal (D) to Fair (C) over the past month.

<b>Table 1 - November/October 2020 WQM Data Summary</b>							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Sites]	[1-7] Nov/Oct	[8-10] Nov/Oct	[11-15] Nov/Oct	[1-15] Nov/Oct	Last Mo (10'20)	Last Yr (11'19)	16-yr Avg (Nov.)
Temperature, oC	16.6/18.4	12.6/14.0	14.5/16.3	15.0/16.6	-10%	-7%	0%
Sp.Cond., mS/cm	2.57/3.68	2.05/2.31	2.15/2.15	2.41/2.87	-16%	-22%	-11%
DO, mg/L	6.82/5.26	9.66/8.77	7.24/4.79	7.47/5.67	30%	95%	40%
DO, % of Sat.	70/56	91/84	68/48	73/57			
pH	7.97/7.78	8.29/8.23	/7.93	8.02/7.86	2%	7%	4%
3-day ADF, cfs	4.8/1.8	4.6/3.1	4.6/3.3	4.7/2.7	72%	335%	-9%
WQ Index	46/32	57/47	40/26	46/32	41%	117%	62%
Nov/Oct	C/D	B/C	C/D-	C/D			
November/ October	Fair/ Marginal	Good/ Fair	Fair/ Marginal	Fair/ Marginal	Index up 14 points overall from last month		

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

LSDR **water temperatures** fell 1.6 degrees (10%) from last month to 7% below a year ago reaching the 16-yr Nov. norm of 14.9 oC. Overall **specific conductivity** of 2.41 mS/cm constitutes a 16% decrease from last month, to 22% less than last Nov. and 11% below the 16-yr norm of 2.72 mS/cm. The overall **dissolved oxygen** level of 7.47 mg/L (73%Sat.) is 30% more than last month, 95% above a year ago Nov. and 40% greater than the 16-yr norm of 5.34 mg/L (52%Sat.). **Streamflow** over the antecedent 3-day period of 4.7 cfs is up 72% from last month to 335% of a year ago but 9% less than the 16-yr monthly norm. This month's LSDR **water quality index** (WQI) is 14 points above last month, 25 points (117%) greater than a year ago Nov. and 18 points (62%) more than the 16-yr norm of 28.

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

<b>Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (10'18 - 11'20)</b>							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	MRF, in
Oct	24 (D-)	29 (D)	9 (F)	18 (E)	t	3.2	0.57
<b>Nov.'18</b>	<b>21 (E+)</b>	<b>28 (D)</b>	<b>14 (E-)</b>	<b>19 (E)</b>	<b>t</b>	<b>9.6</b>	<b>0.81</b>
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
Mar.	76 (A-)	82 (A)	55 (B)	68 (B)	WW	25	1.28
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
<b>Nov.'19</b>	<b>20 (E)</b>	<b>39 (C)</b>	<b>14 (E)</b>	<b>21 (E)</b>	<b>t</b>	<b>37</b>	<b>0.52</b>
Dec.	60 (B)	61 (B)	31 (D)	49 (C+)	WW	78	3.51
Jan. '20	62 (B)	68 (B)	34 (D)	52 (B-)	WW	18	2.90
Feb.	47 (C)	66 (B)	35 (D)	46 (C)	ww	10	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)	34 (D)	37 (D+)	t	13	0.06
June	23 (E)	35 (D)	23 (E)	26 (D-)	dw	5.7	0.02
July	18 (E)	30 (D)	20 (E)	21 (E)	DW	2.1	0.00
Aug	23 (E)	24 (E+)	19 (E)	21 (E)	DW	1.3	0.00
Sept	21 (E)	34 (D)	19 (E)	22 (E)	DW	1.3	0.00
Oct	32 (D)	47 (C)	26 (D-)	32 (D)	DW	2.2	0.21
<b>Nov.'20</b>	<b>46 (C)</b>	<b>57 (B)</b>	<b>40 (C)</b>	<b>46 (C)</b>	<b>t</b>	<b>6.0</b>	<b>0.17</b>

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 16+ years of monitoring. The October and November values for each year are expressed as color-shaded bars; blue-B (50 or >) 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/or poorest reach (Upper Santee Basin) are shown in red. The downward slope in index, represented by the smooth dashed black line, during the 16-yr period is primarily attributed to depleted dissolved oxygen levels extending throughout low-flow periods of the water year. The dashed line represents an overall negative slope of -0.625% per annum in index value over the 16+ years of monitoring. The irregular solid black line (12-month running average index value), generally rising since reaching a low of 19 in October 2014, is currently at 35. This month's index of 46 (green column) is the first time that November results have reached the B-Good level since 2011.

Monthly WQI values from Oct. '04 through Nov.'20 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 35 is 13% above the 16-yr LSDR flow-weighted average index; well above values experienced since 2012. The running average Nov. low of 16 (49% below the current norm) occurred in 2016. The highest running average WQI of 51 (63% above the norm) occurred in 2004. The fact that the wet season has only gotten underway indicates that WY21 should see well above average water quality index values.

Both monthly and 12-mo. running average WQI values for the "poorest" (Upper Santee Basin) and "best" (Mission Gorge) reaches are presented in **Chart 2**. Although water quality improved within the Upper Santee Basin over the past year, resurgent aquatic growth and subsequent decay of invasive plants such as floating primrose-willow (*Ludwigia peploides*) in conjunction with low stream flow and increased benthos are causes of sustained poor water quality within the upper reaches of both the Santee Basin and Mission Valley. The greatest downward trend (red-dashed line) is associated with the poorest reach (Upper Santee Basin) encompassing monitoring sites 13 (Mast Park East) and 14 (Magnolia Ave.). Mission Gorge (blue lines) present the least decline over time in water quality index values.

Spatial WQI values by monitoring site over the past three months are shown in **Charts 3, 4 and 5** on page 6. Nov. results (color bars w/values in black) shown on Chart 5 are significantly above those from last month (Chart 4) and Sept. (Chart 3). Six of 15 sites were rated Good(B) this month, while there was only one last month and none in Sept.. Lower water temperature and higher streamflow result in improved dissolved oxygen levels and declining specific conductivity values. November marks only the second month of WY21 and suggests further recovery in overall (LSDR) water quality index values as flows and dissolved oxygen levels increase. As shown in Chart 5, this month's index values (solid colored columns) for each site are well above a year ago (11/19, dashed colored columns), last month (dashed red line) and the 16-yr Nov. norms (solid black line).

(jck 11/22/20)

