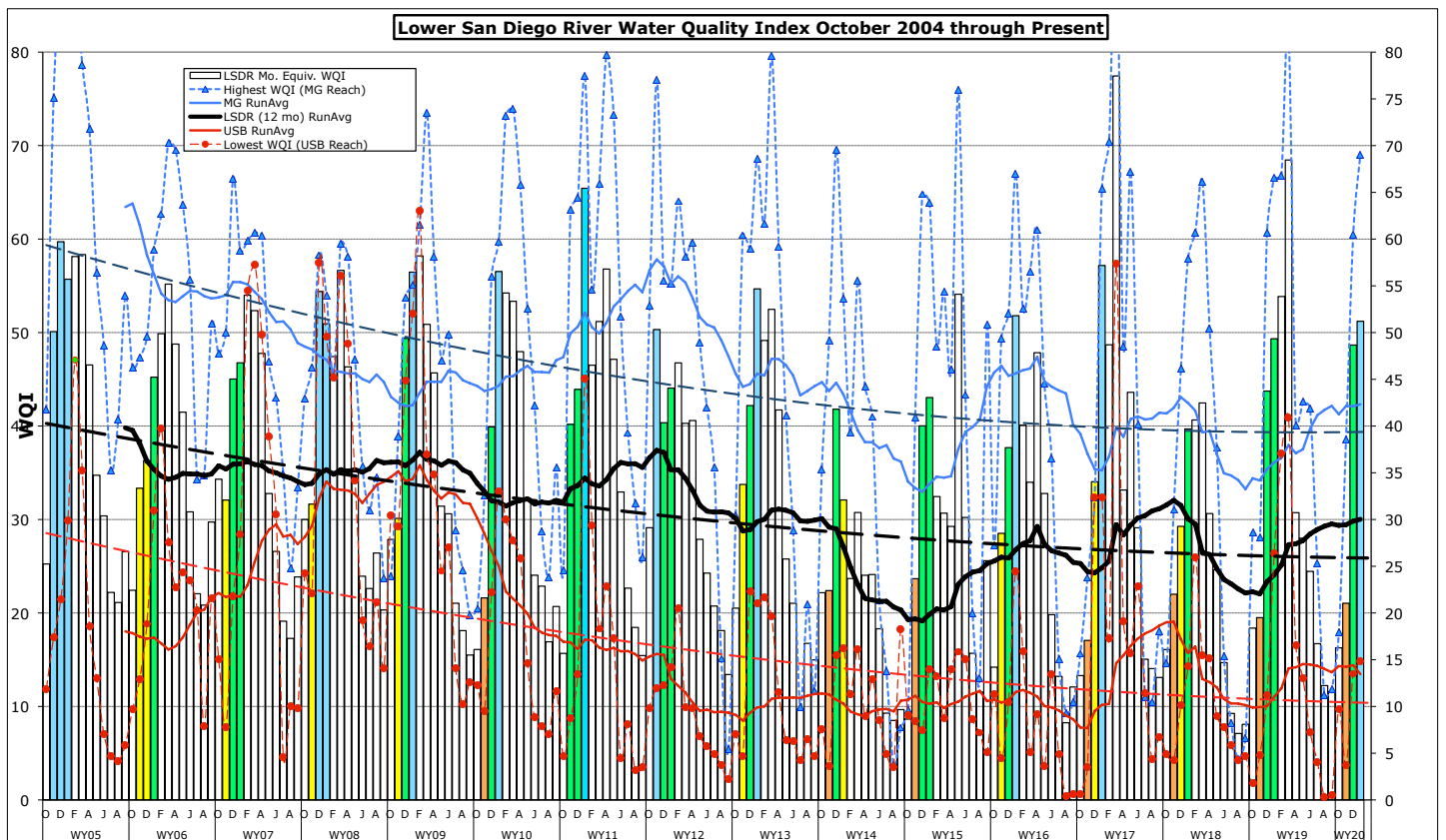


Monthly WQM Report

Lower San Diego River - January 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 watershed over the past two months (Dec.'19 and Jan.'20); the first two months of the winter/wet-weather period. The January index rose 2 index points from last month to four points above the 15-yr Jan. average of 48. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) for the first month of the year rose 5% from Fair (C+) last month to Good (B-).

Table 1 - January 2020/December 2019 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Sites]	[1-7] Jan/Dec	[8-10] Jan/Dec	[11-15] Jan/Dec	[1-15] Jan/Dec	Last Mo (12'19)	Last Yr (1'19)	15-Yr Avg (Jan.)
Temperature, oC	12.2/12.0	11.7/8.8	11.7/11.0	11.9/10.9	9%	-20%	0%
Sp.Cond., mS/cm	2.04/1.94	1.40/1.38	1.47/1.77	1.74/1.88	-7%	36%	3%
DO, mg/L	8.66/9.42	10.69/8.97	5.95/5.86	7.73/7.76	0%	20%	0%
DO, % of Sat.	81/87	97/89	55/52	72/72			
pH	7.74/7.75	8.05/8.02	7.78/7.68	7.76/7.71	1%	2%	1%
3-day ADF, cfs	56.3/12.5	14.9/10.1	10.3/9.8	27.2/10.8	152%	-45%	-13%
WQ Index	59 /61	69 /60	34 /31	51 /49	5%	4%	6%
Grade Jan/Dec	B /B	B /B	D /D	B -/C+			
January 2020 Dec. '19	Good / Good	Good / Good	Marginal /Marginal	Good / Fair	Index rose 2 points overall from last month		

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

LSDR **water temperatures** increased one degree (9%) from last month to the 15-yr norm (11.9oC); 20% below last January. Overall **specific conductivity** of 1.74 mS/cm constitutes a 7% decline from last month, to within 3% of the 15-yr norm (1.70 mS/cm) and 36% above last Jan. The overall **dissolved oxygen** level of 7.73 mg/L (72%Sat.) is roughly unchanged from last month and the 15-yr norm; a value that is 20% above a year ago. **Streamflow** over the antecedent 3-day period of 27cfs is 152% greater than last month, but 45% less than a year ago and 13% below the 15-yr norm of 31 cfs. This month's LSDR **water quality index** (WQI) increased two points (5%) from last month and a year ago to four points (6%) above the 15-yr Jan. 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.

Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (11/2017 - 1/2020)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	MRF, in
Nov.	25(D-)	31(D)	15(E)	22(E)	t	1.4	0.01
Dec. '17	26(D-)	46 (C)	24(E+)	29 (D)	t	2.3	0.02
Jan.'18	41(C)	58(B)	29(D)	40(C)	WW	13	1.78
Feb.	41(C)	61(B)	31(D)	41(C)	t	4.4	0.36
Mar.	42(C)	66(B)	31(D)	42(C)	WW	22	0.95
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. '18	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
Nov.	20 (E)	39 (C)	14 (E)	21 (E)	t	37	0.52
Dec. '19	61 (B)	60 (B)	31 (D)	49 (C+)	WW	67	3.51
Jan. '20	59 (B)	69 (B)	34 (D)	51 (B-)	WW	79	2.90

The **cover page** chart presents monthly WQI values and their range (high-low) for the Lower San Diego River as determined over the past 15+ years of RiverWatch monitoring. The two-month values (Dec/Jan) 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 negative trend of -2.5% per annum decline in index value since late 2004. WY05 witnessed best overall water quality during the past 15+ years while the poorest water quality was experienced during the summer months of WY14 extending into Fall (Nov.).

Monthly WQI values extending from Oct. '04 through Jan. of the new year are presented in **Chart 1** (next page) together with 12-mo. running averages for each of the five principal reaches of the river and overall (i.e., LSDR). The current running average WQI of 30 is only two percent below the 15-yr LSDR flow-weighted average index of 30.5, remaining six index points above a year ago. The Jan. running average low of 20 (-35% below the norm) occurred in 2014. The highest running average WQI for Jan. of 36 (+19% above norm) occurred both in 2007 and 2009. The overall LSDR running average (12-month trendline), shown dashed in black, has declined 10 index points over the 15+ year span.

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 the increased 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 slightly higher than last month and much higher than Nov. In Nov. 67% of the sites (10 of 15) were Poor or Very Poor, whereas this month only one (7%) was Very Poor. This month, 12 of 15 sites (80%) were found Good (WQI >50) and two were Fair. December had two Poor-to-Very Poor sites, three Marginal-to-Fair and 10 Good.

January is typically a month of continued improvement in LSDR water quality as illustrated on the cover page chart. The primary driver is enhanced streamflow (flushing), resulting from rainfall (increased runoff). February, similarly, is often a month of continued water quality improvement.

(jck 1/22/2020)

