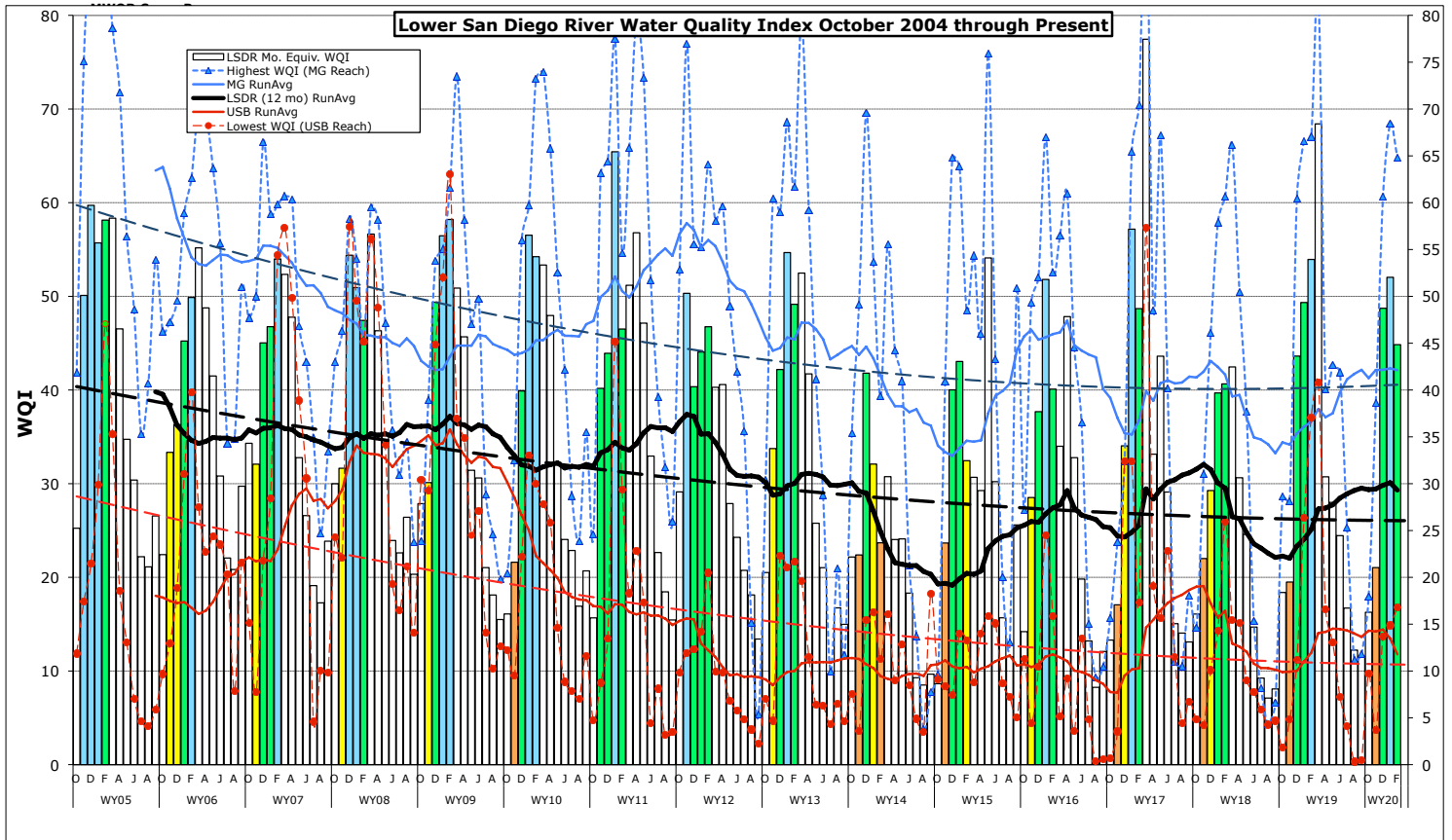


Monthly WQM Report

Lower San Diego River - February 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 sub-basin over the last two months (Jan. and Feb.); mid-months of the wet-weather (winter) season. The February index fell six points from last month; one point above the 15-yr Feb. average of 45. Overall water quality in the lower San Diego River hydrologic unit (HSU 907.1) for February fell 12 percent from last month's Good (B-) to Fair (C).

Table 1 - January/February 2020 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Sites]	[1-7] Jan/Feb	[8-10] Jan/Feb	[11-15] Jan/Feb	[1-15] Jan/Feb	Last Mo (1'20)	Last Yr (2'19)	15-Yr Avg (Feb)
Temperature, oC	12.2/16.0	11.7/13.6	11.7/14.1	11.9/14.7	24%	5%	5%
Sp.Cond., mS/cm	2.04/2.39	1.40/1.55	1.47/1.69	1.74/1.96	13%	244%	21%
DO, mg/L	8.66/6.17	10.7/10.36	5.95/6.03	7.73/6.71	-7%	-19%	-4%
DO, % of Sat.	81/63	97/98	55/60	72/67			
pH	7.74/7.75	8.05/8.08	7.78/7.73	7.76/7.74	0%	0%	-1%
3-day ADF, cfs	24.9/24.2	11.7/7.9	10.3/6.1	15.6/12.8	-18%	-95%	-80%
WQ Index	62/47	68/66	34/35	52/46	-12%	-15%	1%
Grade Jan/Feb	B/C	B/B	D/D	B-/C			
January/ February '20	Good/ Fair	Good/ Good	Marginal/ Marginal	Good/ Fair	Index fell 6 points overall from last month		

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

LSDR **water temperatures** increased 2.8 degrees (24%) from last month to 5% above last year and the 15-yr Feb. norm of 14.0 oC. Overall **specific conductivity** of 1.96 mS/cm constitutes a 13% increase from last month, and 21% over the 15-yr norm of 1.62 mS/cm. The overall **dissolved oxygen** level of 6.71 mg/L (67%Sat.) is 7% below last month and 4% less than the 15-yr norm of 7.82 mg/L. **Streamflow** over the antecedent 3-day period of 12.8 cfs is down 18% from last month at 98% less than a year ago and 80% below the 15-yr norm of 64.5 cfs. This month's LSDR **water quality index** (WQI) decreased six points (-12%) from last month and -15% from a year ago to within one percent of the 15-yr Feb. norm of 45.

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 (12/2017 - 2/2020)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	MRF, in
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. '18	41 (C)	61 (B)	31 (D)	41 (C)	ww	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.'19	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	60 (B)	61 (B)	31 (D)	49 (C+)	WW	67	3.51
Jan. '20	62 (B)	68 (B)	34 (D)	52 (B-)	WW	79	2.90
Feb. '20	45 (C)	65 (B)	35 (D)	45 (C)	ww	10.3	0.38

The **cover page** chart presents monthly WQI values and their range (high-low) for the Lower San Diego River sub-basin as determined over the past 15+ years of RiverWatch monitoring. The last four-month values (Nov.-Feb.) 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 overall poorest water quality was experienced during the summer months of WY14 extending into Fall (Nov.).

Monthly WQI values extending from Oct. '04 through this February 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 29 is four percent below the 15-yr LSDR flow-weighted average index of 30.5, remaining four index points above a year ago. The Feb. running average low of 20 (-33% below the norm) occurred in 2015. The highest running average WQI for the month of 36 (+17% above norm) occurred both in 2009. The overall LSDR running average (12-month trendline), shown dashed in black, has declined approximately ten index points over the past 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 lower than last month and for Dec. at nearly all monitoring sites. In December 67% of the sites (10 of 15) were Good or Very Good; while last month 87% were Good or better. This month only six sites (40%) were found Good (blue bars) while eight (53%) were Fair (green bars). Of special note is site 13 (Mast Park) where a very low DO value (0.11 mg/L), recorded again this month, resulted in an extremely low WQI.

Although February is often a month of continued water quality improvement, this year reduced streamflow (runoff) due to below average rainfall over the past four weeks resulted in an evident decline in overall river water quality. A continued decline in physio-chemical quality can be anticipated for March should rainfall remain well below the monthly norm.

(jck 2/24/2020)

