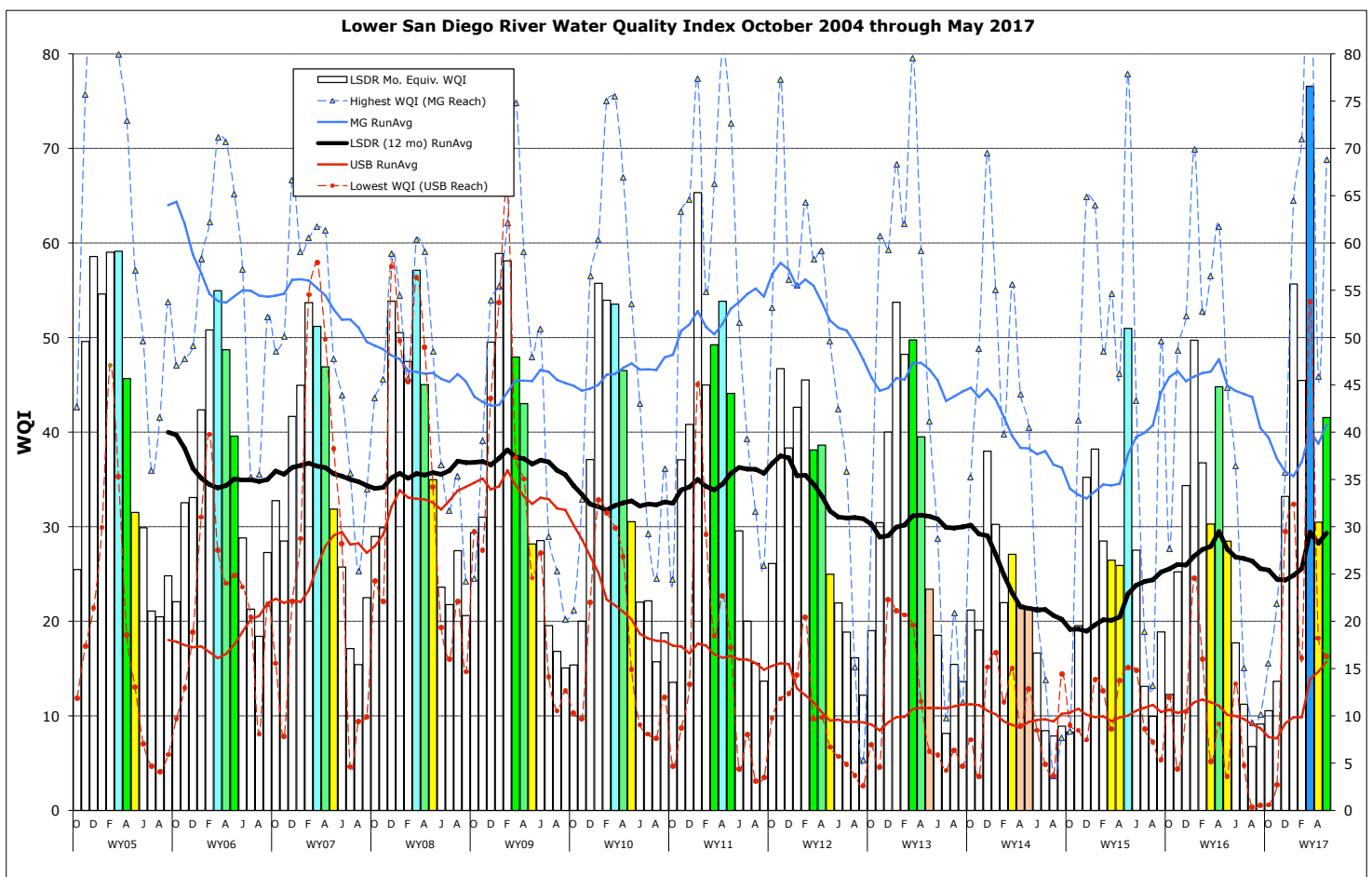


Monthly WQM Report

Lower San Diego River - May 2017



Lower SDR WQ Monitoring Data Summary

Table 1 presents a summary of water quality data monitored by SDRPF's RiverWatch Team within the Lower San Diego River watershed over the past two months. April and May constitute the spring months. This month's index is down 16 points from last month; a value 15 points higher than last May and 14 points above the 12-yr monthly norm. Overall water quality of the lower hydrologic unit (HSU 907.1) is rated Fair (C+) for May up from Marginal (D) last month.

Table 1 - May/April 2017 WQM Data Summary							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Sites]	[1-7] May/April	[8-10] May/April	[11-15] May/April	[1-15] May/April	Last Mo (4/'17)	Last Yr (5/'16)	12-Yr Avg (May)
Temperature, oC	22.0/22.0	18.1/18.0	19.3/18.9	20.1/19.9	1%	2%	0%
Sp.Cond., mS/cm	1.64/2.61	1.51/1.56	1.54/1.55	1.61/2.02	-20%	-25%	-29%
DO, mg/L	5.51/4.21	9.05/6.54	4.98/4.54	5.94/4.68	27%	15%	15%
DO, % of Sat.	64/49	97/70	55/50	66/52			
pH	7.95/7.93	7.98/8.10	8.01/8.05	7.99/8.00	0%	5%	5%
30-day ADF, cfs	27.6/10.1	22.8/6.2	21.2/4.8	24/7.0	240%	259%	49%
WQ Index	44/31	69/46	34/28	42/30	36%	24%	18%
Grade(May/April)	C/D	B/C	D/D	C/D			
May 2017 / April 2017	Fair/ Marginal	Good/ Fair	Marginal/ Marginal	FAIR/ Marginal	WQI up 12 points from last month		

Overall, LSDR **water temperatures** are up two tenths of a degree (1%) from last month and last May, at one-tenth of a degree below the 12-yr norm of 20.2°C. **Specific Conductivities** declined 20% from last month to 25% below May of 2016 and 29% below the 12-yr monthly norm of 2.28 mS/cm. Overall **Dissolved oxygen** of 5.94 mg/L is up 27% from last month at 15% above last May and the 12-yr monthly norm of 5.21 mg/L. **Streamflow** over an antecedent 30-day period of 24 cfs is up 240% from than last month's well-below-normal value of 7 cfs at 49% above the 12-yr norm of 16 cfs. This month's LSDR **water quality index** (WQI) of 42(C) rose 12 points (36%) above last month's value of 30(D) to 8 points higher than a year ago May and 7 points higher than the 12-yr monthly norm of 35 (D).

Conclusion:

**The Lower San Diego River water quality index rose 12 points (38%)
from 30 (D-Marginal) to 42 (C-Fair) over the past month.**

A summary of monthly WQI values occurring over the past two years of record for the three sections of the lower river system as well as the overall LSDR average are listed in **Table 2** along with average daily flow (ADF) and total monthly rainfall (MRF).

Table 2 - WQI Values, Average Daily Flow and Monthly Rainfall (May 2015 - May 2017)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	MRF, in
May'15	55(B)	78(A-)	41(C)	54(B)		12.9	2.4
June	26(D-)	43(C)	31(D)	31(D)	DW	3.2	0.01
July	12(F)	19(E)	15(E)	15(E)		9.5	1.71
Aug	8(F)	13(E-)	15(E)	12(F+)	DW	2.7	0.00
Sept	8(F)	50(B-)	32(D)	26(D-)		5.5	1.25
Oct	5(F)	28(D)	17(E)	14(E)		4.9	0.42
Nov	28(D)	49(C+)	20(E)	29(D)		7.8	1.53
Dec.	40(C)	52(B)	29(D)	38(C-)		7.5	0.45
Jan.'16	54(B)	70(B)	42(C)	52(B)	WW	92.7	3.21
Feb.	40(C)	53(B)	35(D)	40(C)		12.3	0.05
March	32(D)	57(B)	25(D-)	34(D)		14.0	0.72
April	63(B)	62(B)	30(D)	49(C+)		11.5	0.55
May	38(C)	45(C)	26(D-)	34(D)		5.8	0.43
June	14(E)	36(D)	18(E)	20(E)	DW	1.2	0.02
July	14(E)	15(E)	12(F+)	13(E-)	DW	0.6	0.00
Aug	10(F)	9(F)	6(F)	8(F)	DW	0.4	0.00
Sept	12(F+)	10(F)	12(F+)	12(F+)	DW	0.4	0.32
Oct	13(E-)	16(E)	13(E-)	13(E-)	DW	0.8	0.07
Nov.	16 (E)	23(E)	14(E)	14(E)		1.2	0.61
Dec.	27(D)	36(D)	37(D+)	33(D)	WW	19.4	4.22
Jan. '17	62(B)	64(B)	49(C+)	56(B)	WW	128.2	3.01
Feb.	49(C+)	71(B)	37(D+)	45(C)	WW	122.8	3.14
March	81(A)	95(A+)	64(B)	77(A-)	WW	176.6	0.07
April	33(D)	39(C)	19(E)	30(D)		9.3	0.02
May'17	44(C)	69(B)	34(D)	42(C)		23.9	0.92

The **cover page** chart presents monthly WQI values and their range (high-low) for the Lower San Diego River as determined over the past 12 and-a-half years of RiverWatch monitoring. April and May values for each of the last 12 years are expressed as color-shaded bars. Running average index values for LSDR (for 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 general upward trend in the index through the past six months of winter and spring is evident. Last month's overall index of 30(D) represented the lowest April following the highest overall March index on record. This month's overall index of 42(C) is slightly above (18%) the 12-yr May norm.

Monthly WQI values extending from Oct. 2004 through May 2017 are presented in **Chart 1** (next page) together with 12-month running averages (trend-lines) for each of the five principal reaches and overall (i.e., for the LSDR). The current overall running average WQI for the LSDR of **29** is only 7% below the 12-yr annual norm of 32. A year ago (May 2016) the running average WQI was a full point lower (28) at 13% below the norm. The improved DO values throughout the five reaches of the lower river system associated with hydraulic flushing during this year's wet-weather months (Dec-March) are now declining with the return to dry-weather conditions.

Monthly and 12-mo. running average WQI values for the poorest reach (Upper Santee Basin) and best Mission Gorge section (Sites 8-10) are presented in **Chart 2** also on next page. Although water quality has improved to some extent in the Upper Santee Basin, excessive growth of invasive aquatic plants such as floating primrose-willow (*Ludwigia hexapetala*) observed throughout many of the slower-moving reaches of the river, considered a prime contributor to dissolved oxygen deficits and resultant low WQI values during extended periods in previous years, is now, following months of flushing, on the upsurge.

Spatial WQI results by site for the past three months of monitoring are shown on **Charts 3, 4 and 5** on page 6. WQI values (color bars w/index values in black) declined significantly from March all time highs in March to last months lows. May values saw a return toward 12-yr normalized results due to several rainfall events earlier this month. Sixty percent (9 of 15) of the sites were in the Fair (C) range (WQI>37) this past month while four more (27%) were Good (B). In April ten of 15 sites were Poor (3) to Marginal (7) with the remaining five Fair (3) to Good (2). All 15 sites were in the Good (5) or Very Good (10) range in March.

Water quality index values can be expected to continue to decline over the next month at most monitoring sites assuming continued increase in specific conductivity and water temperature, in conjunct with lower dissolved oxygen levels and streamflow. Dissolved oxygen concentrations can be anticipated to fall below the hypoxic threshold of 4 mg/L absent an early summer rainstorm.

jck (5/23/2017)

