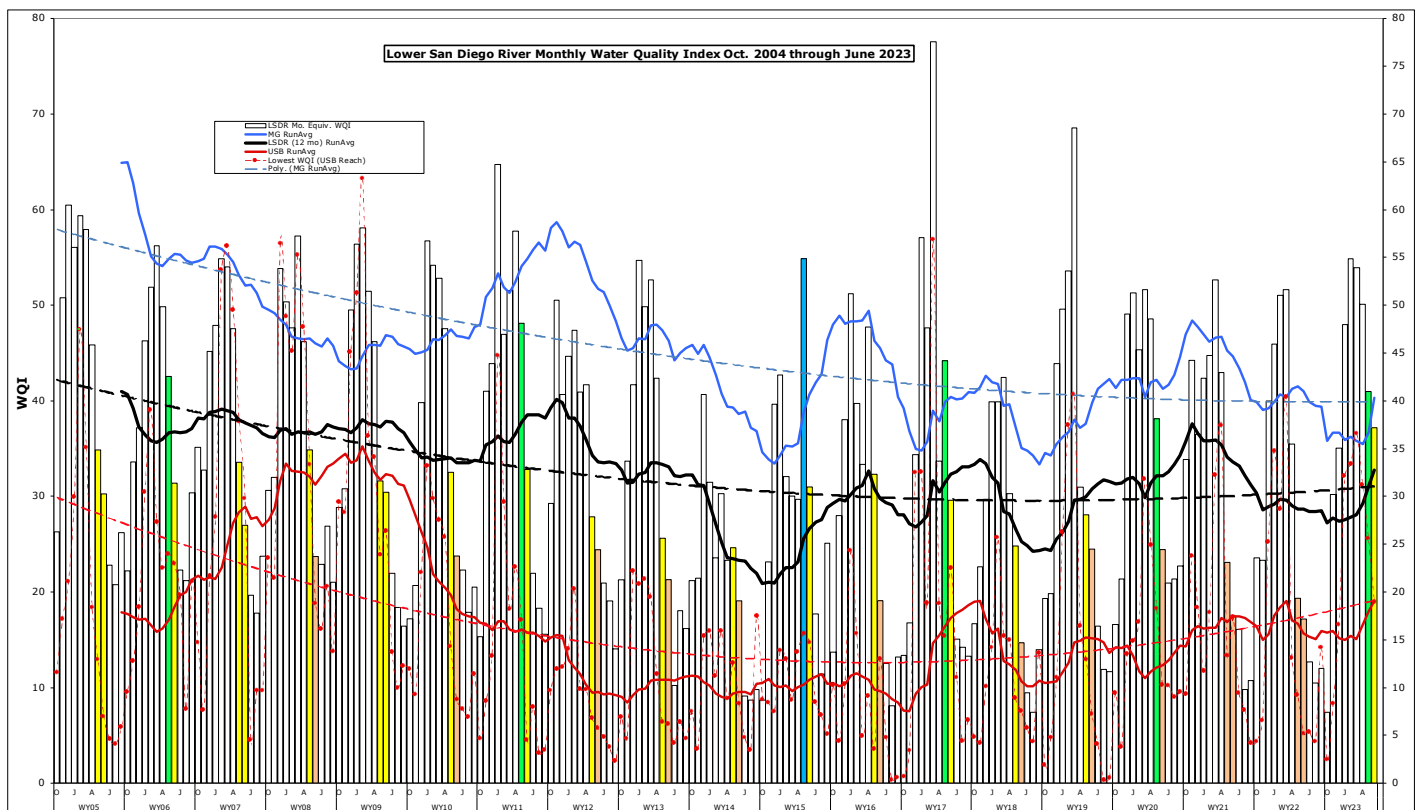


# Monthly WQM Report

## Lower San Diego River - July 2023



## Lower SDR Water Quality Monitoring Data Summary

**Table 1** presents a summary of water quality data monitored by the SDRPF RiverWatch Team within the Lower San Diego River (LSDR) watershed over the past two months (July/June) of 2023. This month's overall index is 14 points (37%) less than last month. Overall water quality in the LSDR hydrologic unit (HSU 907.1) declined from Marginal (D+) in June to Poor (E+) in July.

<b>Table 1 - July/June 2023 WQM Data Summary</b>							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] July/June	[8-10] July/June	[11-15] July/June	[1-15] July/June	Last Mo. (6/'23)	Last Yr. (7/'22)	19-yr Avg. (July)
Temperature, oC	24.5/23.0	21.4/19.6	22.5/20.4	23.0/21.3	8%	1%	-1%
Sp.Cond., mS/cm	2.86/2.40	1.54/1.29	1.98/1.52	2.34/1.88	24%	-18%	-14%
DO, mg/L	2.77/4.2	6.47/7.23	3.57/4.95	3.82/5.01	-25%	40%	9%
DO, % of Sat.	33/50	73/78	41/56	44/58			
pH	7.57/7.74	7.85/8.08	7.40/7.53	7.46/7.61	-2.0%	-2.8%	-2.5%
3-day ADF, cfs	5.8/8.0	2.8/6.4	2.3/6.2	3.8/6.9	-45%	482%	24%
WQ Index	19/33	38/59	22/33	23/37	-37%	85%	32%
July/June	E/D	C-/B	E/D	E+/D+			
July/June	Poor/ Marginal	Fair/ Good	Poor/ Marginal	Poor/ Marginal	<b>Index down 14 points from last month</b>		

Negative variance (declines from norms) and DO depletion (DO < 5.0 mg/L or 50% of Sat) expressed in red.

LSDR **water temperatures** rose 1.7oC (8%) from last month to a level only 1% below the 19-yr norm of 23.1oC. The overall **specific conductance** of 2.34 mS/cm constitutes a 24% increase from last month to 14% below from the 19-yr July norm of 2.72 mS/cm. The overall **dissolved oxygen** level of 3.82 mg/L (44%Sat.) is 25% less than last month, but 40% greater than last July and 9% above the 19-yr norm of 3.49 mg/L (40%Sat). **Streamflow** over the antecedent 3-day period of 3.8 cfs is 45% less than last month but four times a year ago and 24% above a July norm of 3.1 cfs. This month's overall LSDR **water quality index** (WQI) of 23 (E+) is 37% below last month, holding 85% above July of last year and 32% greater than the 19-yr norm of 18 (E).

Monthly WQI values occurring over the past two years 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 (June,'21 - July,'23)</b>							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
June	14 (E)	23 (E+)	19 (E)	17 (E)	DW	1.7	0.002
<b>July'21</b>	<b>15 (E)</b>	<b>16 (E)</b>	<b>16 (E)</b>	<b>16 (E)</b>	<b>DW</b>	<b>0.8</b>	<b>0.00</b>
Aug.	11 (F+)	6 (F)	10 (F)	10 (F)	DW	0.6	0.22
Sept.	12 (F+)	11 (F+)	10 (F)	11 (F+)	DW	0.6	0.004
Oct.	19 (E)	46 (C)	18 (E)	24(E+)	T	6.4	0.80
Nov.	16 (E)	47 (C)	22 (E)	23 (E+)	T	2.4	0.21
Dec.	35 (D)	53 (B-)	38 (C-)	40 (C)	WW	21	1.10
Jan.'22	44 (C)	68 (B)	38 (C-)	46 (C)	WW	30	1.64
Feb.	55 (B)	67 (B)	38 (C-)	51 (B-)	T	7.1	0.22
March	55 (B)	61 (B)	42 (C)	52 (B-)	WW	26	1.04
April	32 (D)	69 (B)	25 (D-)	36 (D)	WW	14	1.01
May	17 (E)	32 (D)	15 (E)	19 (E)	T	4.1	0.03
June	19 (E)	16 (E)	15 (E)	17 (E)	DW	1.1	0.00
<b>July '22</b>	<b>17 (E)</b>	<b>2 (F-)</b>	<b>12 (F+)</b>	<b>13 (E-)</b>	<b>DW</b>	<b>0.6</b>	<b>0.00</b>
Aug.	15 (E)	2 (F-)	8 (F)	10 (F)	DW	0.4	0.00
Sept.	8 (F)	11 (F+)	16 (E)	12 (F+)	DW	2.0	0.64
Oct.	9 (F)	3 (F-)	7 (F)	7 (F)	T	0.9	0.03
Nov.	25 (D-)	59 (B)	24 (E+)	32 (D)	WW	17	1.16
Dec.	32 (D)	53 (B-)	30 (D)	35 (D)	WW	18	0.93
Jan. '23	49 (C+)	58 (B)	42 (C)	48 (C+)	WW	190	3.48
Feb.	56 (B)	71 (B)	47 (C)	55 (B)	WW	36	2.76
March	58 (B)	57 (B)	52 (B-)	55 (B)	WW	132	4.86
April	52 (B-)	65 (B)	43 (C)	50 (B-)	WW	77	0.55
May	40 (C)	47 (C+)	39 (C)	41 (C)	T	19	0.05
June	33 (D)	59 (B)	33 (D)	37 (D+)	T	18	0.03
<b>July'23</b>	<b>19 (E)</b>	<b>38 (C-)</b>	<b>22 (E)</b>	<b>23 (E+)</b>	<b>DW</b>	<b>5</b>	<b>0.00</b>

The **cover page** of this report presents monthly WQI values and range (high/low) for the Lower San Diego River watershed over nearly 19 years of monitoring. June 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 the LSDR (reach-weighted averages of all sites) are shown as a heavy black line. Running averages for the consistently highest (best) quality section of the river (Mission Gorge) are shown as a blue line while the consistently lowest (poorest) reach (Upper Santee Basin) is shown in red. The generally downward slope in index values, represented by dashed trendlines, are attributable to depleted DO levels extending throughout protracted low-flow periods of the year. The dashed lines present a negative slope (decline) of 0.8 points per annum in index value over the full monitoring period. The irregular solid black line (12-month running average index), generally increasing since a low of 21 in late 2014, is currently at 34; 2.9% above the running average norm of 32.7. This month's index value of 23 is the 16th time the index has been at a grade level of E (Poor) for the month of July.

WQI values extending from Oct.'04 through July are presented in **Chart 1** (next page) together with 12-mo. running averages for each of the five reaches of the lower watershed and overall (i.e., LSDR). The current 12-mo. running average WQI of 34 for July is the same as the 19-yr annual norm. The running average low for July of 23 (29% below norm) occurred in 2014. The highest running average WQI for July of 38 (17% above norm) occurred in 2011.

Monthly and 12-mo. running average WQI values for the "poorest" (Upper Santee Basin) and "best" (Mission Gorge) reaches of the lower watershed are presented in **Chart 2**. Although water quality has improved somewhat within the upper-most reach in recent years, resurgent growth of invasive aquatics and subsequent decomposition with below average streamflow and accrual of organics, especially in the deeper ponded portions of the river, are considered principal causes of poor water quality. The greatest downward trend (red-dashed line) over time is associated with the poorest quality reach (Upper Santee Basin) encompassing Mast Park (#13E) and Magnolia Ave. (#14) monitoring sites. The Mission Gorge (blue line) section from Old Mission Dam through Mission Trails continues to demonstrate the least decline in index values over the entire monitoring period. The poorest quality Mission Valley site is at the outlet from Kaiser Ponds (Site 6) below San Diego Mission Rd. bridge. The poorest Santee Basin site (13E) is Mast Park East, also referred to as Walmart Pond.

Spatial WQI values determined over the last three months, shown in **Charts 3, 4 and 5** on page 6, are expressed in order of their position upstream. This month's results (color bars w/values in black shown on Chart 5) are considerably below those from the last two months (Charts 3 & 4). Four out of 16 sites (25%) are graded F (Very Poor) while four more are Poor, six (38%) are Marginal (D) and the remaining two Fair (C). The 2023 July index values for seven of the sites are above 19 yr- norms while four are below. The August index is expected to further decline due to depleted streamflow, increased water temperature and specific conductivity, combined with continued decline in dissolved oxygen levels.

{7/15/23 jck}

Chart 1 - LSDR Monthly WQI, Running Averages and Trendlines by River Reach (Sept. 2005 thru July 2023)

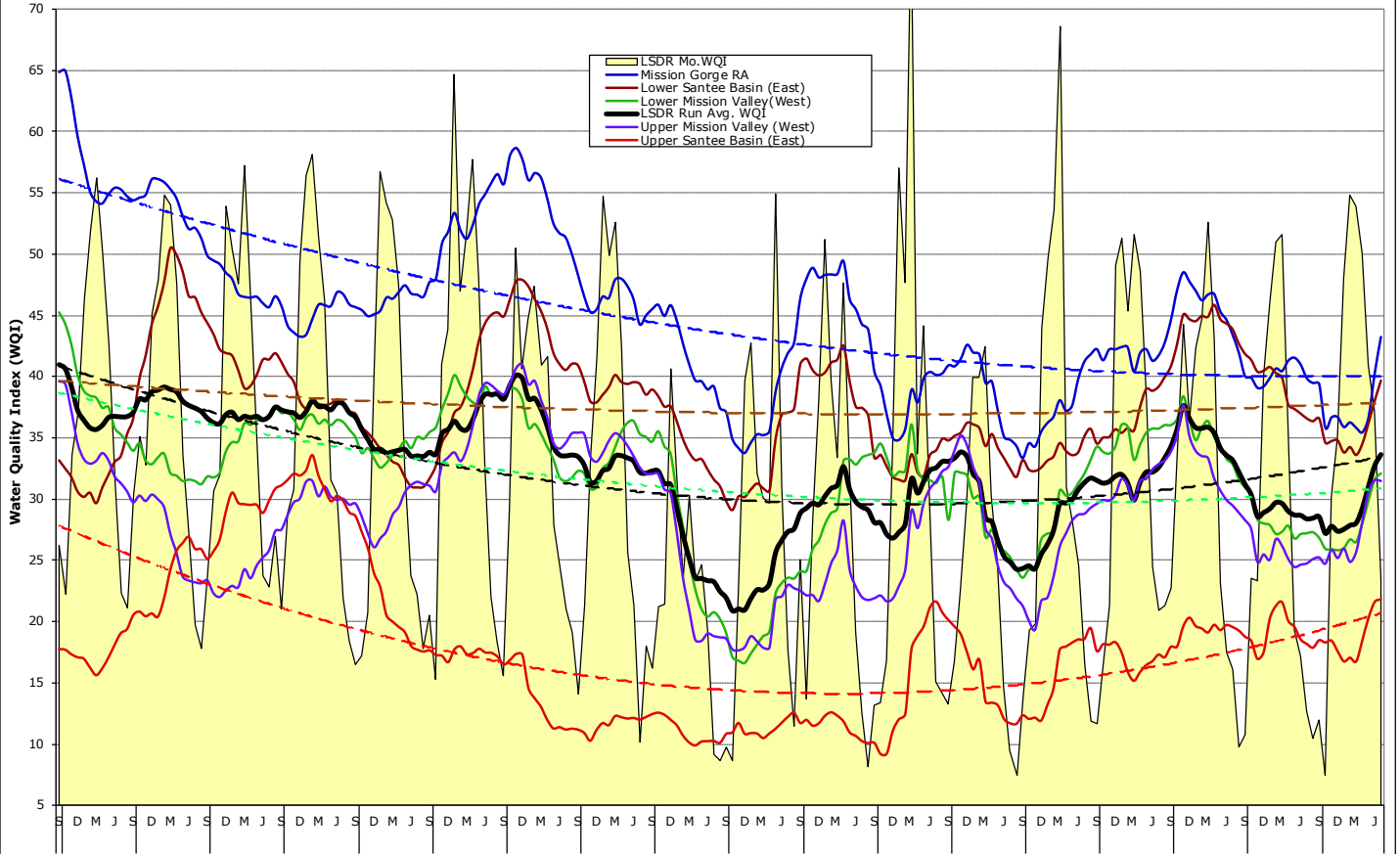


Chart 2 - Mast Park East (Site 13E) and Mission Gorge (Sites 8&10) Monthly WQI, 12-mo Running Averages and 18+yr Trendlines

