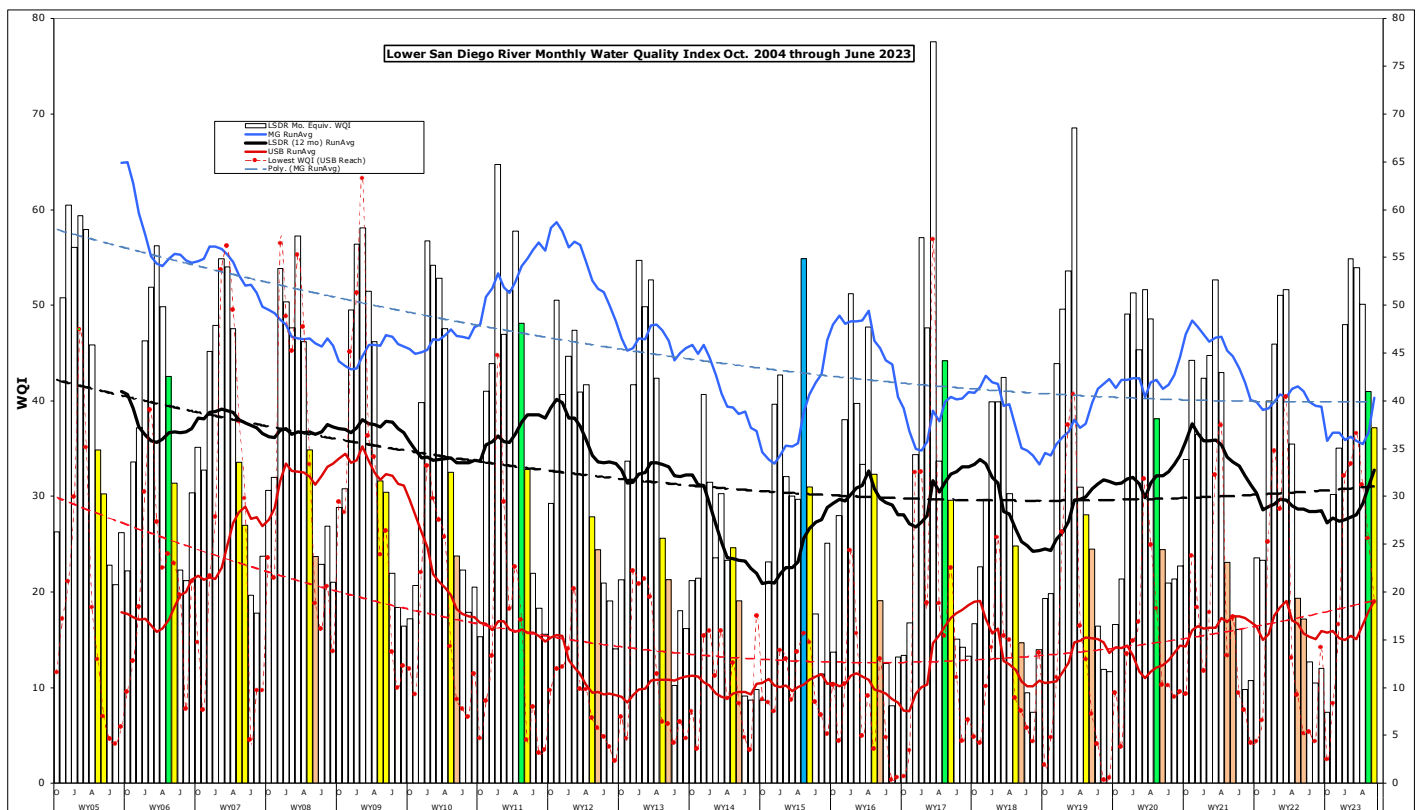


# Monthly WQM Report

## Lower San Diego River - August 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/Aug) of 2023. This month's overall index is six points (26%) less than last month. Overall water quality in the LSDR hydrologic unit (HSU 907.1) declined from Poor (E+) in July to Poor (E) in August.

<b>Table 1 - July/Aug 2023 WQM Data Summary</b>							
	West - MV	Mid - MG	East - SB	LSDR	Percent Variance from		
[Site #s]	[1-7] July/Aug	[8-10] July/Aug	[11-15] July/Aug	[1-15] July/Aug	Last Mo. (7/'23)	Last Yr. (8/'22)	19-yr Avg. (Aug)
Temperature, oC	24.5/24.0	21.4/22.4	22.5/23.0	23.0/23.2	1%	-3%	0%
Sp.Cond., mS/cm	2.86/3.19	1.54/1.87	1.98/1.85	2.34/2.48	6%	-19%	-15%
DO, mg/L	2.77/2.75	6.47/3.98	3.57/2.56	3.82/2.87	-24%	6%	-14%
DO, % of Sat.	33/33	73/46	41/30	44/34			
pH	7.57/7.54	7.85/7.81	7.40/7.70	7.46/7.63	2.3%	1.4%	-0.9%
3-day ADF, cfs	5.8/4.7	3.8/2.7	3.4/2.3	4.4/3.3	-25%	775%	211%
WQ Index	19/20	39/22	23/15	24/18	-26%	70%	13%
July/Aug	E/E	C-/E	E/E	E+/E			
July/Aug	Poor/Poor	Fair/Poor	Poor/Poor	Poor/Poor	<b>Index down 6 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 0.2oC (1%) from last month to nearly reach the 19-yr norm of 23.3oC. The overall **specific conductance** of 2.48 mS/cm constitutes a 6% increase from last month to 15% below from the 19-yr Aug. norm of 2.92 mS/cm. The overall **dissolved oxygen** level of 2.87 mg/L (34%Sat.) is 24% less than last month, but 6% above last Aug. and 14% below the 19-yr norm of 3.39 mg/L (39%Sat). **Streamflow** over the antecedent 3-day period of 3.3 cfs is 25% less than last month but nearly eight times a year ago and twice the August norm of 1.1 cfs. This month's overall LSDR **water quality index** (WQI) of 18 (E) is 26% below last month, holding 70% above the same period last year and 13% more than the 19-yr norm of 16 (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 (July,'21 - Aug '23)</b>							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF,cfs	TMR,F,in
July	15 (E)	16 (E)	16 (E)	16 (E)	DW	0.8	0.00
<b>Aug.'21</b>	<b>11 (F+)</b>	<b>6 (F)</b>	<b>10 (F)</b>	<b>10 (F)</b>	<b>DW</b>	<b>0.6</b>	<b>0.22</b>
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
July	17 (E)	2 (F-)	12 (F+)	13 (E-)	DW	0.6	0.00
<b>Aug.'22</b>	<b>15 (E)</b>	<b>2 (F-)</b>	<b>8 (F)</b>	<b>10 (F)</b>	<b>DW</b>	<b>0.4</b>	<b>0.00</b>
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
July	19 (E)	39 (C-)	23 (E)	24 (E+)	DW	5	0.00
<b>Aug '23</b>	<b>20 (E)</b>	<b>22 (E)</b>	<b>15 (E)</b>	<b>18 (E)</b>	<b>DW</b>	<b>3</b>	<b>1.98</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 18 is the 16th time the index has been at a grade level of E (Poor) for the month of Aug.

WQI values extending from Oct.'04 thru Aug.'23 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 August is 5% above the 19-yr annual norm. The running average low for Aug. of 22 (31% below norm) occurred in 2014. The highest running average WQI for Aug. of 39 (18% above norm) occurred in 2011. The greatest decline in water quality this month occurred within the Mission Gorge section.

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 to an extent 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. The rainfall (Hurricane Hillary) listed in Table 2 (1.98") occurred several days after completion the monthly monitoring effort.

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 less than those from the last two months (Charts 3 & 4). Four out of 16 sites (25%) are graded F (Very Poor) while eight more (50%) are Poor, and the remaining six (25%) Marginal (D). The current index values for most of the sites are above 19-yr norms however four remain below. The September index is expected to improve due to streamflow, lower water temperatures and greater dissolved oxygen levels.

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

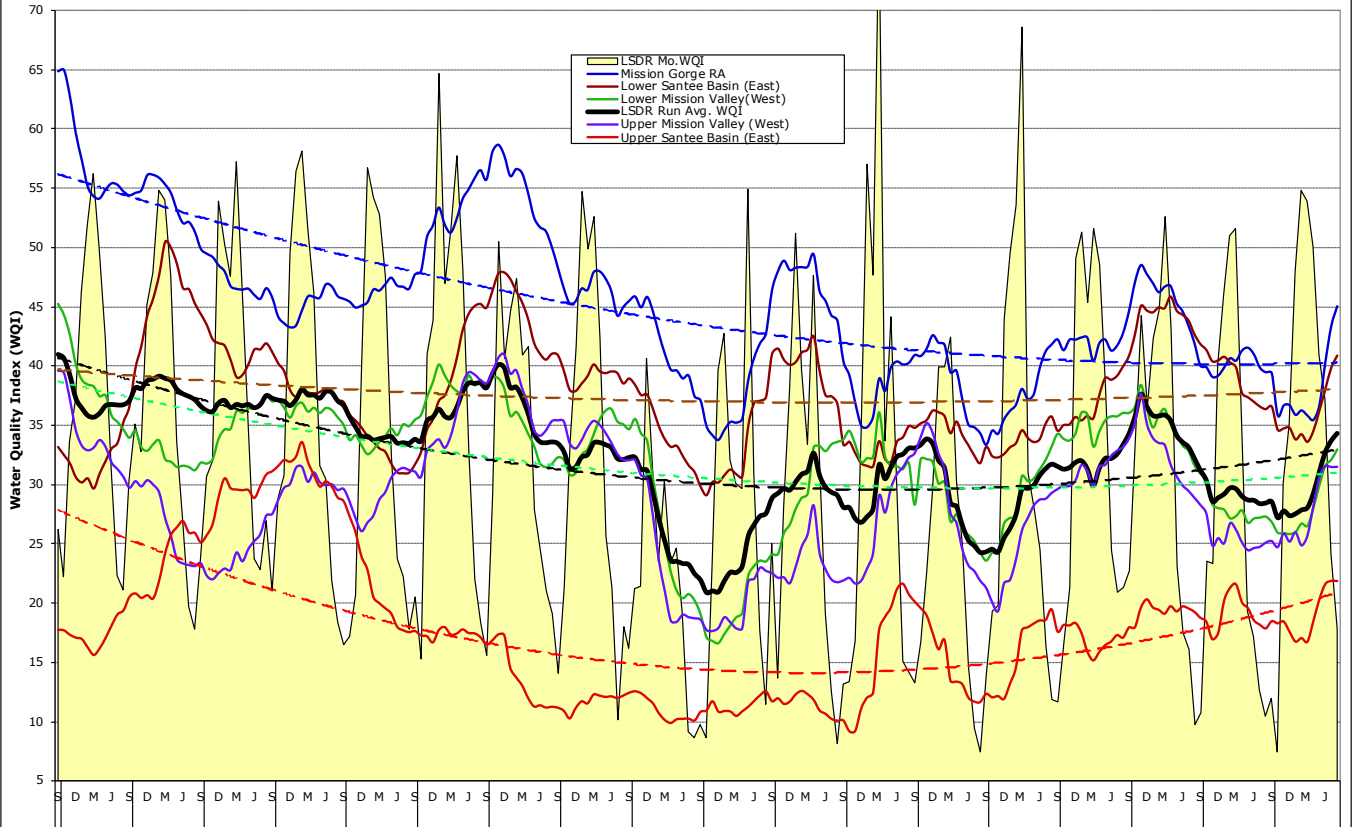
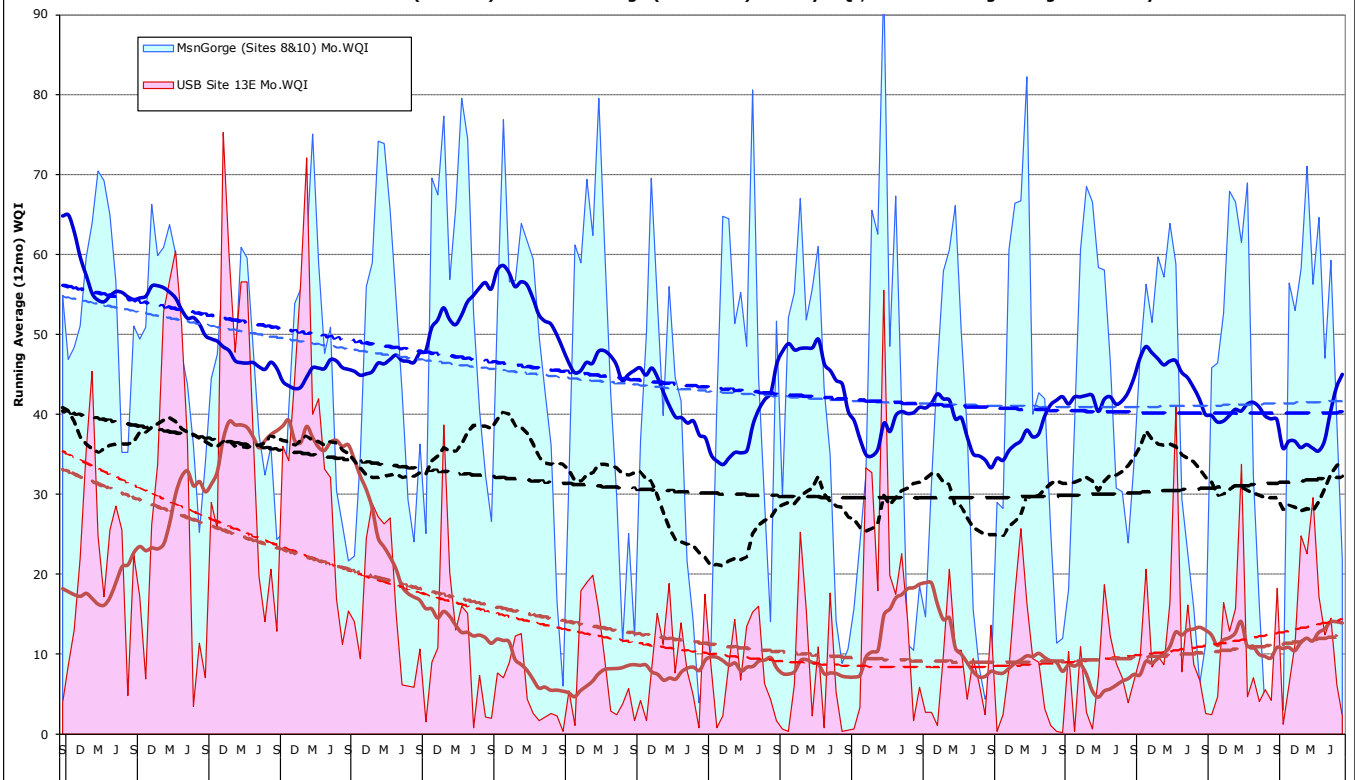
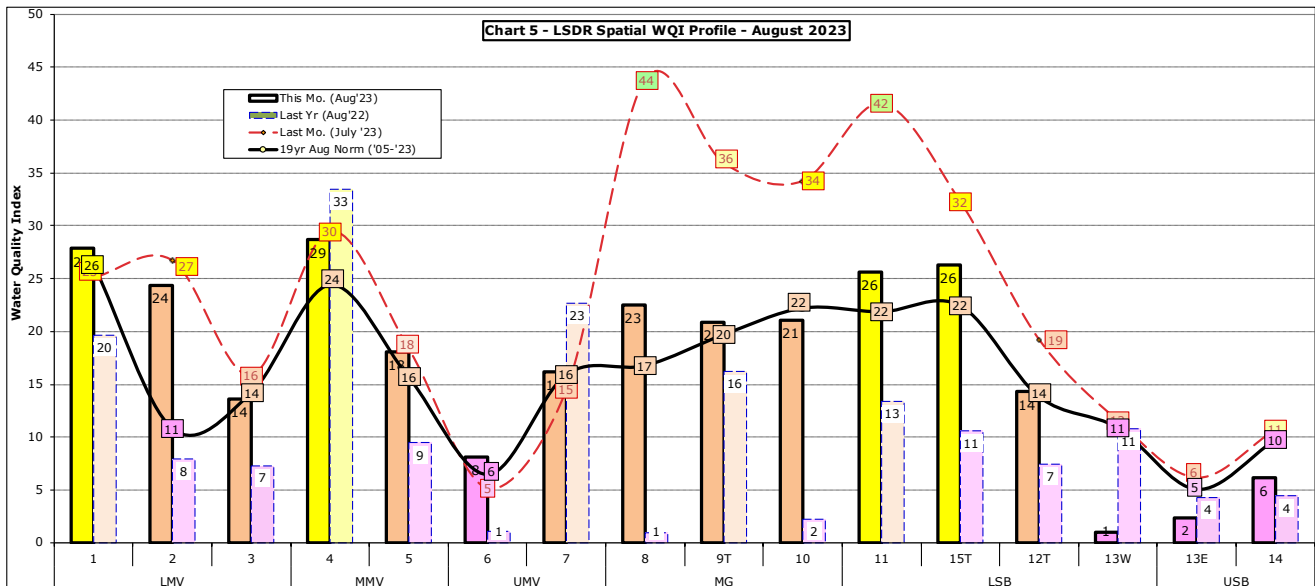
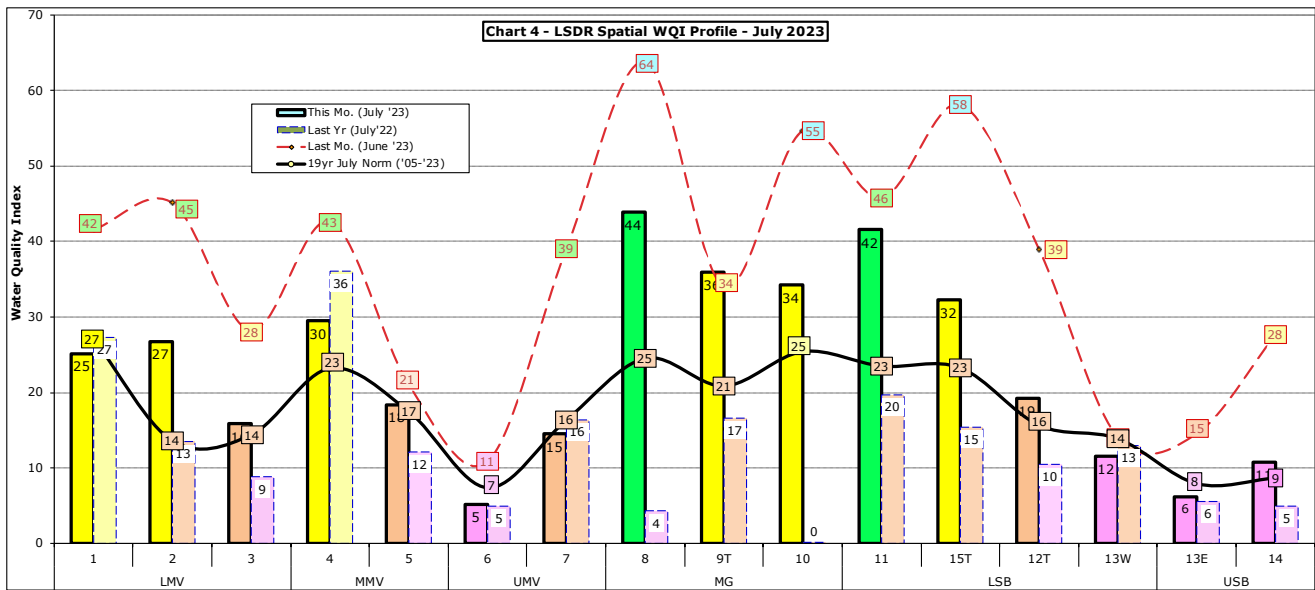
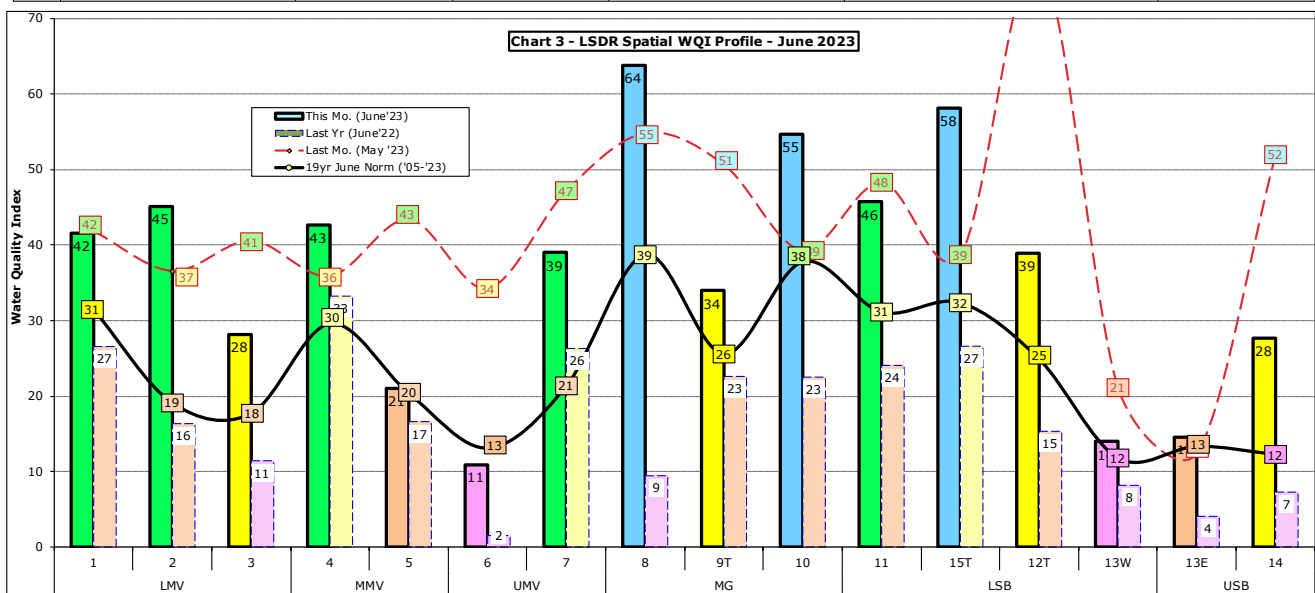


Chart 2 - Mast Park East (Site 13E) and Mission Gorge (Sites 8-10) Monthly WQI, 12-mo Running Averages and 18-yr Trendlines





{9/7/23 jck}