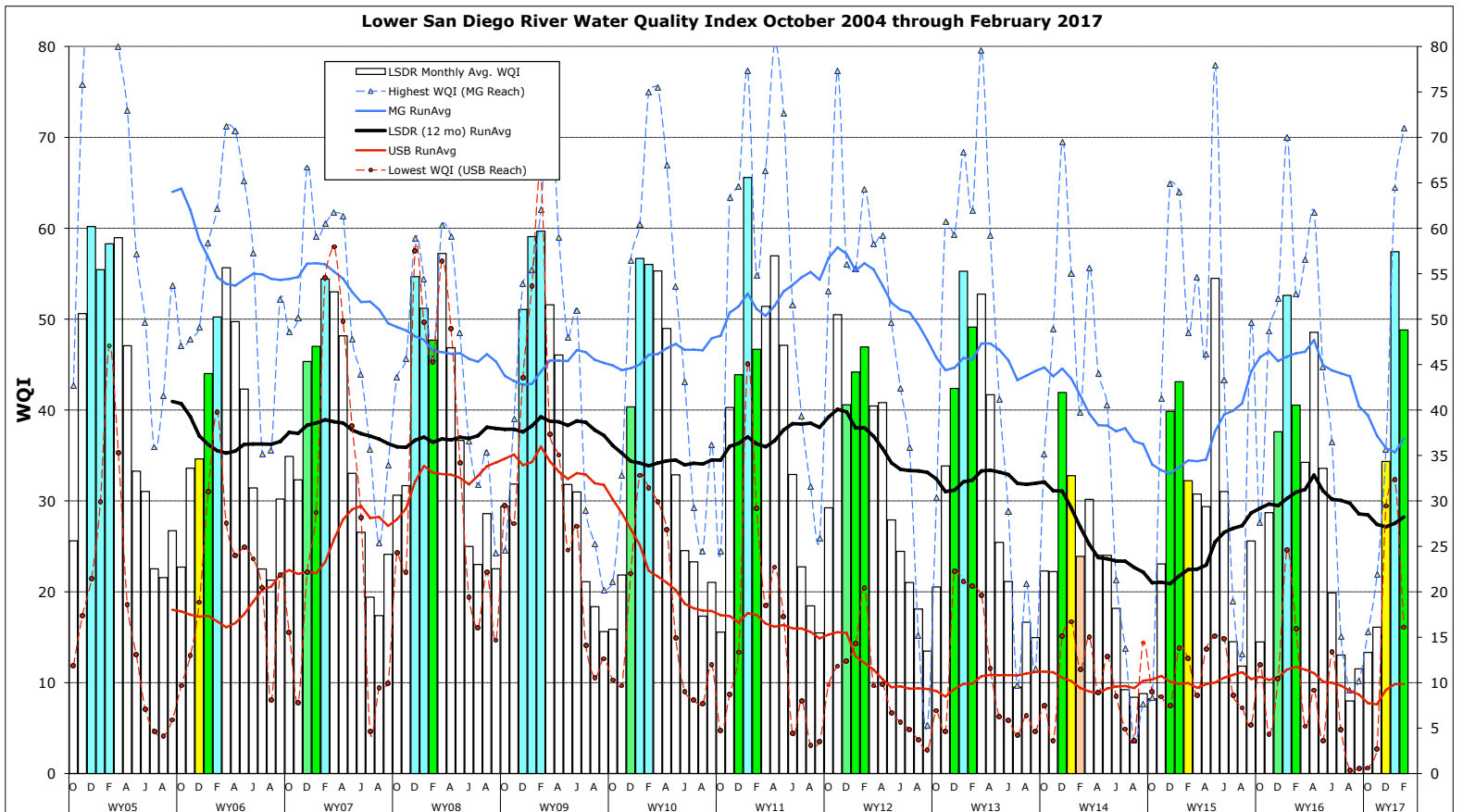


Monthly WQM Report

Lower San Diego River - February 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. December and January constitute the second and third month of winter/wet weather season. This month's index value is down eight points from last month, but eight points higher than last Feb. and one point above the 12-yr monthly norm. Overall water quality of the lower hydrologic unit (HSU 907.1) is rated Fair (C+).

Table 1 - January/February 2017 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/'17)	Last Yr (2/'16)	12-Yr Avg (Feb.)
Temperature, oC	11.1/14.7	10.7/14.7	11.4/15.3	11.1/14.9	34%	-3%	9%
Sp.Cond., mS/cm	1.05/1.01	0.68/1.17	0.94/1.42	0.97/1.22	25%	-37%	-30%
DO, mg/L	9.23/7.57	10.6/9.43	6.97/5.58	8.59/7.04	-15%	17%	0%
DO, % of Sat.	85/75	96/94	65/57	79/71			
pH	7.57/7.52	7.77/7.96	7.44/7.83	7.49/7.70	3%	-4%	-2%
30-day ADF, cfs	226/61	150/36	124/28	167/42	-75%	308%	-60%
WQ Index	62/49	64/71	49/37	57/49	-15%	20%	4%
Grade(Jan/Feb)	B/C+	B/B	C+/D+	B/C+			
February 2017	Fair	Good	Marginal	Fair	Down 8 pts from last mo.		

DO values in red indicate hypoxic (DO < 4 mg/L) conditions.

Overall, LSDR **water temperatures** are up 3.8 degrees Celsius (34%) from last month, nearly the same as last Feb. at 9 percent above the 12-yr norm of 13.7°C. **Specific Conductivities** rose slightly (25%) from last month, but are below last Feb. (-37%) and the 12-yr monthly norm (1.73 mS/cm) by -30%. **Dissolved oxygen** levels are down 15% from last month, but are above last Feb. at the 12-yr monthly norm of 7.10 mg/L. **Streamflow** over the antecedent 30-day period of 42 cfs has declined from last month (167 cfs) and although 3 times the Feb. 2016 level of 10 cfs remains 60% below the 12-yr norm of 100 cfs. This month's LSDR **water quality index** (WQI) of 49(C+) fell 8 points (15%) from last month's value of 57(B), to 8 points above a year ago Feb. (41) and 4% above the 12-yr norm of 47 (C).

Conclusion:

The Lower San Diego River water quality index declined by 8 points, down 15% from **57 (B Good)** to **49 (Fair)** over the past 30 days.

A summary of 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 (Jan. 2015 - Jan. 2017)							
	Mission Valley	Mission Gorge	Santee Basin	LSDR		ADF, cfs	MRF, in
Feb. '15	28(D)	48(C+)	29(D)	32(D)		6.1	0.18
March	24(E+)	55(B)	26(D-)	31(D)		15	0.93
April	24(E+)	46(C)	27(D-)	29(D)	DW	2.2	0.02
May	55(B)	78(A-)	41(C)	54(B)		13	2.4
June	26(D-)	43(C)	31(D)	31(D)	DW	2.1	0.01
July	12(F)	19(E)	15(E)	15(E)		15	1.71
Aug	8(F)	13(E-)	15(E)	12(F+)	DW	1.4	0.00
Sept	8(F)	50(B-)	32(D)	26(D-)		6.0	1.25
Oct	5(F)	28(D)	17(E)	14(E)		4.2	0.42
Nov	28(D)	49(C+)	20(E)	29(D)		8.9	1.53
Dec.	40(C)	52(B)	29(D)	38(C-)		13	0.45
Jan.'16	54(B)	70(B)	42(C)	52(B)	WW	90	3.21
Feb.	40(C)	53(B)	35(D)	40(C)		8.9	0.05
March	32(D)	57(B)	25(D-)	34(D)		14	0.72
April	63(B)	62(B)	30(D)	49(C+)		12	0.55
May	38(C)	45(C)	26(D-)	34(D)		5.6	0.43
June	14(E)	36(D)	18(E)	20(E)	DW	0.9	0.02
July	14(E)	15(E)	12(F+)	13(E-)	DW	0.5	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	1.9	0.32
Oct	13(E-)	16(E)	13(E-)	13(E-)	DW	1.3	0.07
Nov.	16 (E)	23(E)	14(E)	16(E)		5.9	0.61
Dec.	27(D)	36(D)	37(D+)	35(D)	WW	48	4.22
Jan. '17	62(B)	64(B)	49(C+)	57(B)	WW	167	3.01
Feb '17	49(C+)	71(B)	37(D+)	49(C+)	WW	42	1.14

WQI values are expected to remain elevated above 12-yr norms at most monitoring sites over the next month.

The **cover page** chart presents monthly WQI values and their range (high-low) for the Lower San Diego River determined over the past 12+ years of RiverWatch monitoring. December, January and February 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 upward trend in the index through winter months is evident. The WY17 running average for this month is up 30% (6 points) from the February 2014 low, approximately the same as experienced last year (Feb. WY16).

Monthly WQI values extending from Oct. 2004 through Feb. 2017 are presented in **Chart 1** (next page) together with 12-month running averages (trend-lines) for each of the five individual reaches and overall (i.e., for the LSDR). The current overall running average WQI for the LSDR of **26** is still 19% below the 12-yr annual norm of 32. A year ago (Feb. 2016) the running average WQI was two points higher (28) at 13% below the annual norm. The running average index in the Upper Santee Basin segment (Sites 13 and 14) remains Very Poor (<13). Hydraulic flushing of Mast Park and multiple upstream ponds of low DO backwaters over the past month has resulted in only slightly improved dissolved oxygen levels.

Monthly and 12-mo. running average WQI values for the poorest section (Upper Santee Basin) and best Mission Gorge reach (Sites 8-10) are presented in **Chart 2** (also on next page). Water quality at many sites have improved over the past several months. Excessive growth of the invasive aquatic plant, floating primrose-willow (*Ludwigia hexapetala*) observed throughout many of the slower-moving reaches of the river, considered a major contributor of dry-weather dissolved oxygen deficits (DO < 4.0 mg/L) and resultant low index values during extended periods of prior years has been significantly reduced by recent storm water events.

Spatial WQI results for the past three months of monitoring are shown in **Charts 3, 4 and 5** on page 6. WQI values (color bars w/index values in black) increased significantly at all sites throughout the watershed in January. They declined slightly at most sites in February. Nine of the 15 sites remain in the Good (B) range (>50) this month while four others, in the Mission Valley section, are in the Fair (C) range (38-49). The two Upper Santee Basin sites, Mast Park and Cottonwood/RCP present February indexes in the Marginal range (25-37).

Water quality index values can be expected to continue to remain elevated over the next month at most monitoring sites assuming little decline in dissolved oxygen levels and minor changes in Specific Conductivity and water temperatures. Dissolved oxygen concentrations are likely to remain considerably above hypoxic limits (< 4 mg/L) until the dry-weather season. Overall LSDR water quality is expected to remain in the Fair (C) range, throughout the next several months assuming normal area rainfall and river runoff. Potential for some further flooding of the river valley floor from future storm events, should such occur over the next month or two, is possible now that upper groundwater aquifers are close to being saturated.

jck (2/20/2017)

Chart 1 - LSDR WQI Trendlines by River Reach (Sept. 2005 thru Feb. 2017)

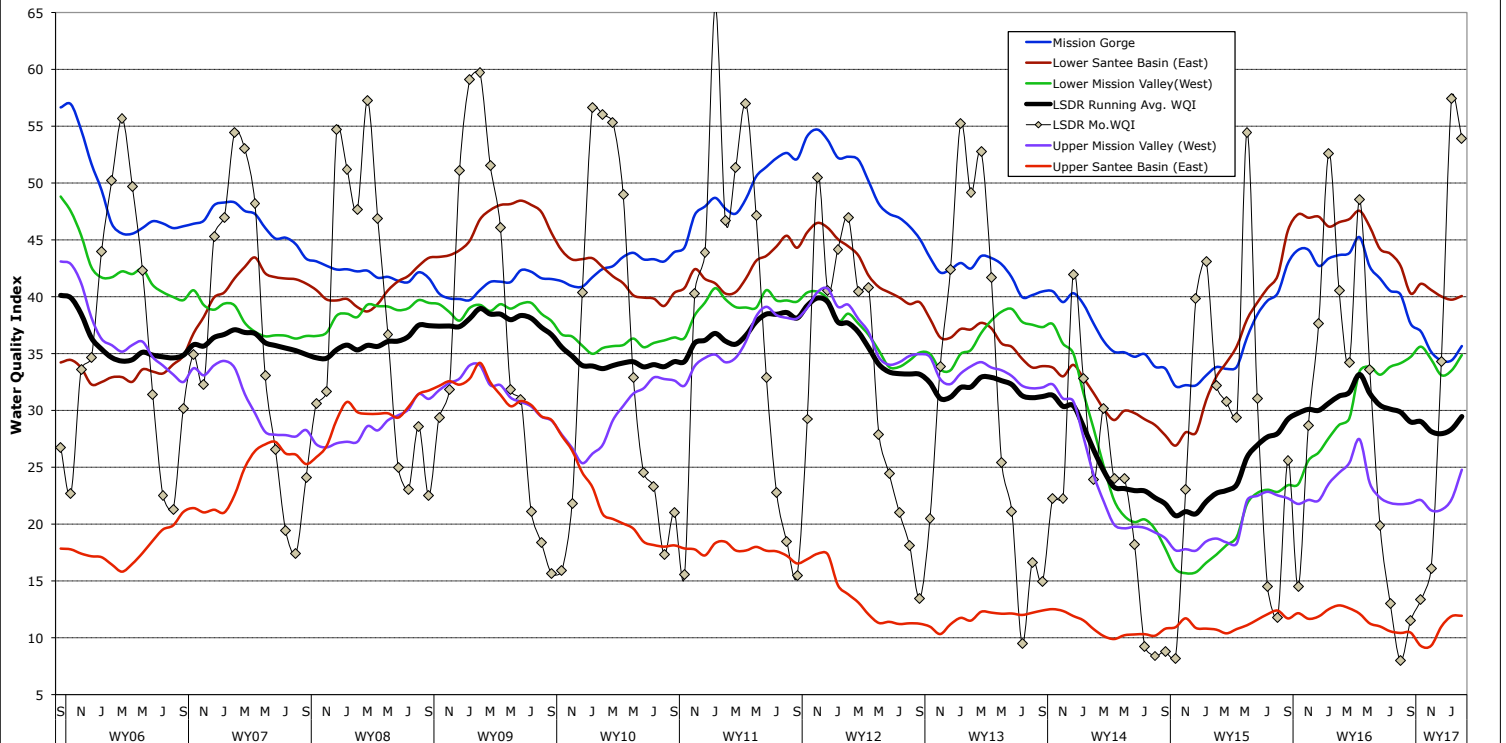


Chart 2 - Mast Park (Site 13) and Mission Gorge (Sites 8-10) Monthly and 12-mo Running Average WQI

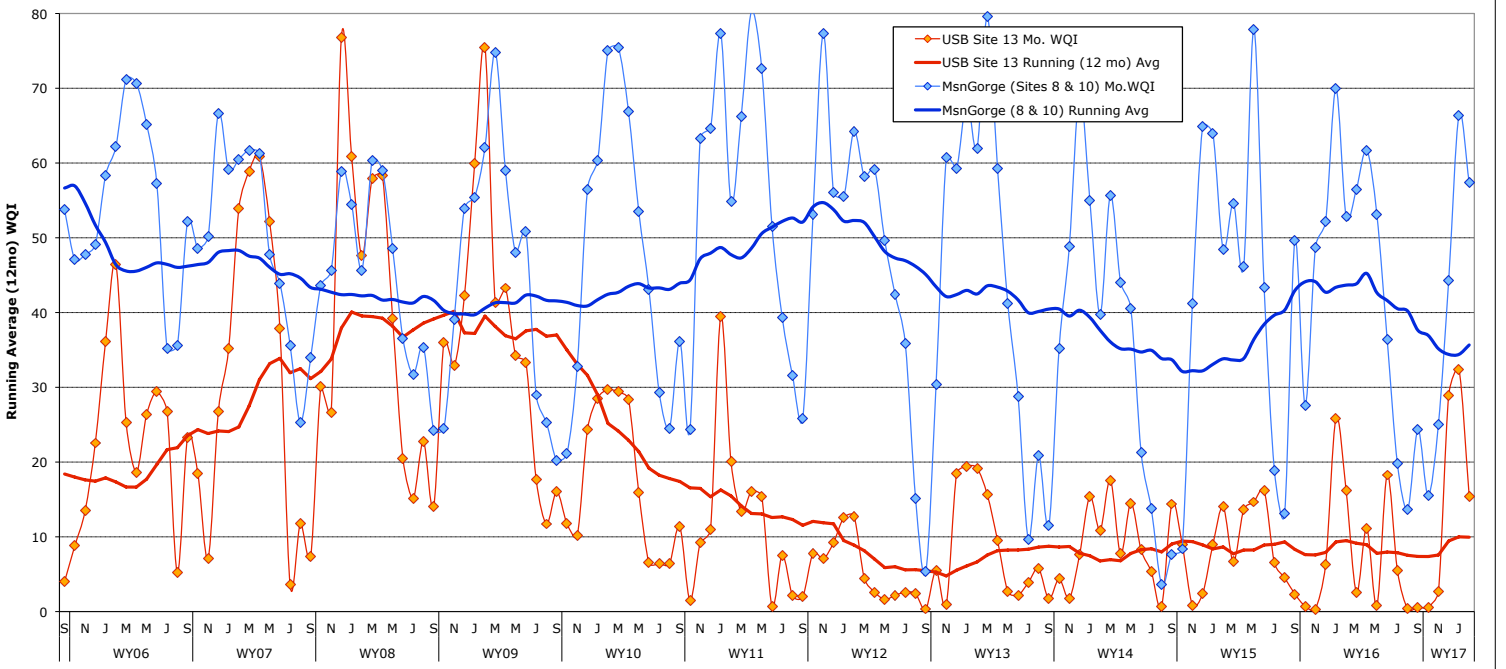


Chart 3 - LSDR Spatial WQI Profile - December 2016

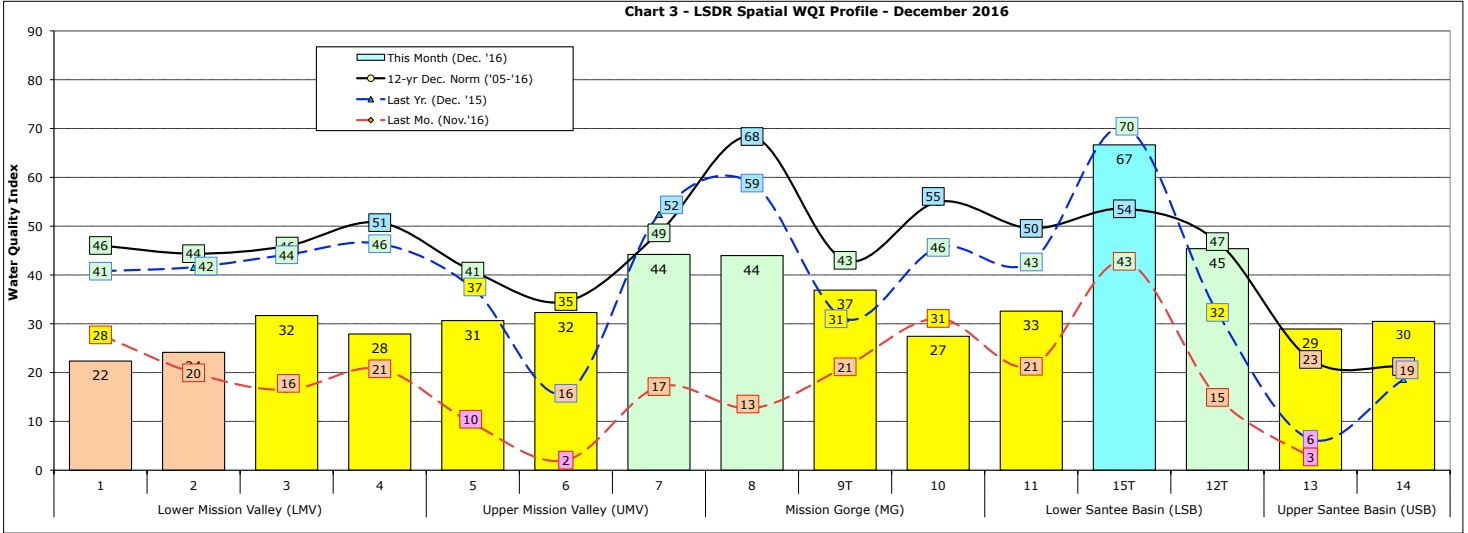


Chart 4 - LSDR Spatial WQI Profile - January 2017

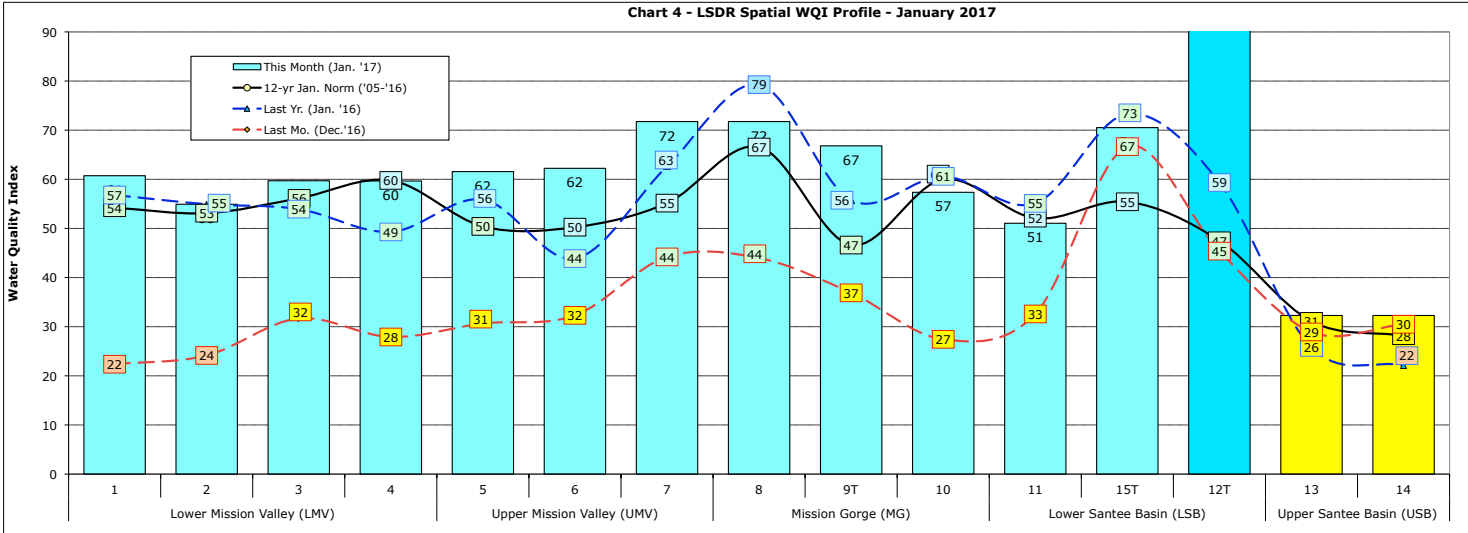


Chart 5 - LSDR Spatial WQI Profile - February 2017

