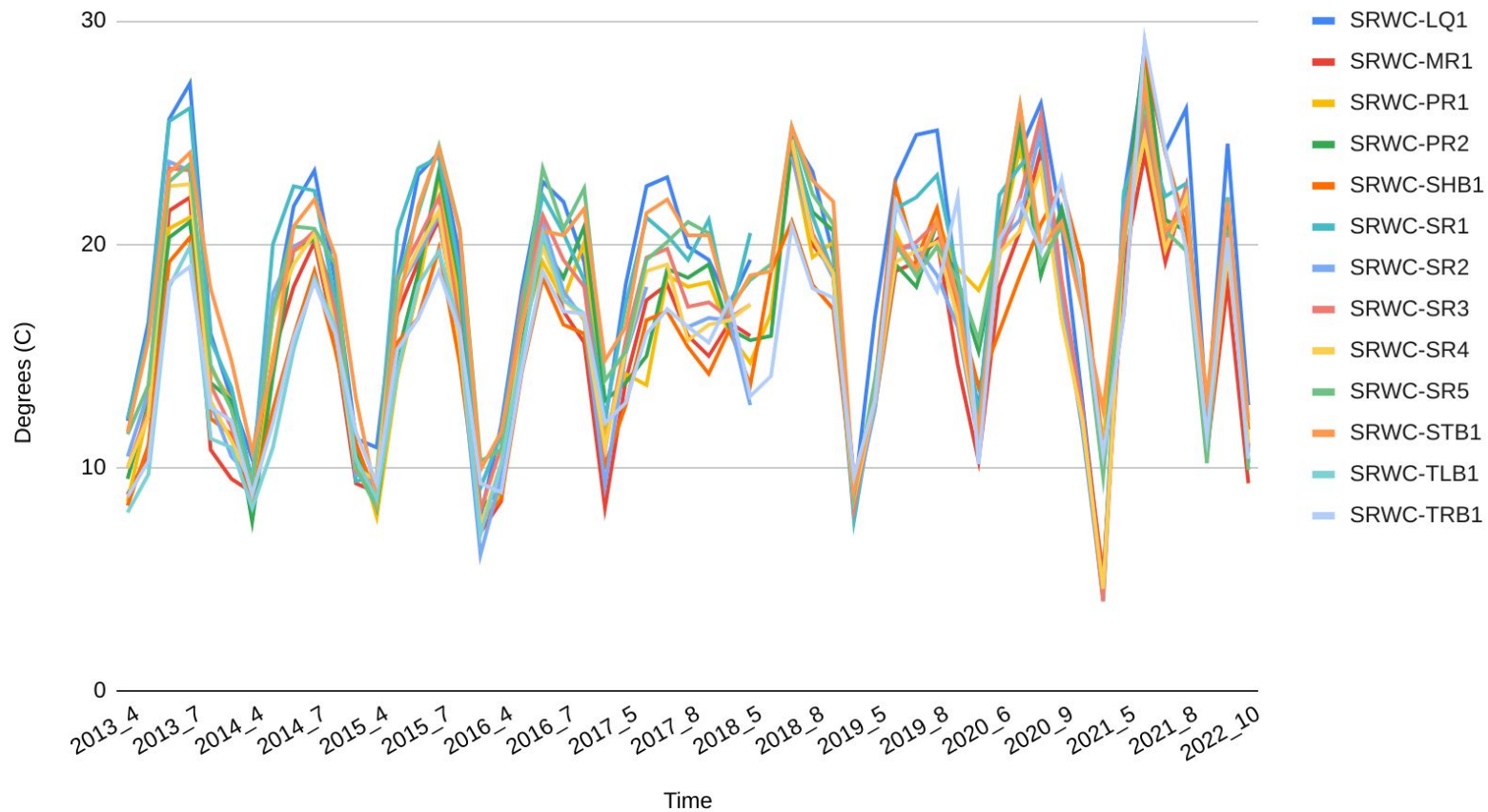
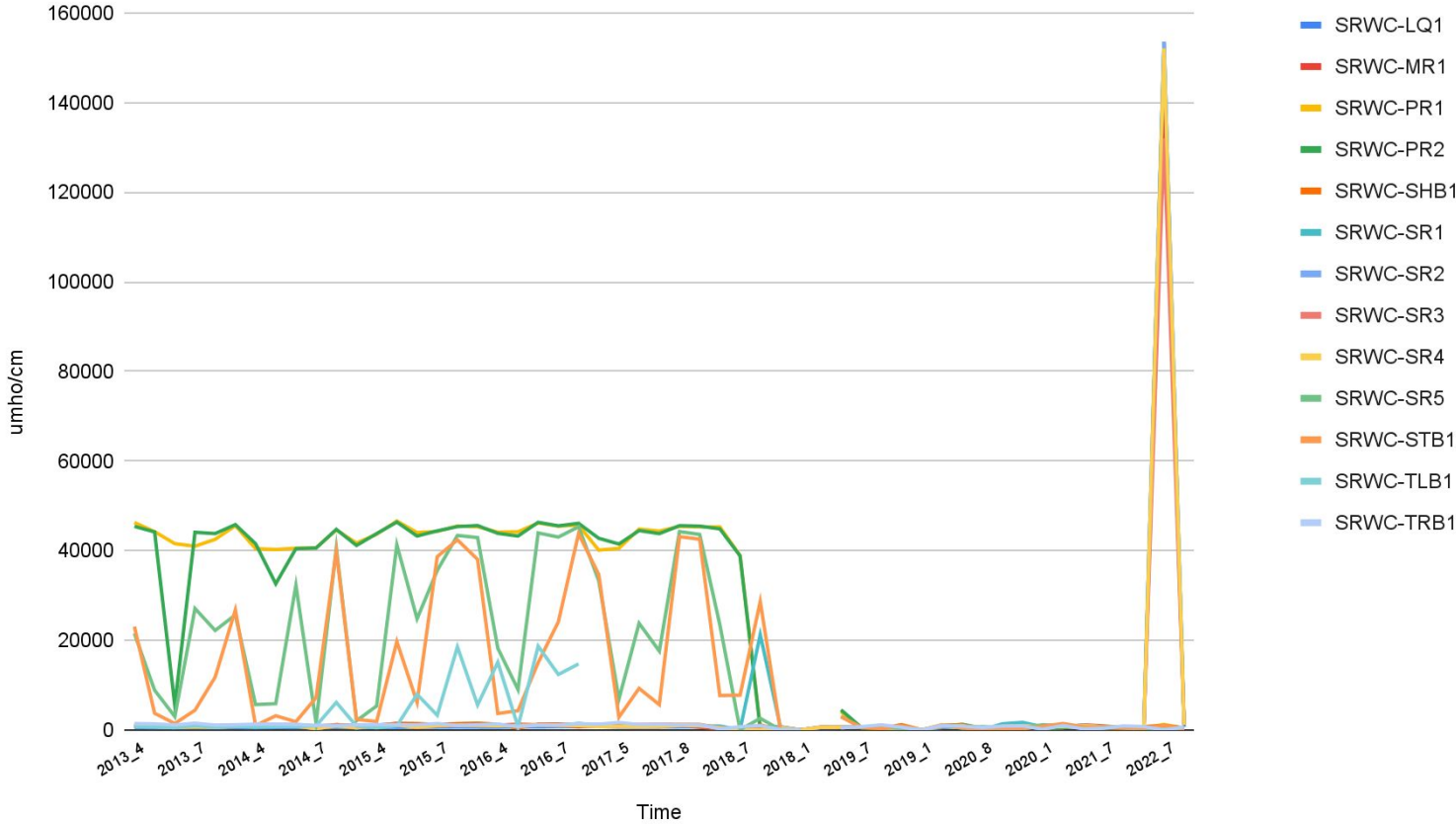


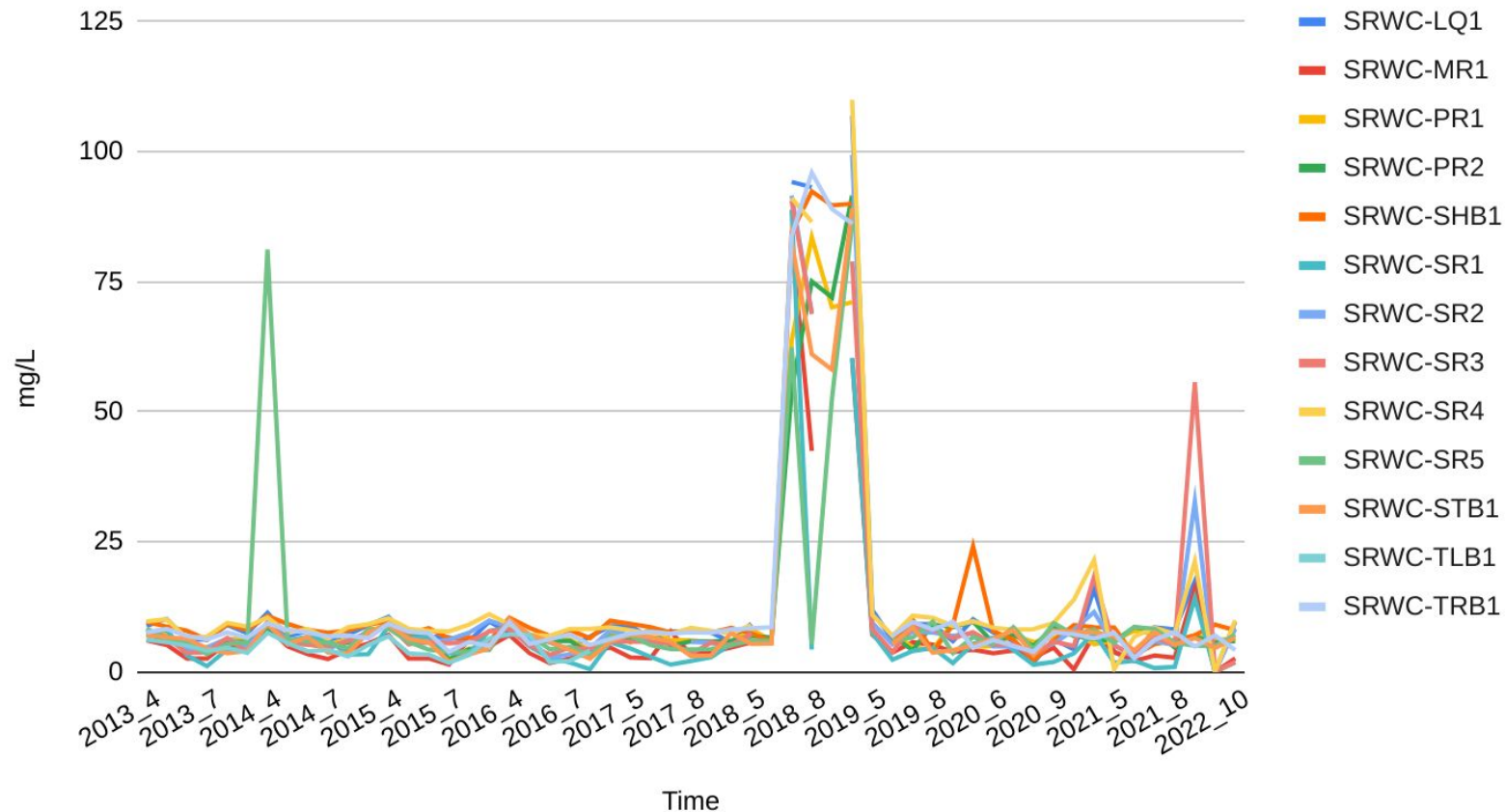
Temp (°C) at SWRC Locations Over Time



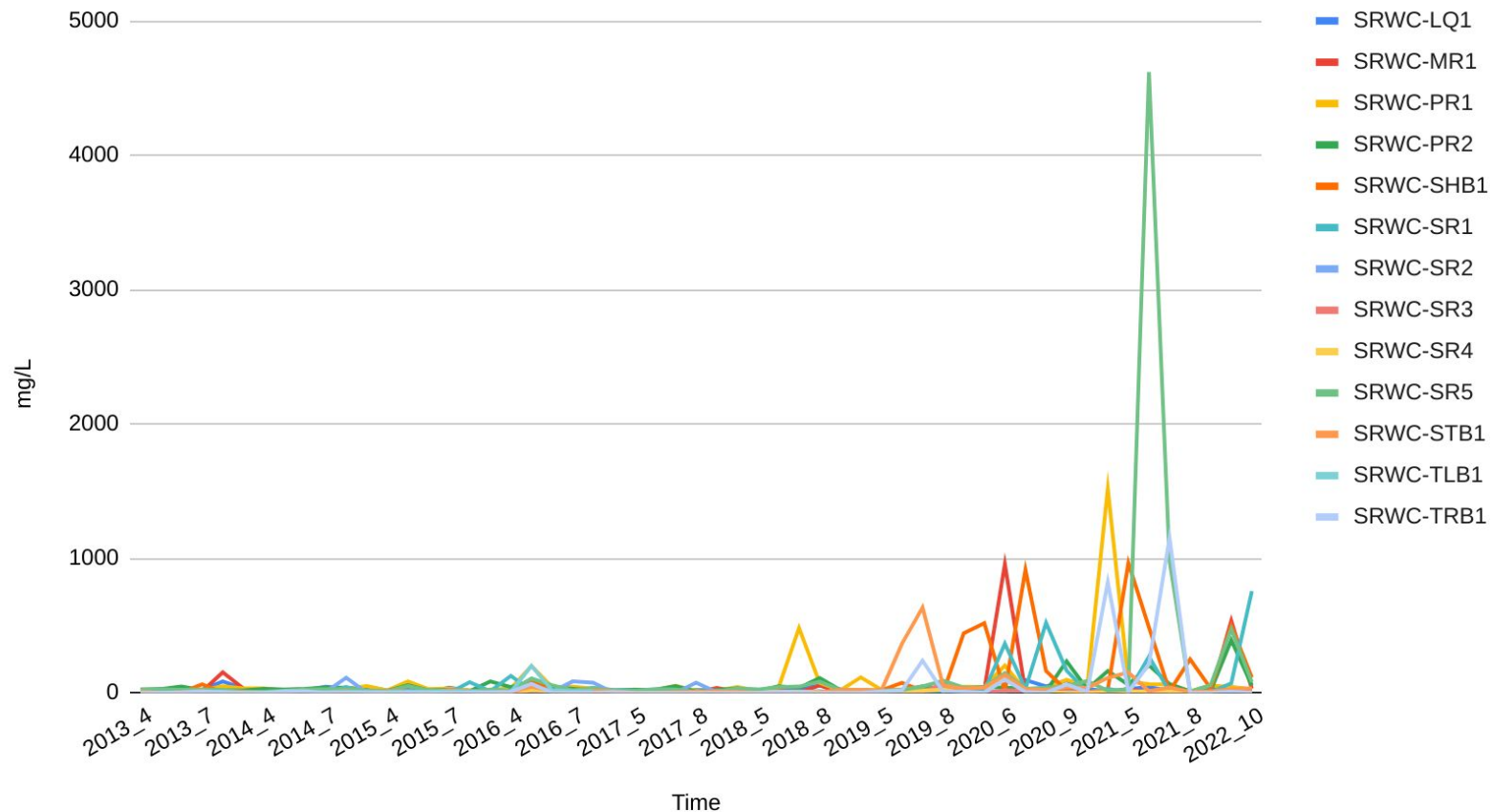
Specific Conductance at SWRC Locations Over Time



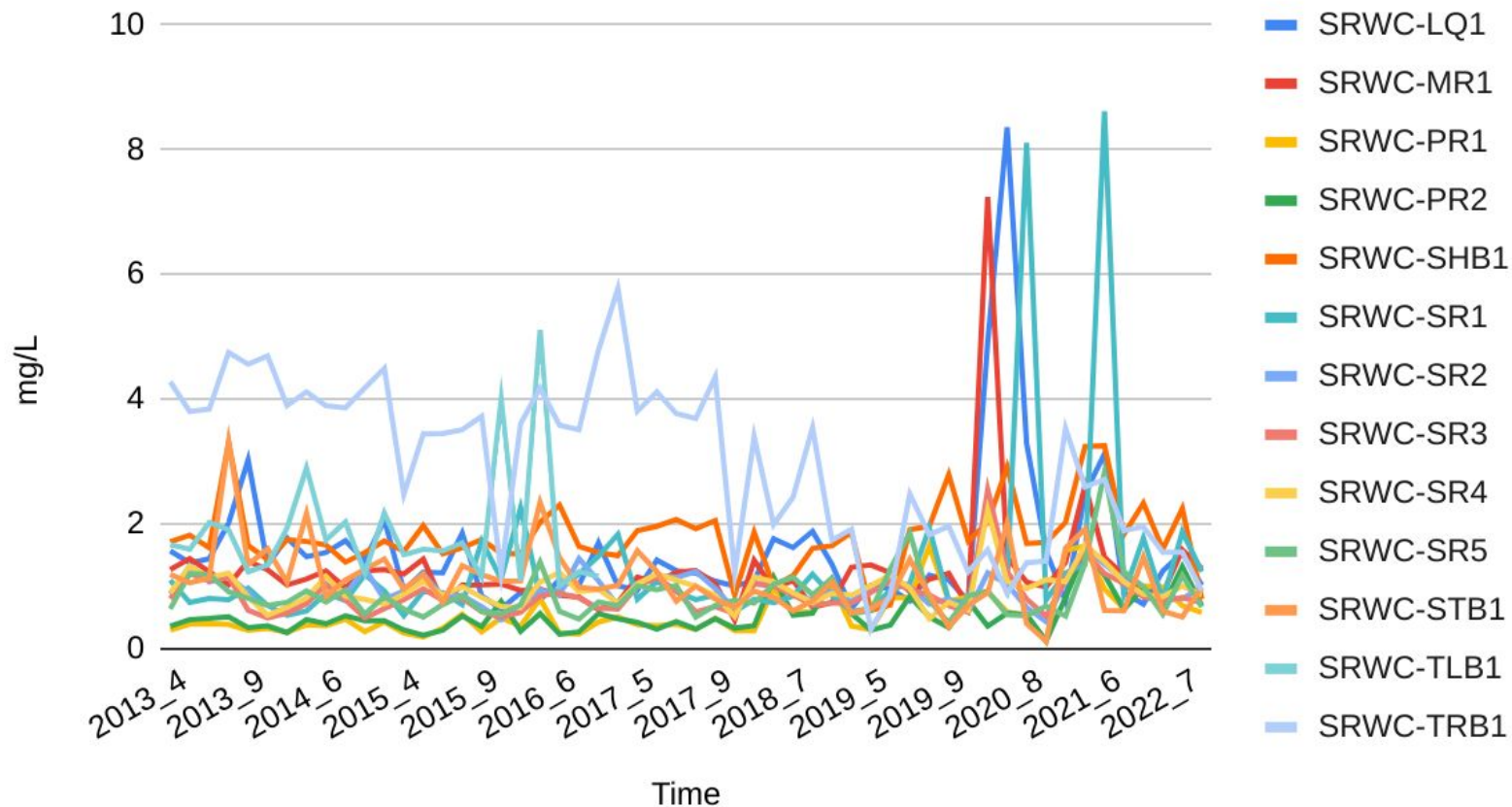
DO at SWRC Locations Over Time



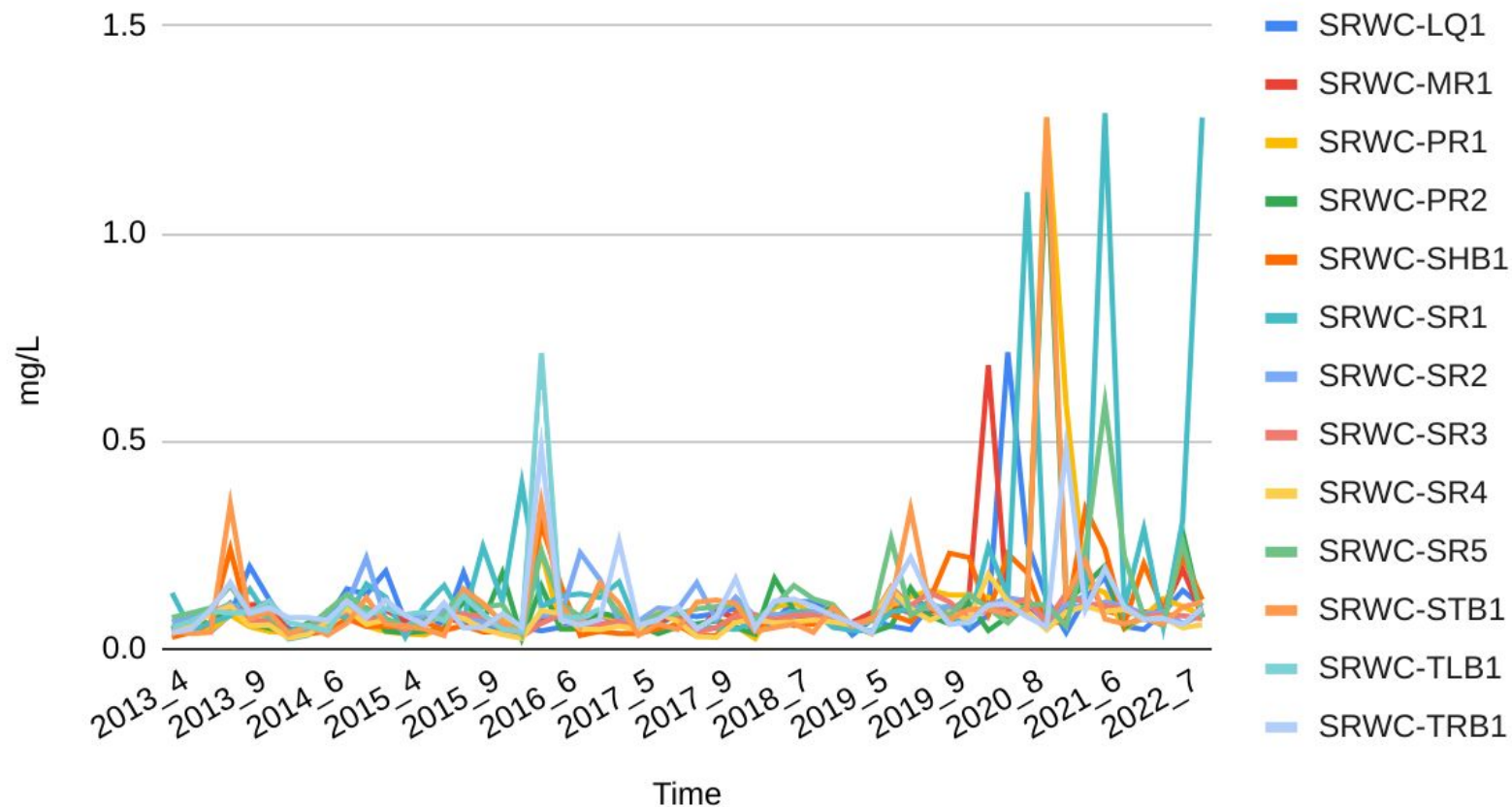
TSS at SWRC Locations Over Time

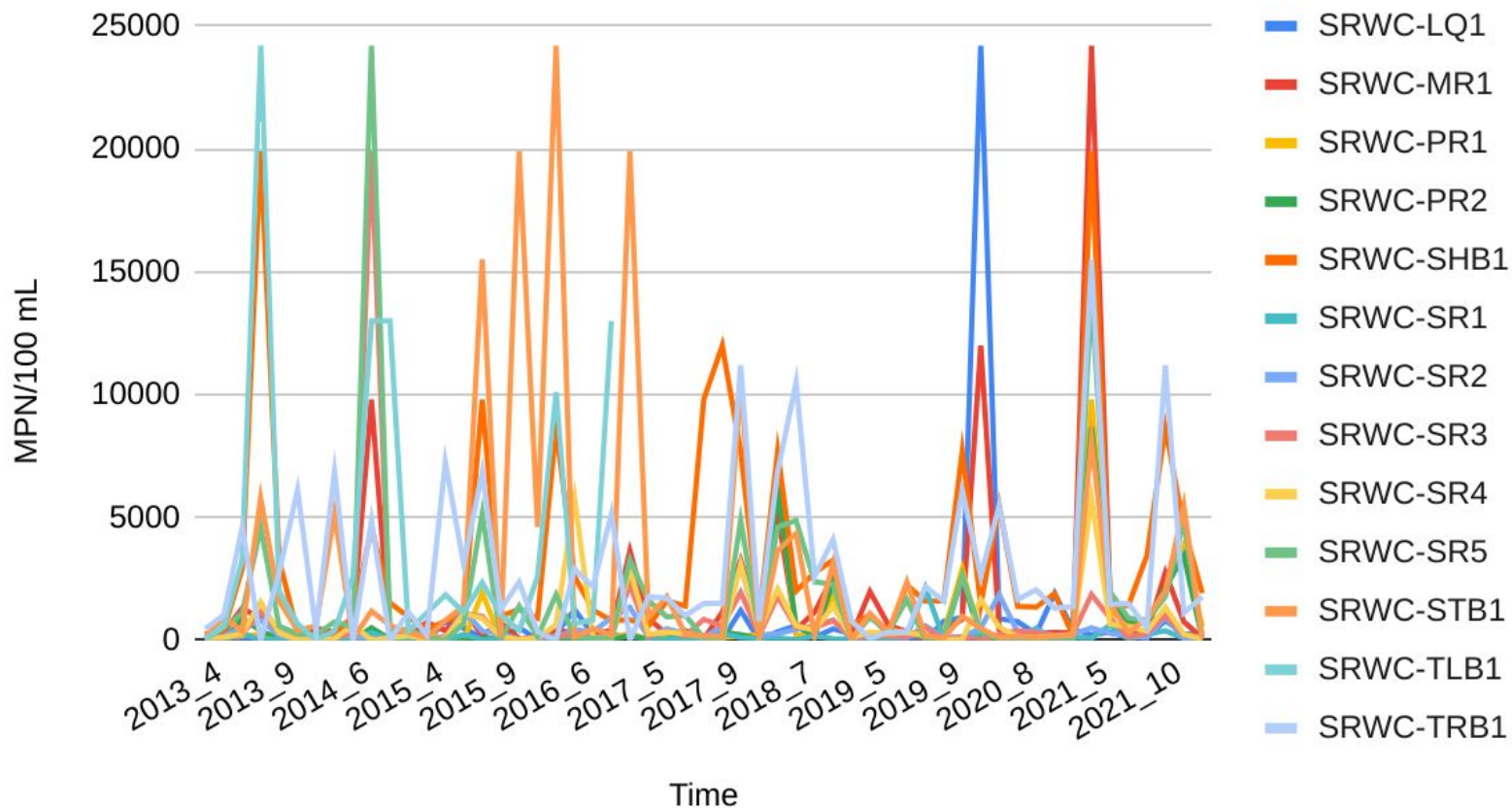


TN at SWRC Locations Over Time

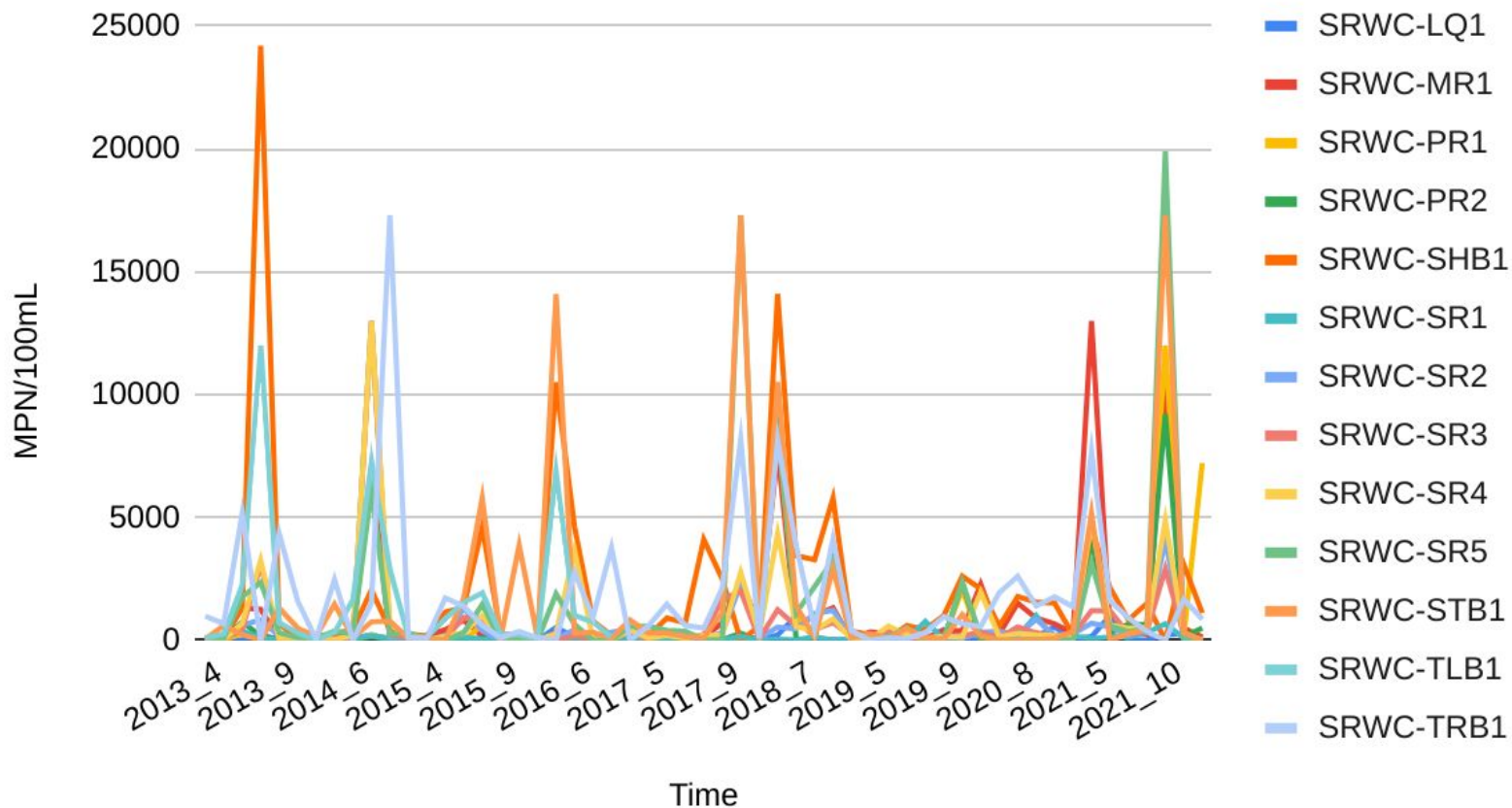


TP at SWRC Locations Over Time





Enterococci at SRWC Locations Over Time



Questions after initial plots (up to slide #13)?

I highlighted cells that are outliers in red.

What happens to DO in the second half of 2018?

For TSS, there were 196 values starting with < . There were 4 values “<10” and they were replaced with 10 and 192 values “<5” which were replaced with 5.

For Specific Conductance, data from sites 1-6 on July 2022 are outliers (see screenshot below). It does not seem to be a matter of unit conversion (mils vs microns Ohms per cm). These 6 outliers were removed from the data set.

6061	4654652	M2022-0051841	SRWC-LQ1	Lake Quannapov	20220524-0002	SRWC-VOLUNTE CENTRAL	A	07/27/2022 6:40	7/27/2022 6:40: CONDAQFLD	Specific Conduct	153566	umho/cm
6062	4654651	M2022-0051840	FIELD-QC-FDUP	FIELD DUPLICAT	20220524-0002	SRWC-VOLUNTE CENTRAL	A	07/27/2022 6:45	7/27/2022 6:45: CONDAQFLD	Specific Conduct	1211	umho/cm
6063	4654654	M2022-0051843	SRWC-PR1	Pines / Saugus R	20220524-0002	SRWC-VOLUNTE CENTRAL	A	07/27/2022 6:45	7/27/2022 6:45: CONDAQFLD	Specific Conduct	1211	umho/cm
6064	4654657	M2022-0051846	SRWC-SR1	Saugus River up	20220524-0002	SRWC-VOLUNTE CENTRAL	A	07/27/2022 6:56	7/27/2022 6:56: CONDAQFLD	Specific Conduct	153579	umho/cm
6065	4654653	M2022-0051842	SRWC-MR1	Mill River @ Fari	20220524-0002	SRWC-VOLUNTE CENTRAL	A	07/27/2022 7:10	7/27/2022 7:10: CONDAQFLD	Specific Conduct	142468	umho/cm
6066	4654658	M2022-0051847	SRWC-SR2	Saugus River @ I	20220524-0002	SRWC-VOLUNTE CENTRAL	A	07/27/2022 7:34	7/27/2022 7:34: CONDAQFLD	Specific Conduct	153586	umho/cm
6067	4654659	M2022-0051848	SRWC-SR3	Saugus River @ I	20220524-0002	SRWC-VOLUNTE CENTRAL	A	07/27/2022 7:53	7/27/2022 7:53: CONDAQFLD	Specific Conduct	132006	umho/cm
6068	4654660	M2022-0051849	SRWC-SR4	Saugus River @ I	20220524-0002	SRWC-VOLUNTE CENTRAL	A	07/27/2022 8:09	7/27/2022 8:09: CONDAQFLD	Specific Conduct	152127	umho/cm

Station Names

Map #	Site Code	Name / Description	Town
1	LQ1	Lake Quannapowitt	Wakefield
2	SR1	Saugus River upstream of LWSC Dam	Wakefield / Lynnfield
3	MR1	Mill River @ Farm Street	Wakefield
4	SR2	Saugus River @ Breakheart	Saugus
5	SR3	Saugus River @ Route 1	Saugus
6	SR4	Saugus River @ Bridge Street	Saugus
7	SHB1	Shute Brook downstream of Central Street	Saugus
8	SR5	Saugus River @ Boston Street / Lincoln Avenue	Lynn / Saugus
9	STB1	Strawberry Brook Outlet	Lynn
10	PR1	Pines / Saugus River @ Gibson Park	Revere
11	PR2	Pines River @ Route 1A	Revere
12	TRB1	Trifone Brook	Revere
13	TLB1	Town Line Brook @ Cemeteries	Malden

Set A - 1-2

Set B - 3,7

Set C - 4-6

Set D - 8-11

Set E - 12-13

Sites were grouped together by their proximity to certain land features and bodies of water. 8-11 all have tidal influence, while both 1 and 2 are at the start of a large body of water.

Recordings of Parameters at Stations

COUNTA of Parameter								
Site Code	DO	E. coli	Enterococci	Specific Conduc	TempC	TN	TP	TSS
FIELD-QC-FDUI	102	106	106	100	104	104	104	109
SRWC-LQ1	53	55	55	53	54	54	54	56
SRWC-MR1	53	55	55	53	54	54	54	57
SRWC-PR1	54	55	55	52	55	54	54	56
SRWC-PR2	54	55	55	52	55	54	54	56
SRWC-SHB1	54	55	55	52	55	54	54	55
SRWC-SR1	53	55	55	53	54	54	54	55
SRWC-SR2	52	55	55	52	53	54	54	56
SRWC-SR3	53	55	55	53	54	54	54	57
SRWC-SR4	53	55	55	53	54	54	54	55
SRWC-SR5	54	55	55	52	55	54	54	57
SRWC-STB1	54	55	55	52	55	54	54	55
SRWC-TLB1	23	23	23	23	23	23	23	23
SRWC-TRB1	54	55	55	52	55	54	54	62
Grand Total	766	789	789	752	780	775	775	809

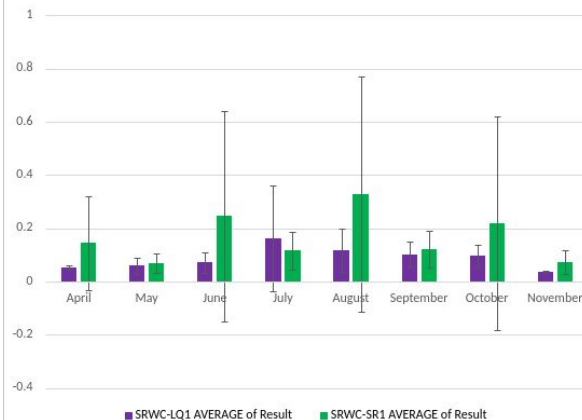
This chart shows the amount of times each parameter was recorded at a station over the 10 years. Station TLB1 was discontinued about half way through the data collecting period.

Parameters by Station Group

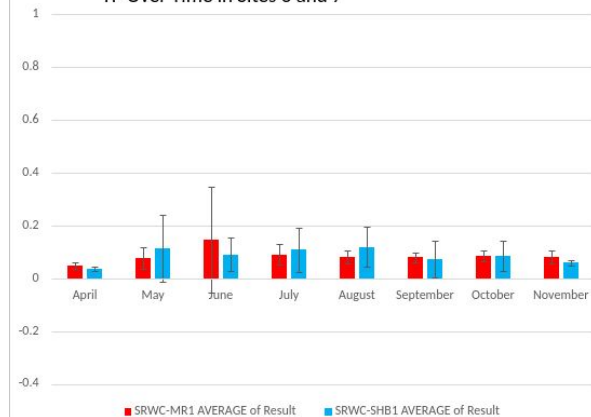
Stations were grouped for easier comparison. For each station, all of the results from each month were taken and averaged. Their standard deviation bar was recorded to show the range of results in the data for each month. For example, for E. Coli the values are widely different depending on the year, which causes the standard deviation to be very large.

Total Phosphorus (mg/L)

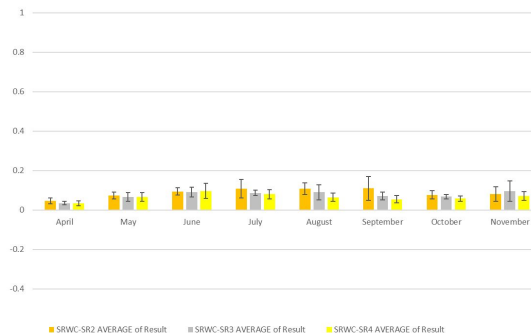
TP Over Time in Sites 1 and 2



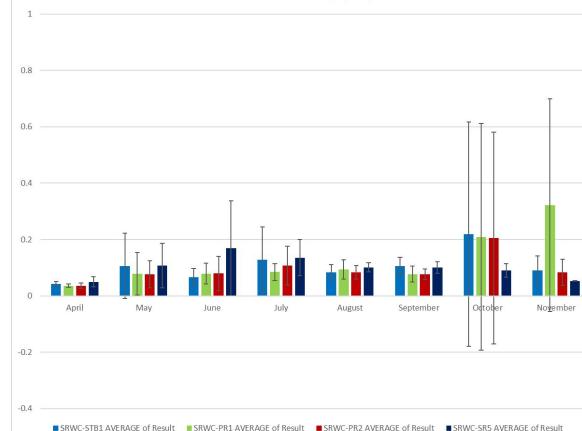
TP Over Time in Sites 3 and 7



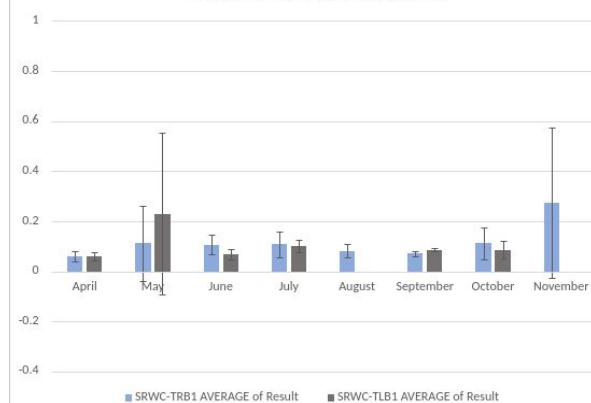
TP Over Time in Sites 4, 5, and 6



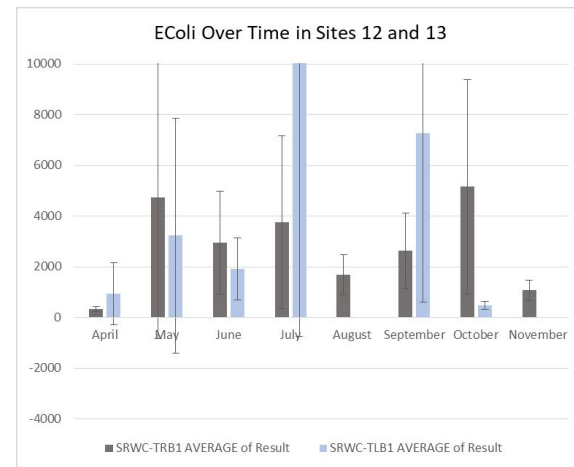
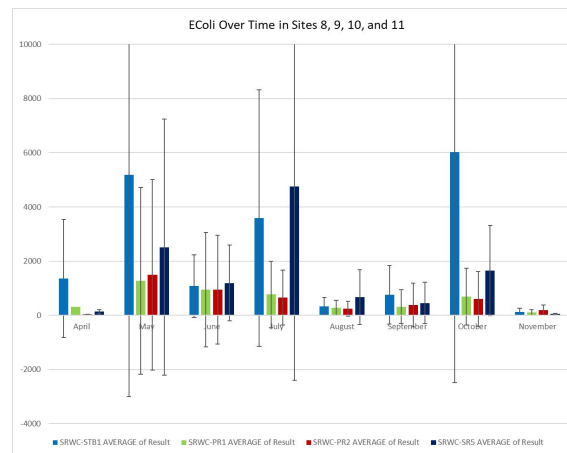
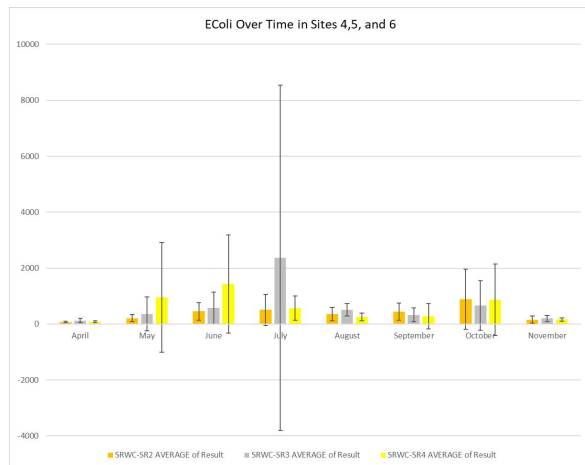
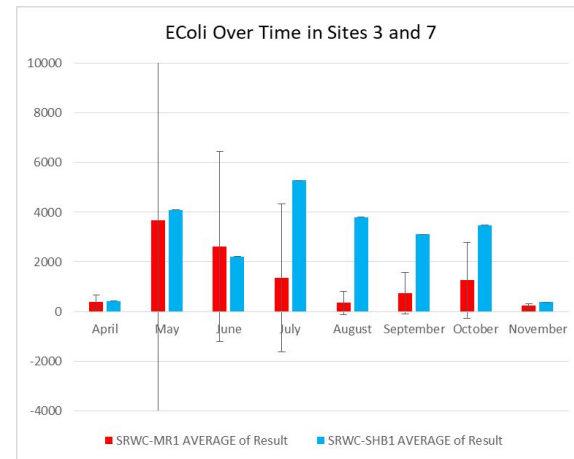
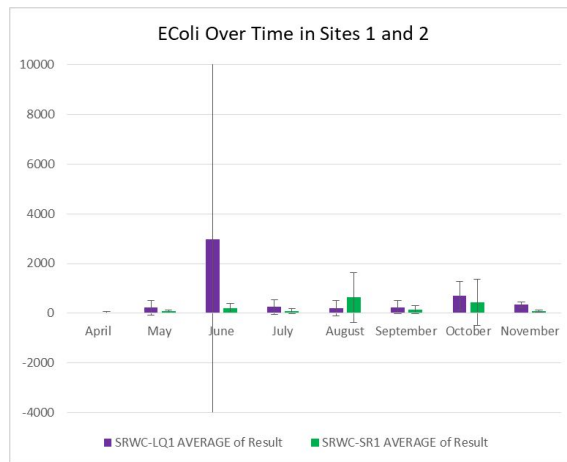
TP Over Time in Sites 8, 9, 10, and 11



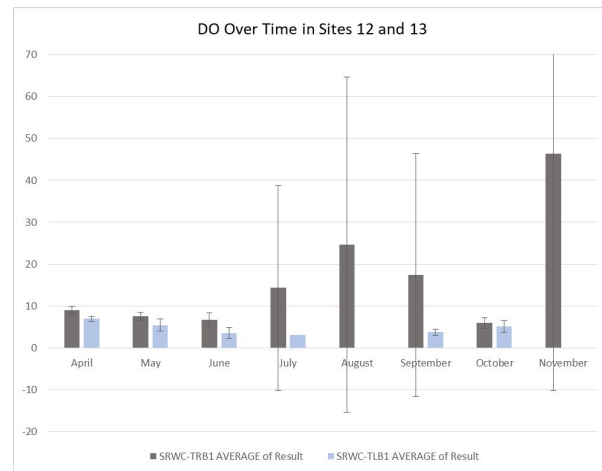
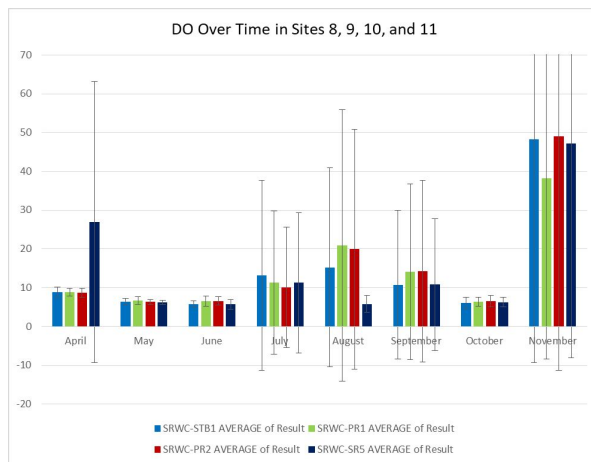
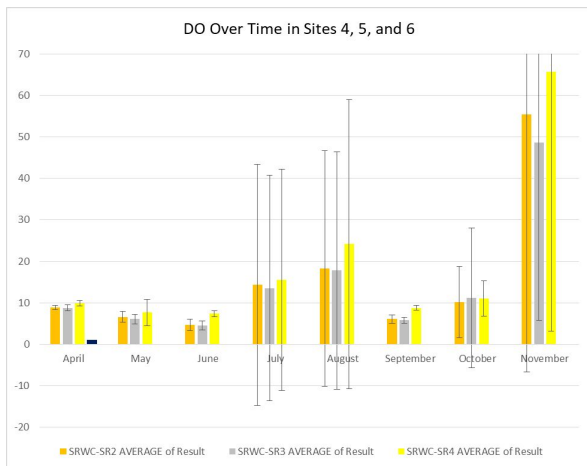
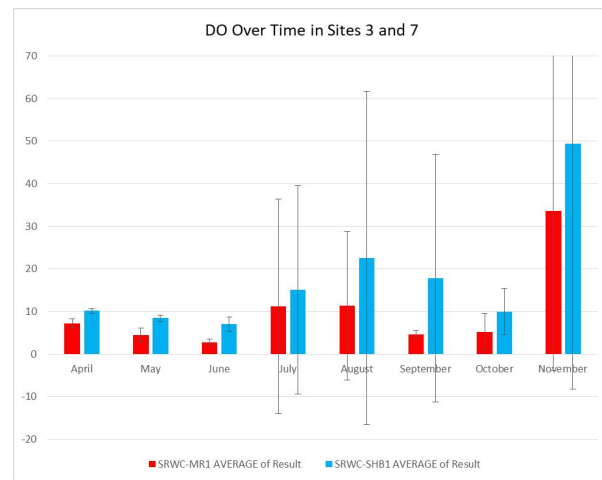
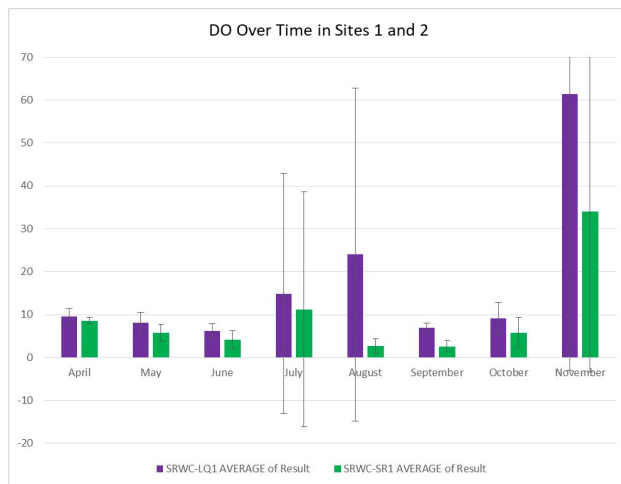
TP Over Time in Sites 12 and 13



Escherichia coli (MPN/100 mL)

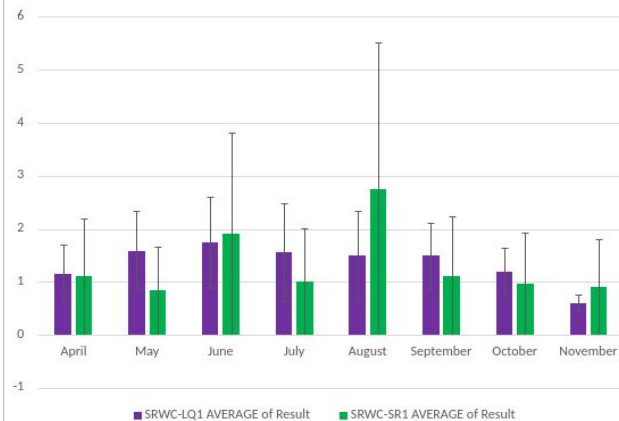


Dissolved Oxygen (mg/L)

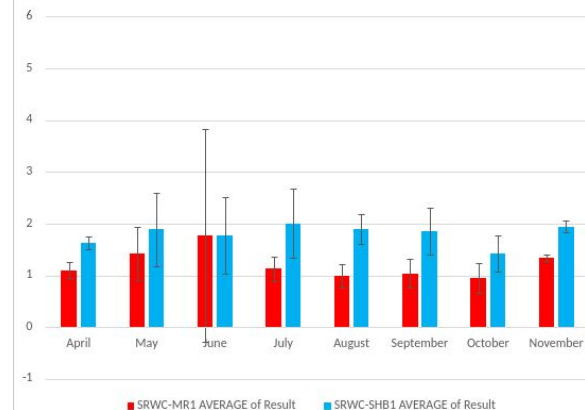


Total Nitrogen (mg/L)

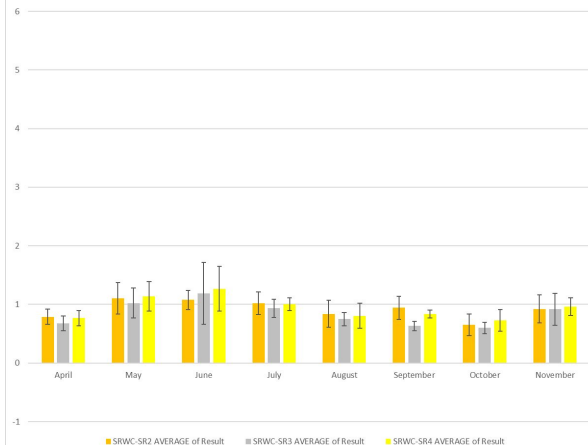
TN Over Time in Sites 1 and 2



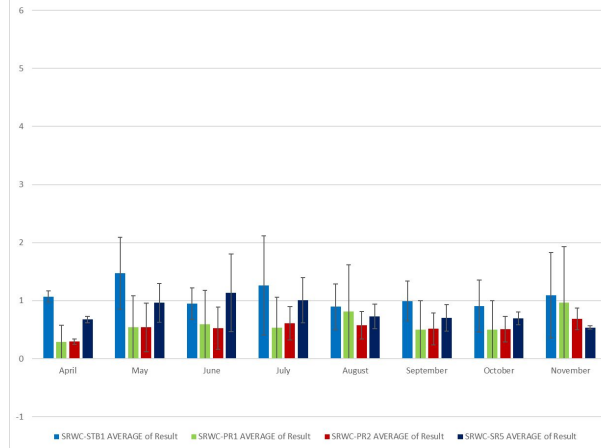
TN Over Time in Sites 3 and 7



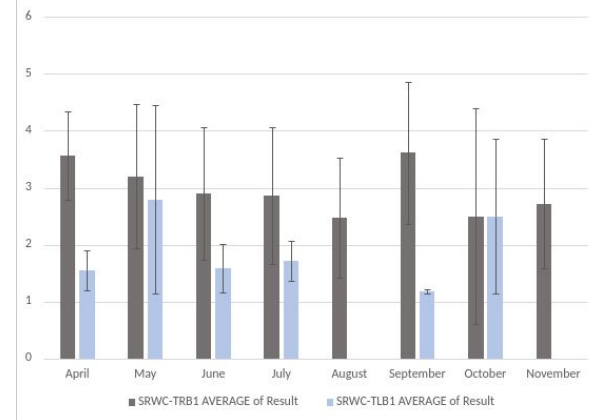
TN Over Time in Sites 4, 5, and 6



TN Over Time in Sites 8, 9, 10, and 11

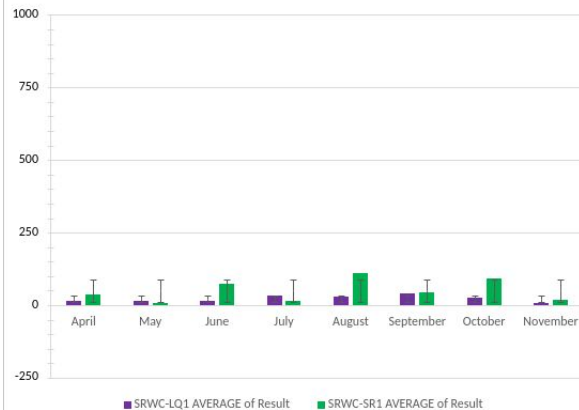


TN Over Time in Sites 12 and 13

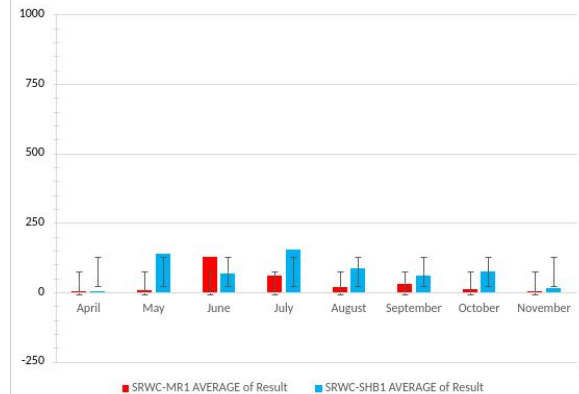


Total Suspended Solids (mg/L)

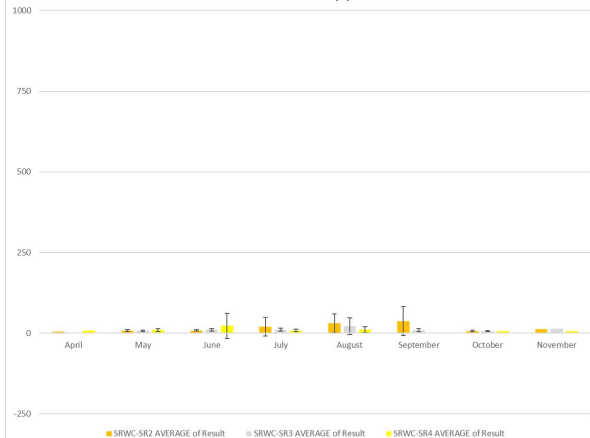
TSS Over Time in Sites 1 and 2



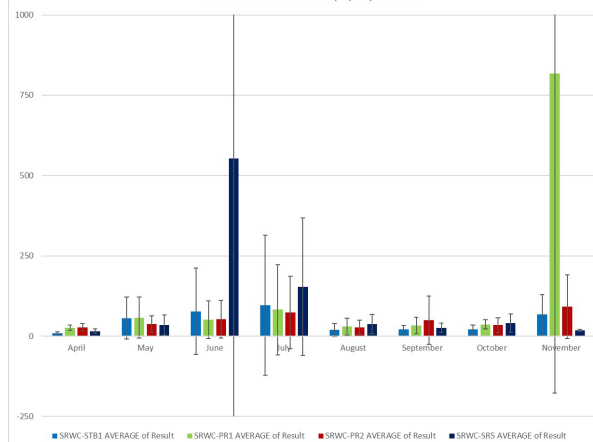
TSS Over Time in Sites 3 and 7



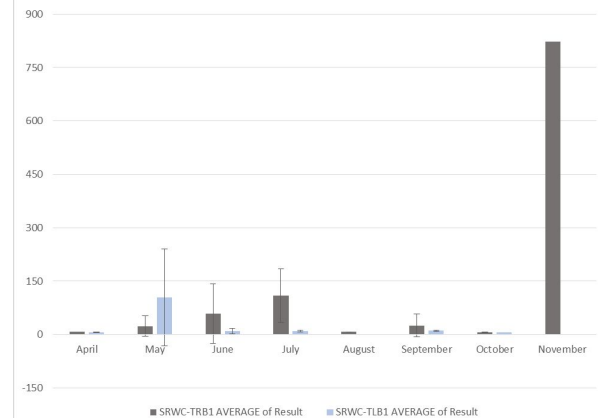
TSS Over Time in Sites 4,5, and 6



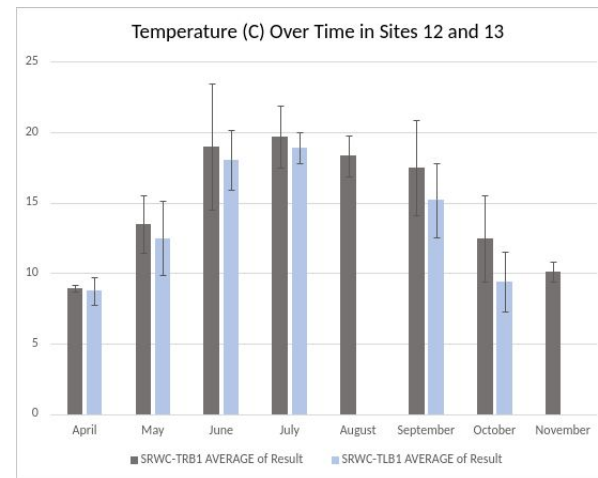
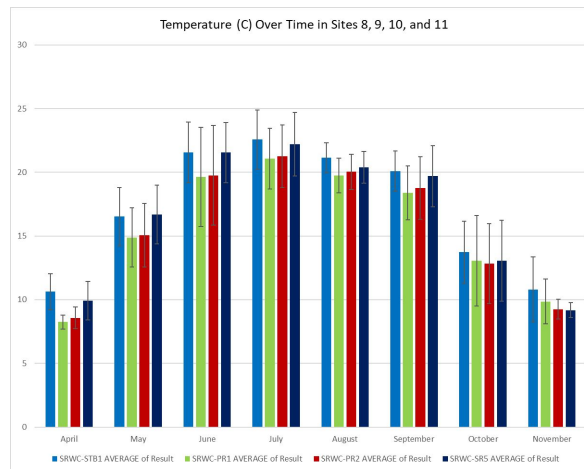
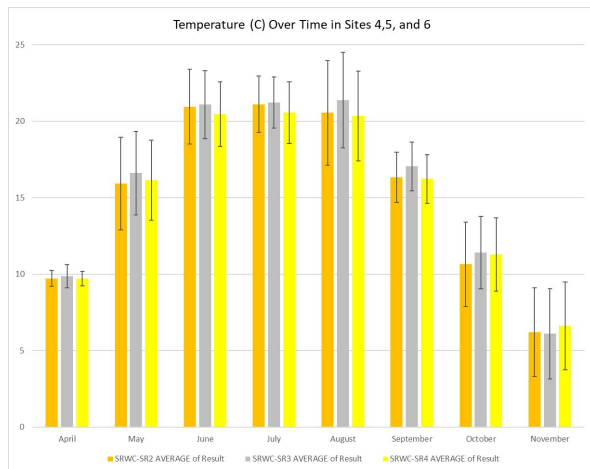
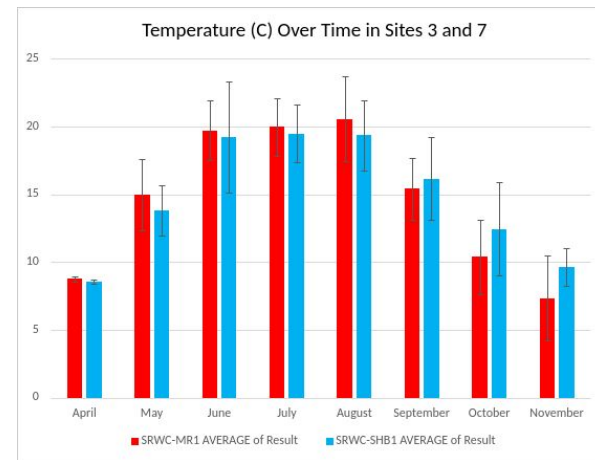
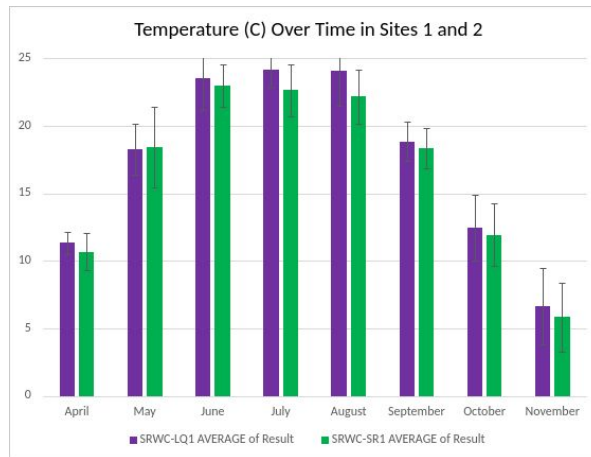
TSS Over Time in Sites 8, 9, 10, and 11



TSS Over Time in Sites 12 and 13

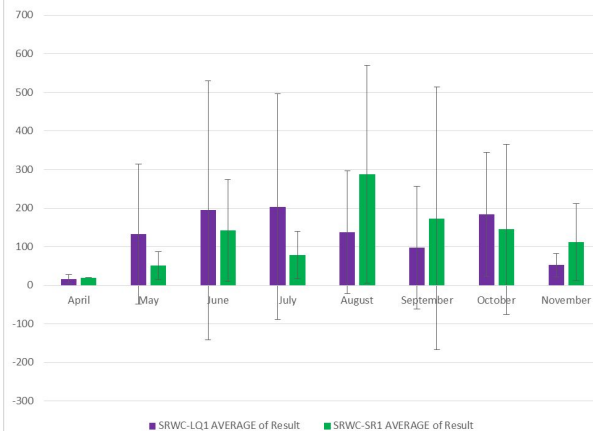


Temperature (°C)

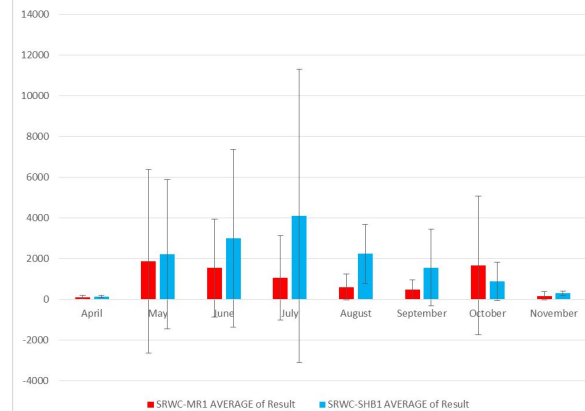


Enterococci (MPN/100 mL)

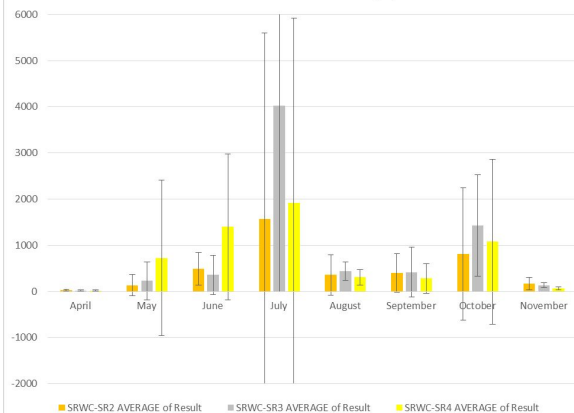
Enterococci Over Time in Sites 1 and 2



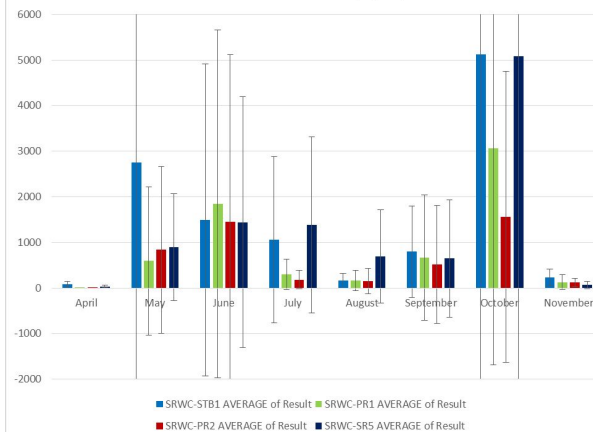
Enterococci Over Time in Sites 3 and 7



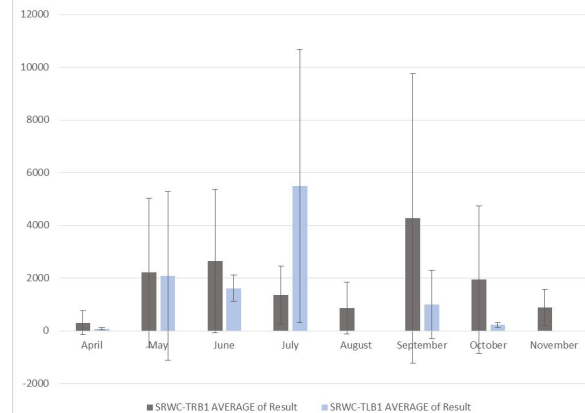
Enterococci Over Time in Sites 4, 5, and 6



Enterococci Over Time in 8, 9, 10, and 11



Enterococci Over Time in Sites 12 and 13



Specific Conductivity (umho/cm)

