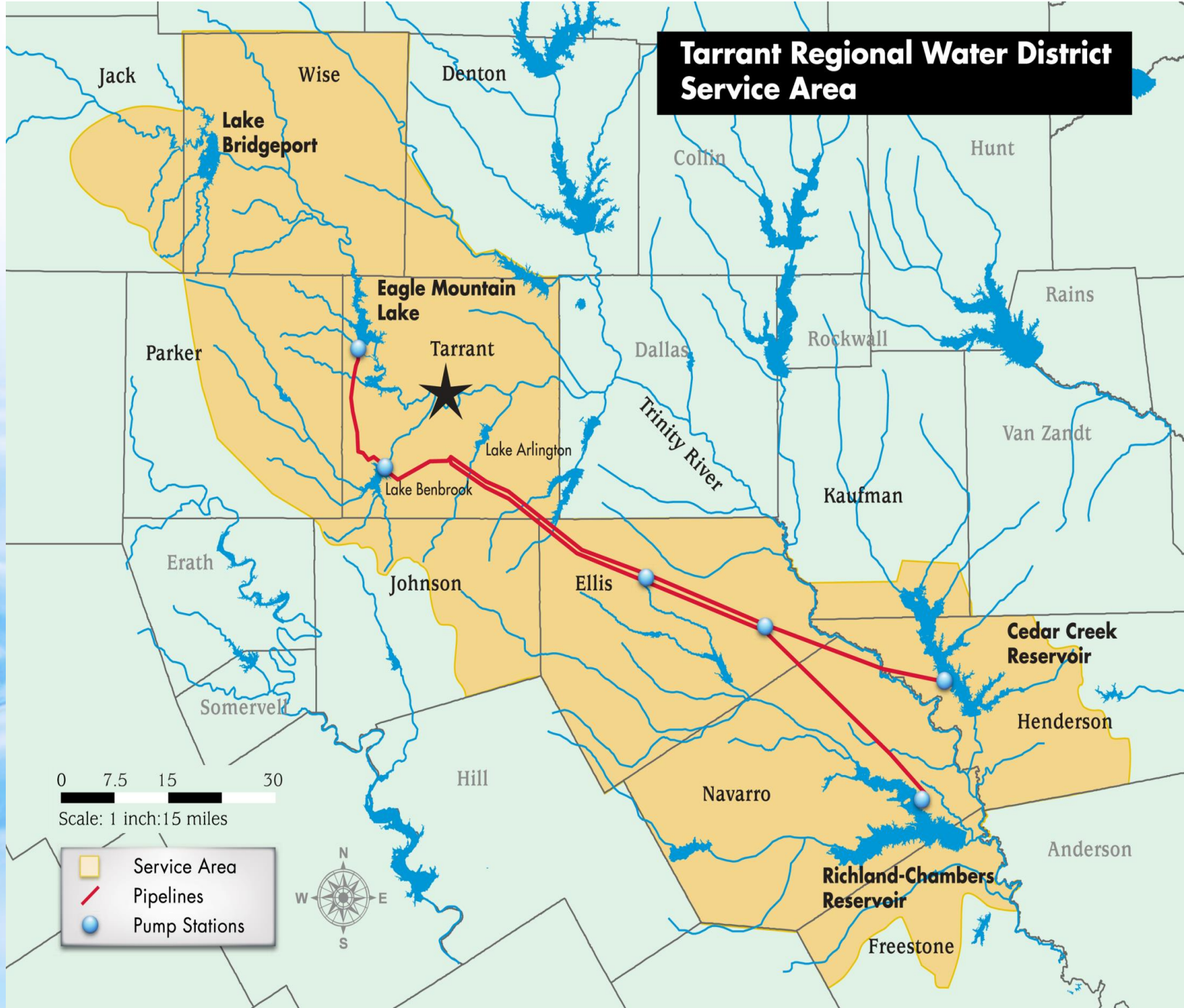




FROM DROUGHT TO FLOOD....THE EFFECTS ON RESERVOIR WATER QUALITY

By Jennifer Owens
Tarrant Regional Water District
Fort Worth, Texas

Tarrant Regional Water District Service Area





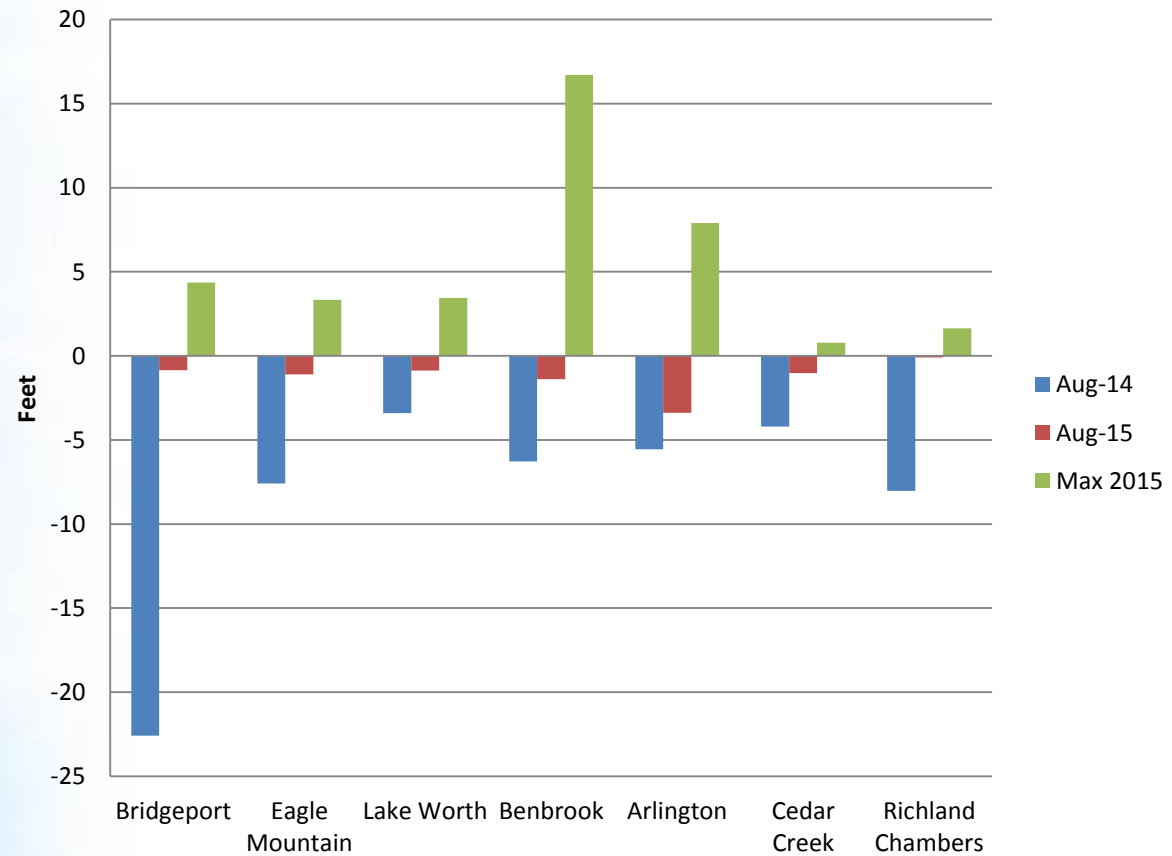
2015:
Historic
Record
Rainfall Year

62 inches

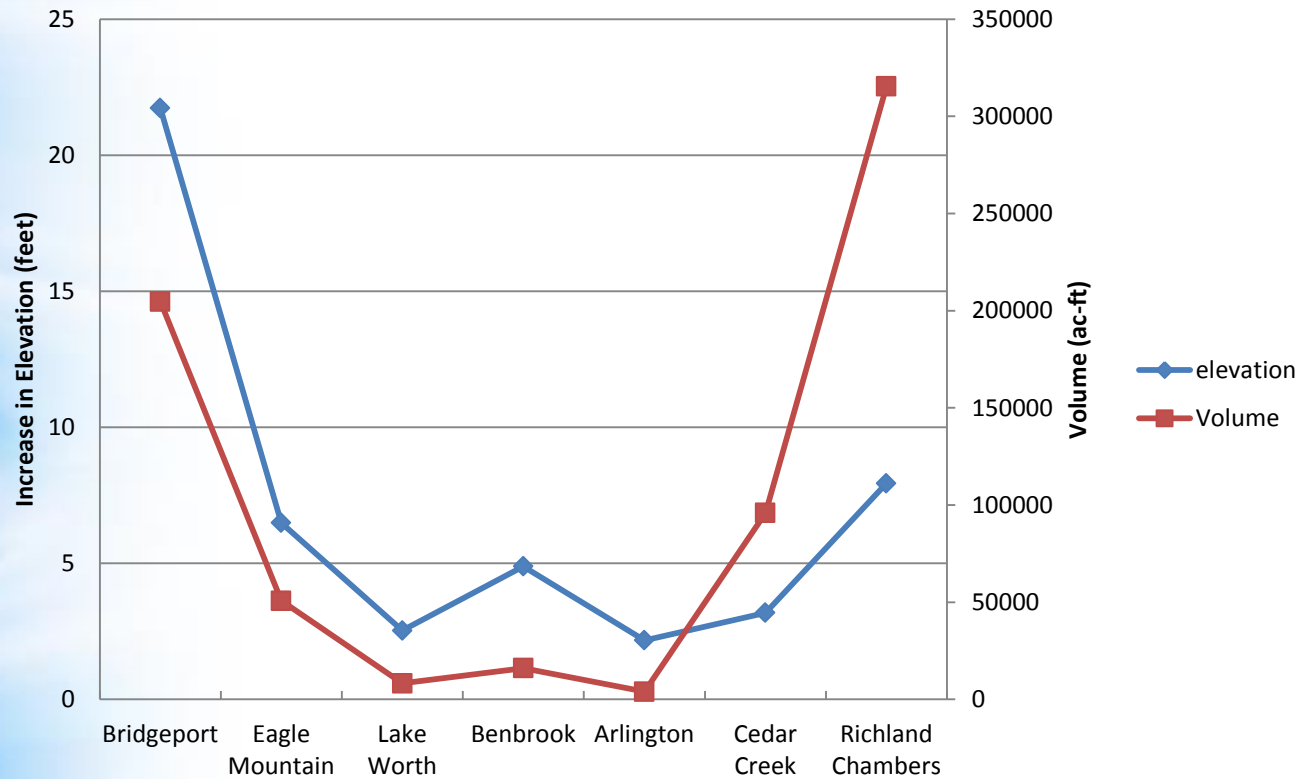




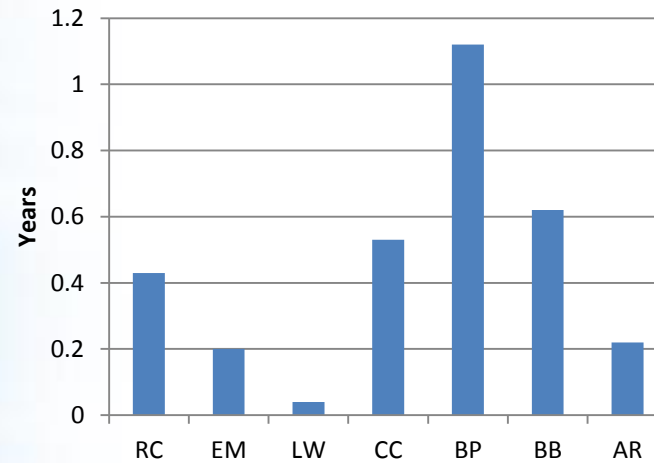
Comparison of Reservoir Conservation Pool Elevation



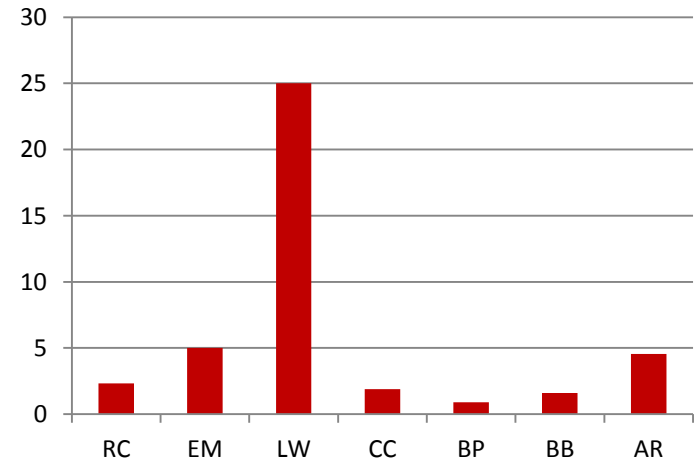
Change From Aug 2014 to Aug 2015



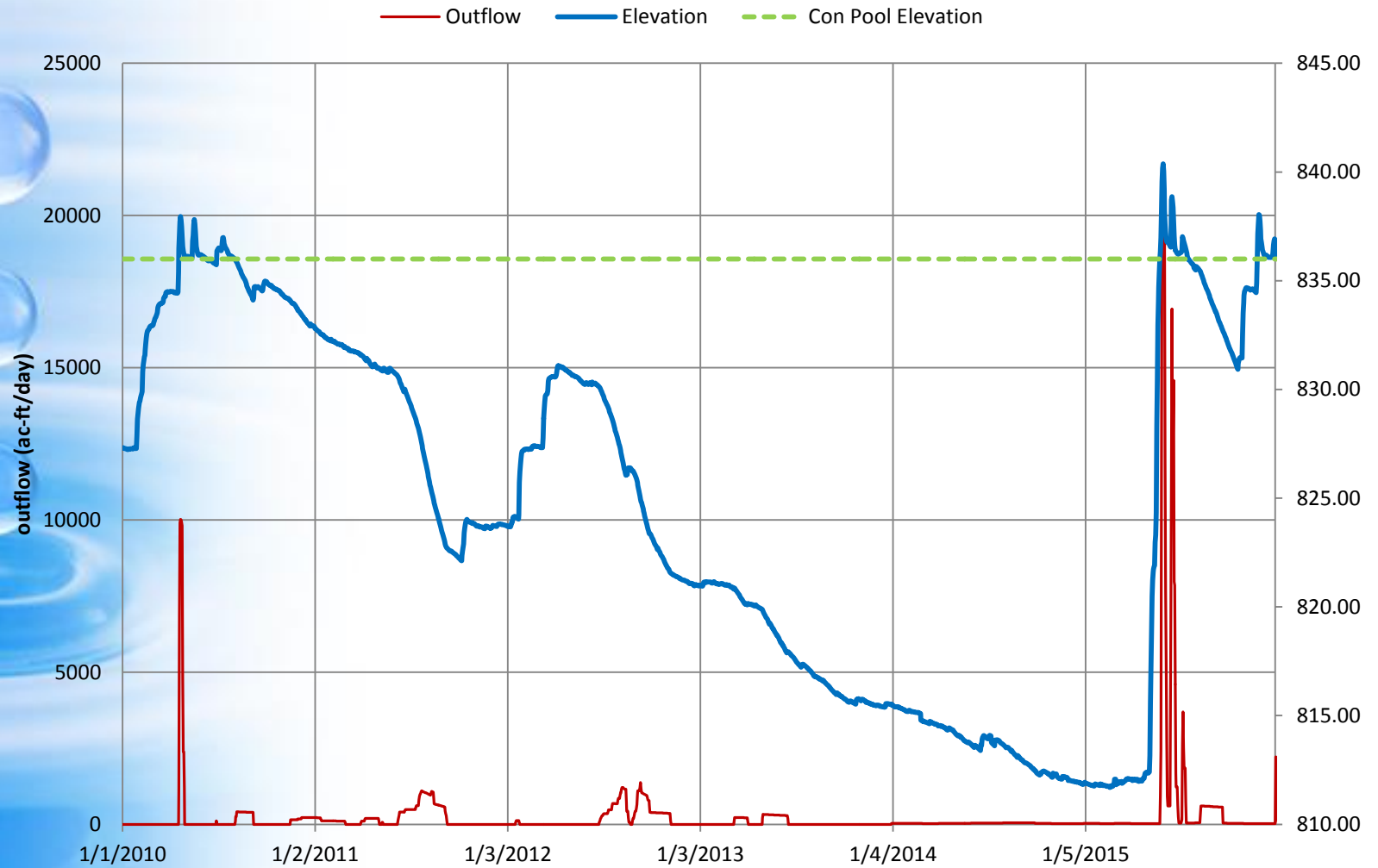
2015 Detention Time



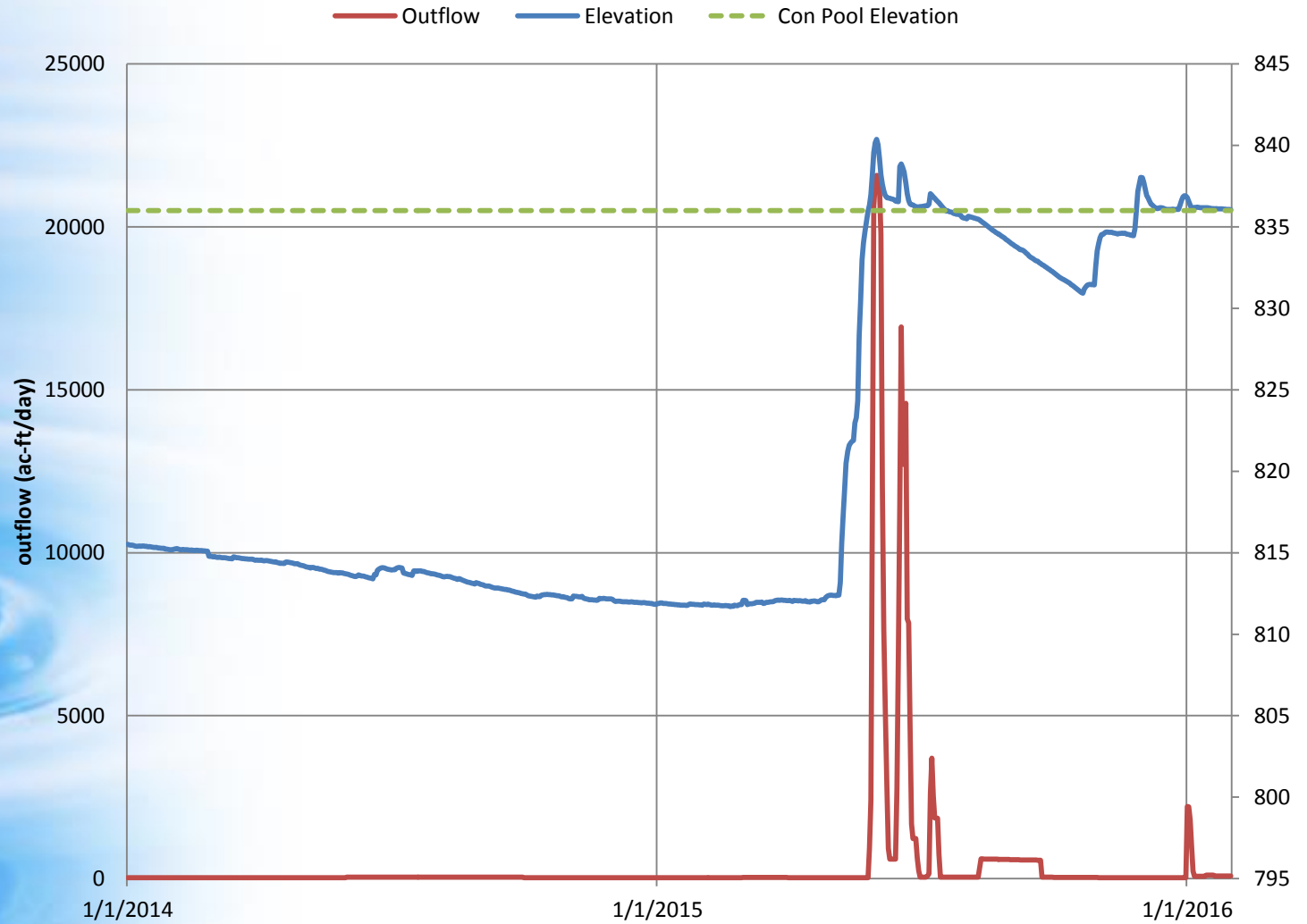
2015 Reservoir Flushes



Lake Bridgeport

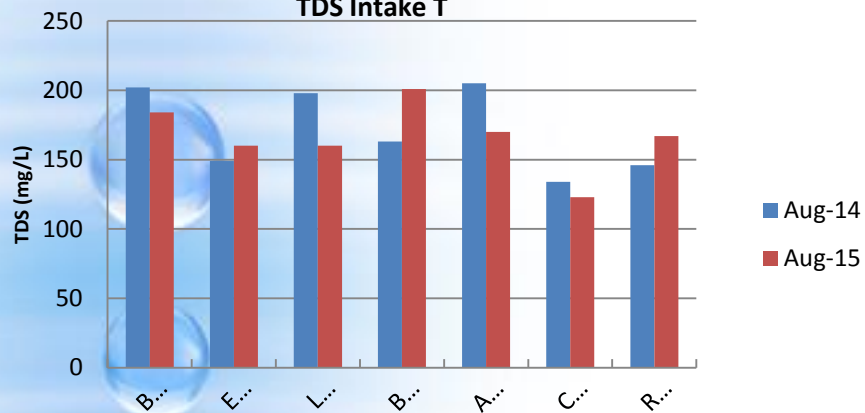


Lake Bridgeport



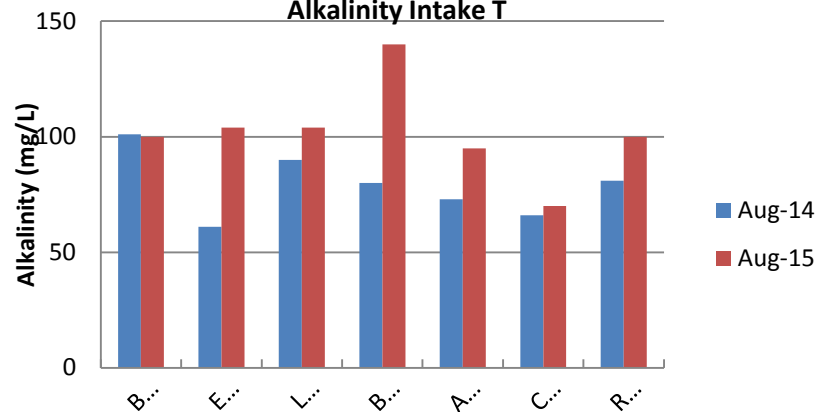
Change From Aug 2014 to Aug 2015

TDS Intake T



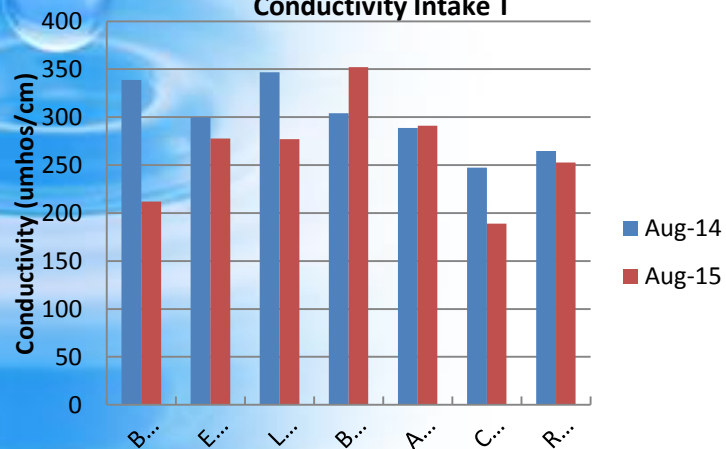
Change From Aug 2014 to Aug 2015

Alkalinity Intake T



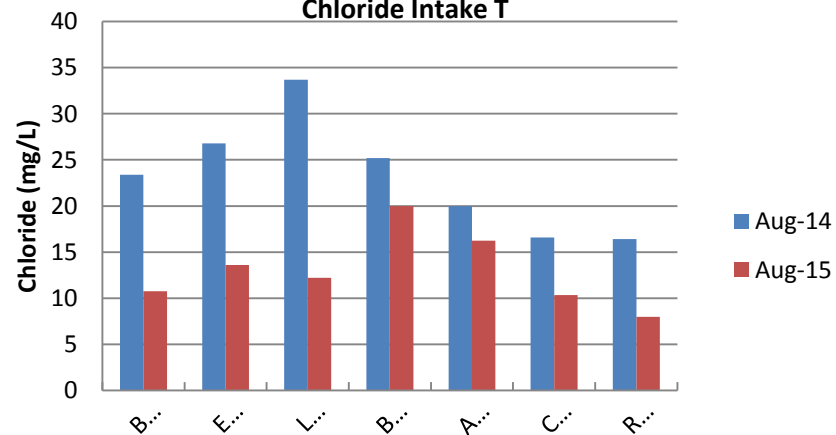
Change From Aug 2014 to Aug 2015

Conductivity Intake T

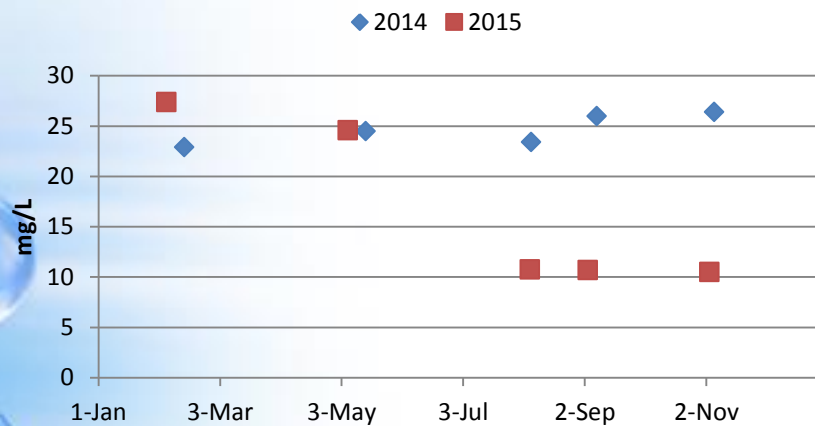


Change From Aug 2014 to Aug 2015

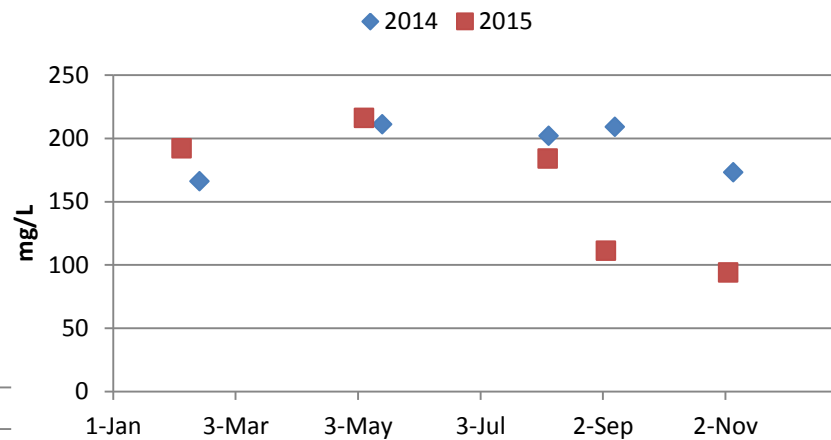
Chloride Intake T



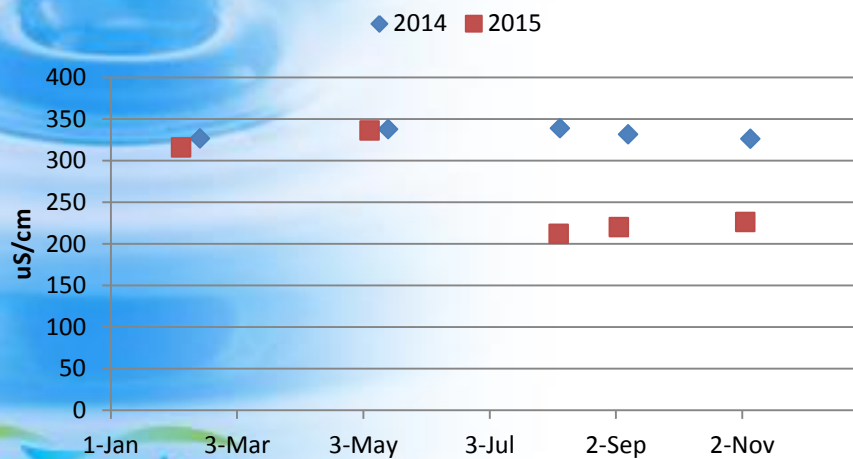
BP Chloride



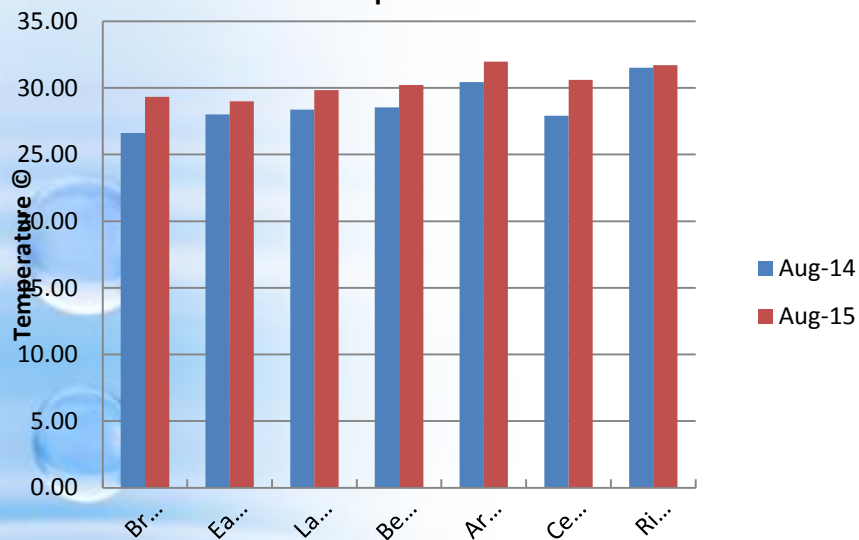
BP TDS



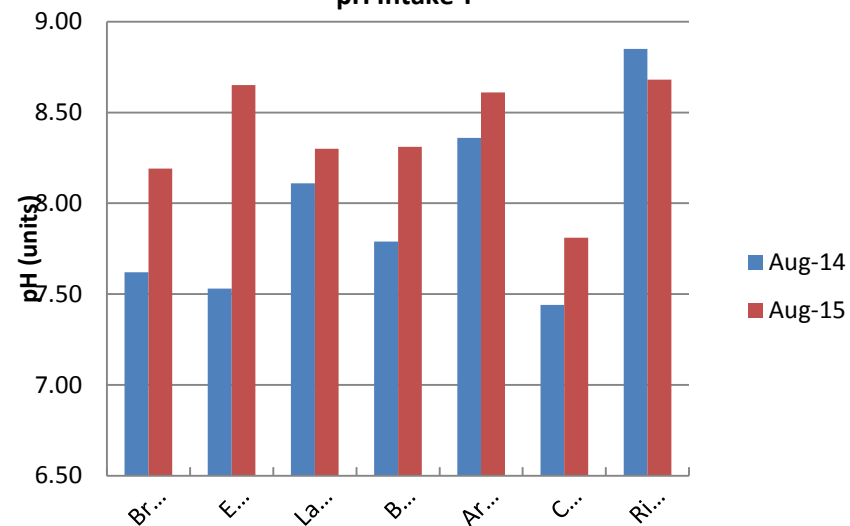
BP SpC



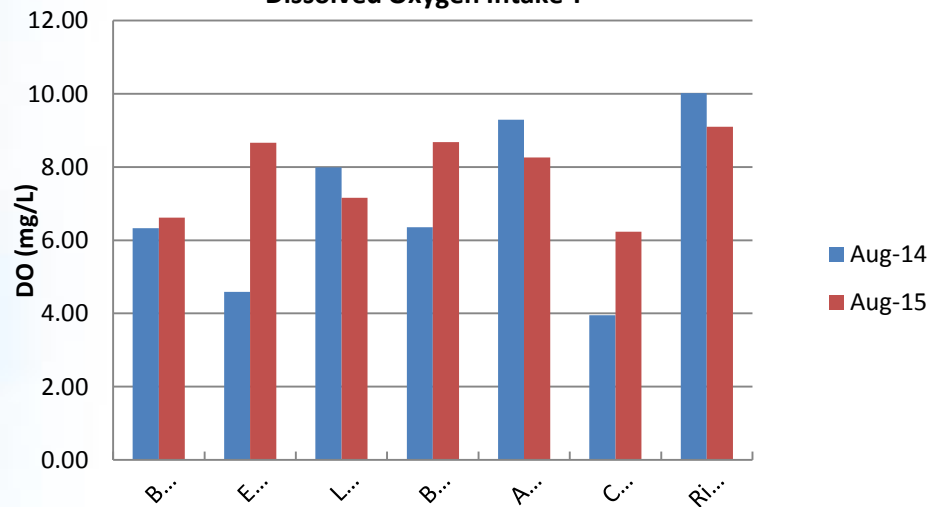
Change From Aug 2014 to Aug 2015
Temp Intake T

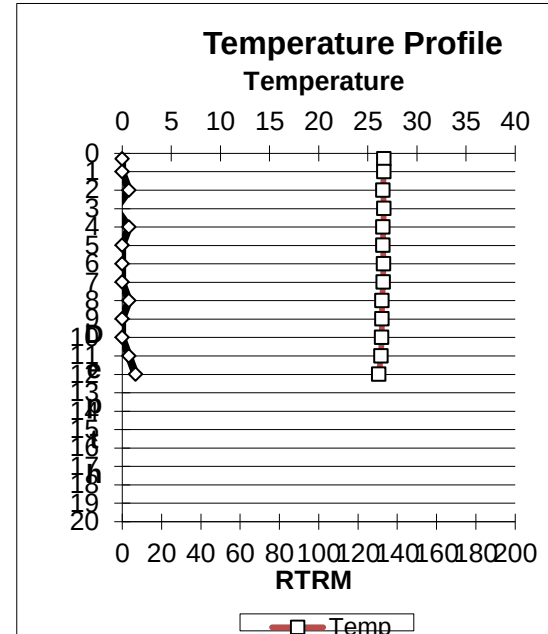
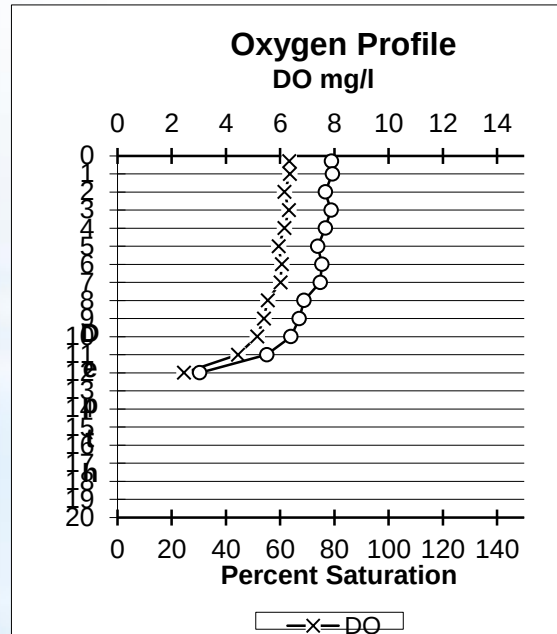


Change From Aug 2014 to Aug 2015
pH Intake T

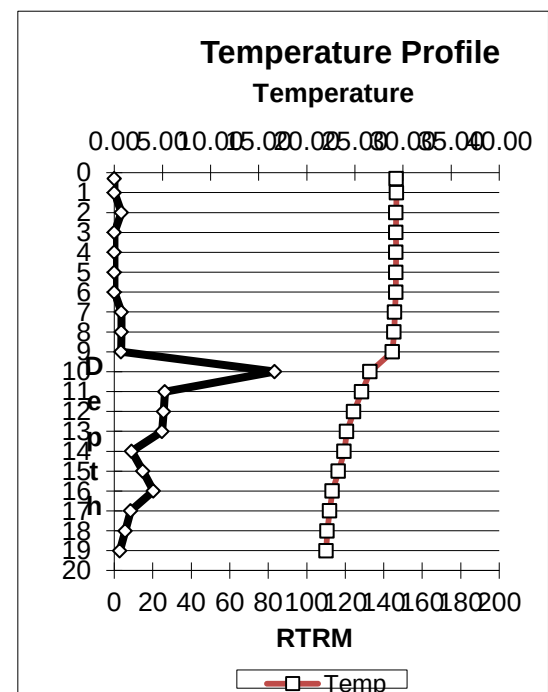
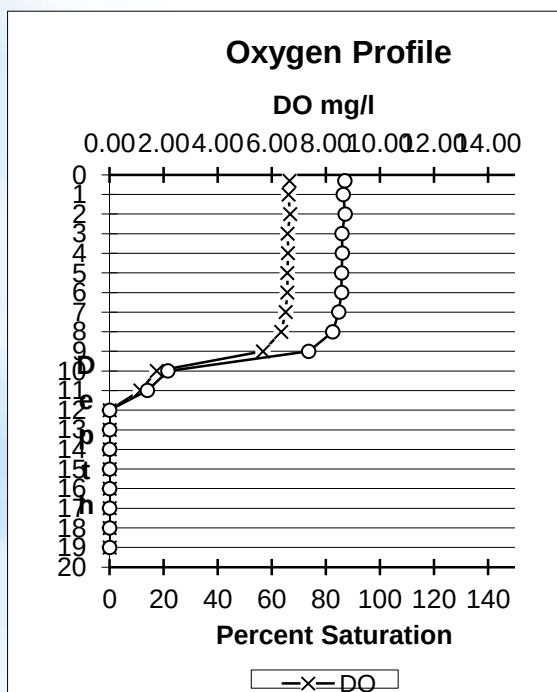


Change From Aug 2014 to Aug 2015
Dissolved Oxygen Intake T



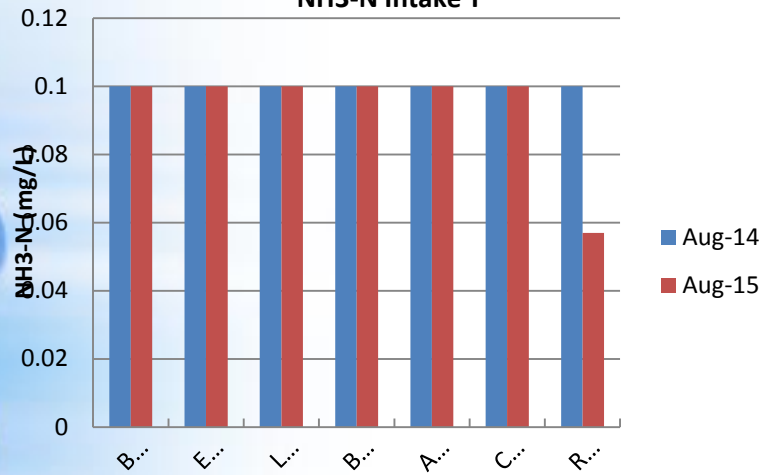


2
0
1
4

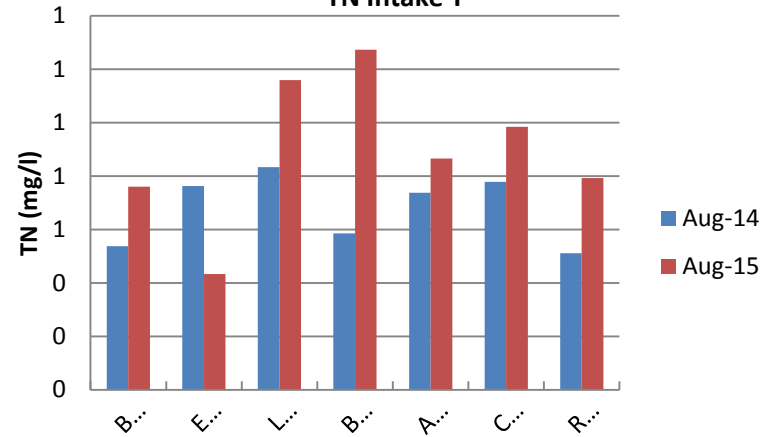


2
0
1
5

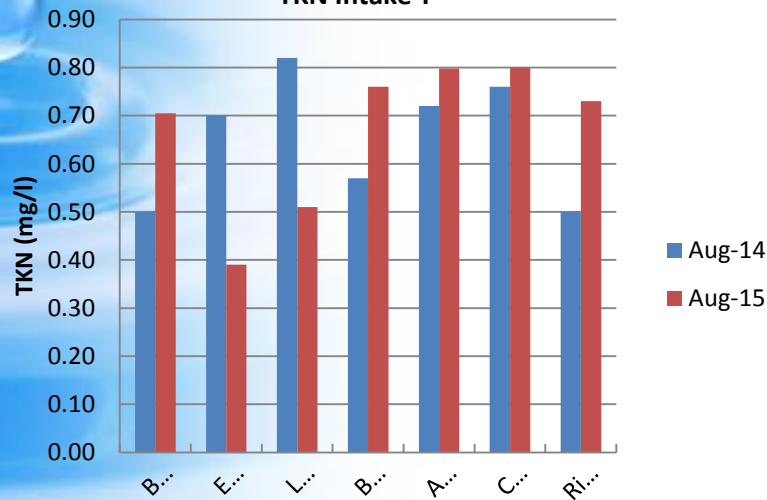
Change From Aug 2014 to Aug 2015
NH3-N Intake T



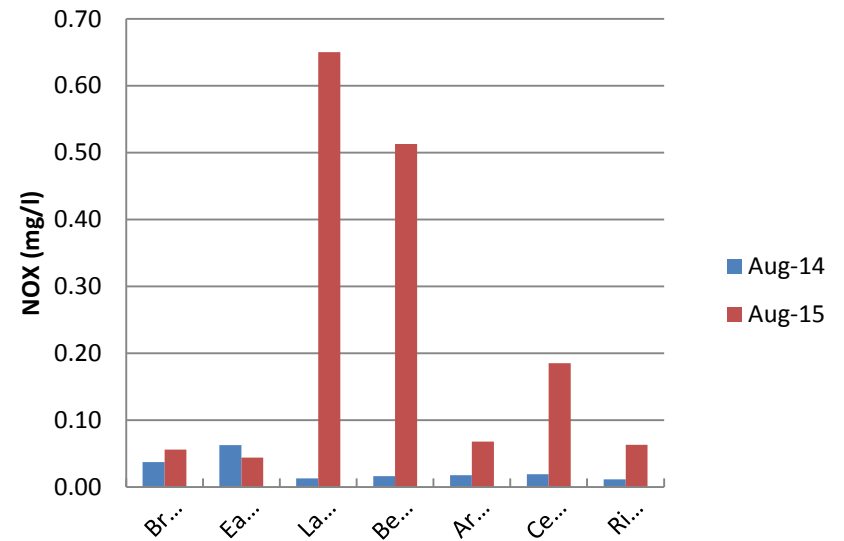
Change From Aug 2014 to Aug 2015
TN Intake T



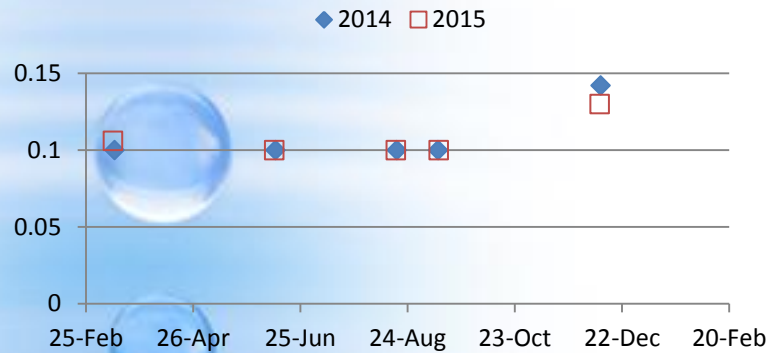
Change From Aug 2014 to Aug 2015
TKN Intake T



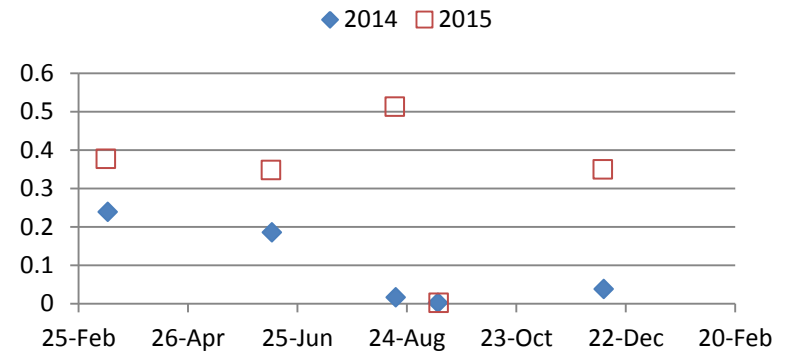
Change From Aug 2014 to Aug 2015
NOX Intake T



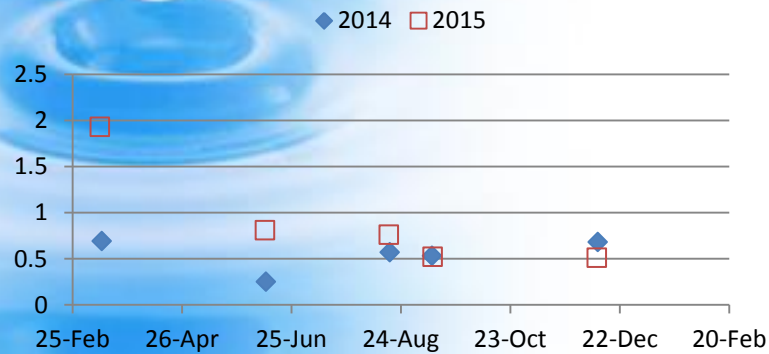
BB Intake NH3



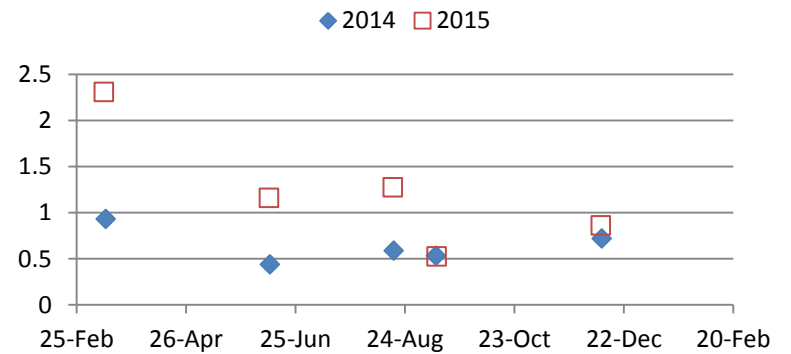
BB Intake NOx



BB Intake TKN



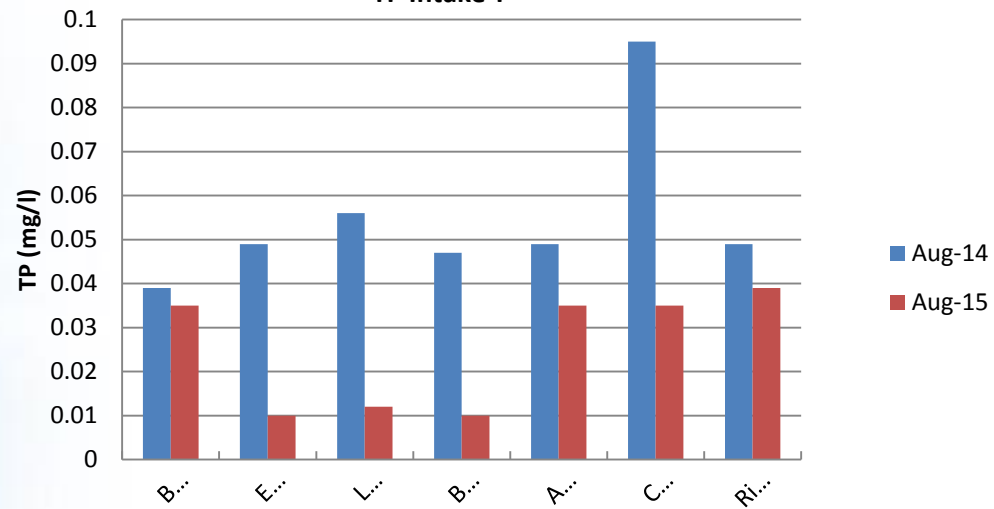
BB Intake TN





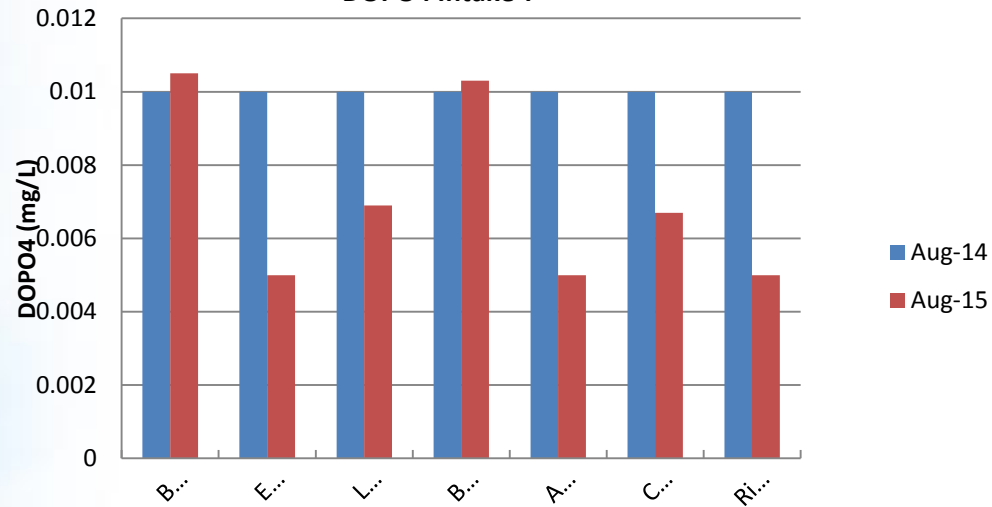
Change From Aug 2014 to Aug 2015

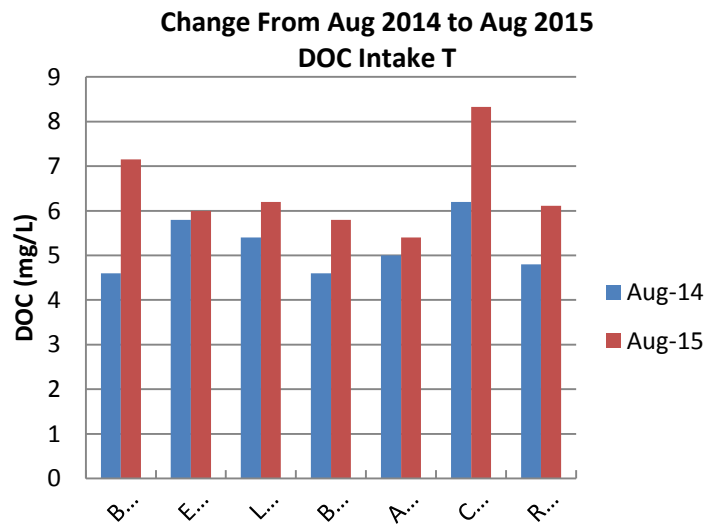
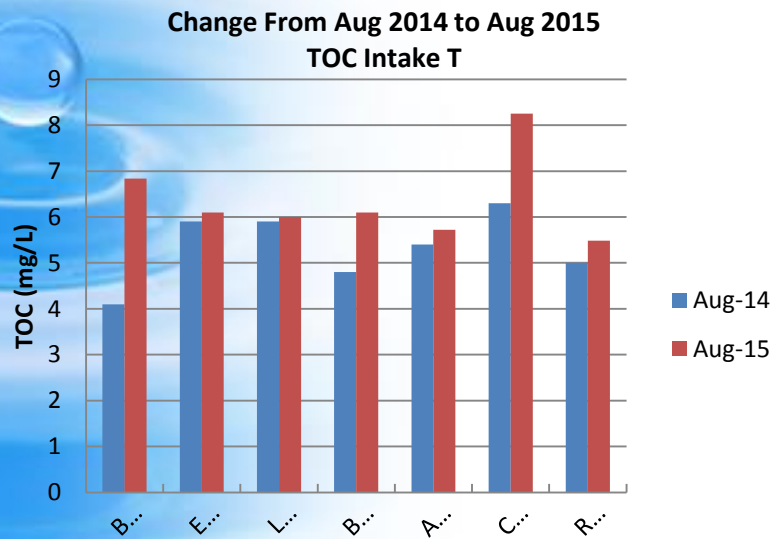
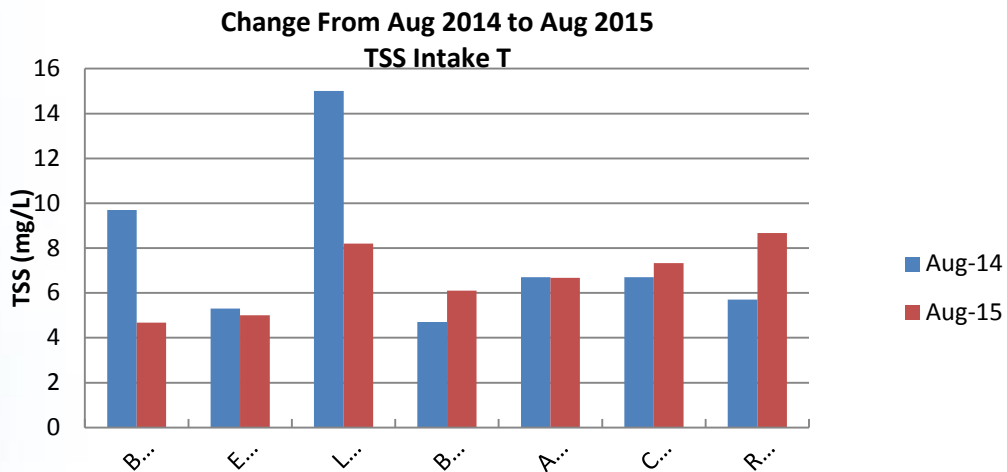
TP Intake T



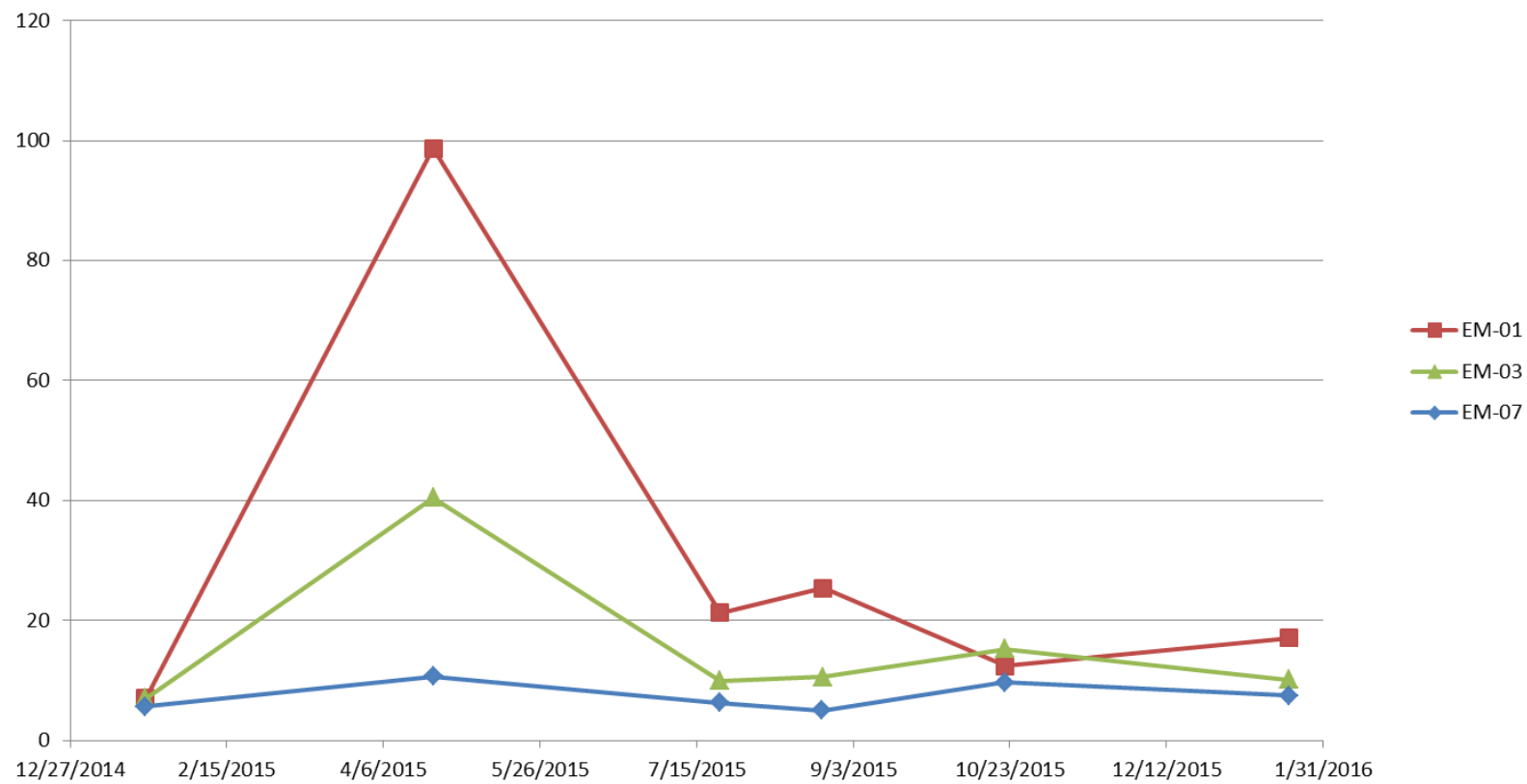
Change From Aug 2014 to Aug 2015

DOPO4 Intake T

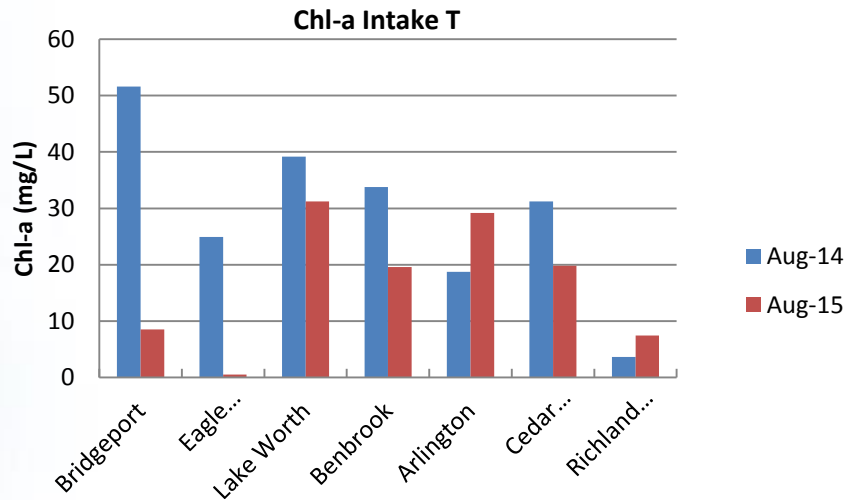




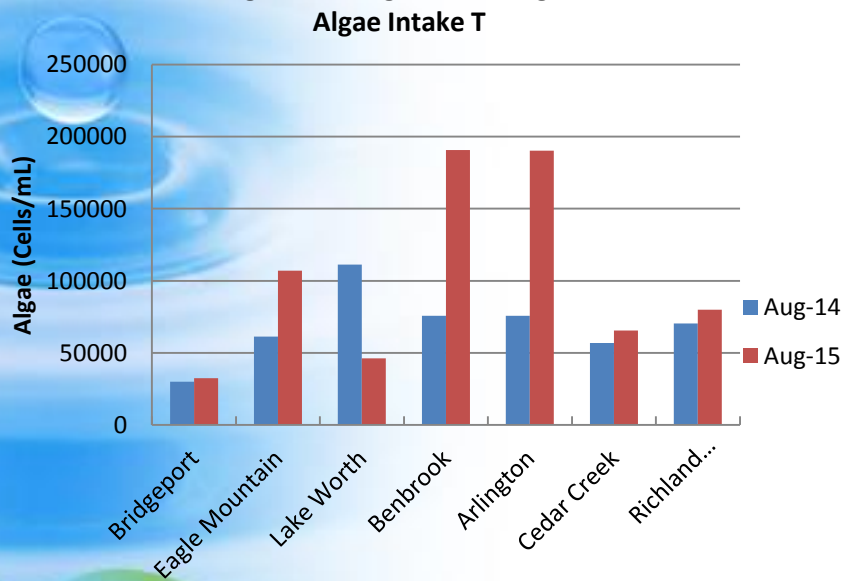
TSS



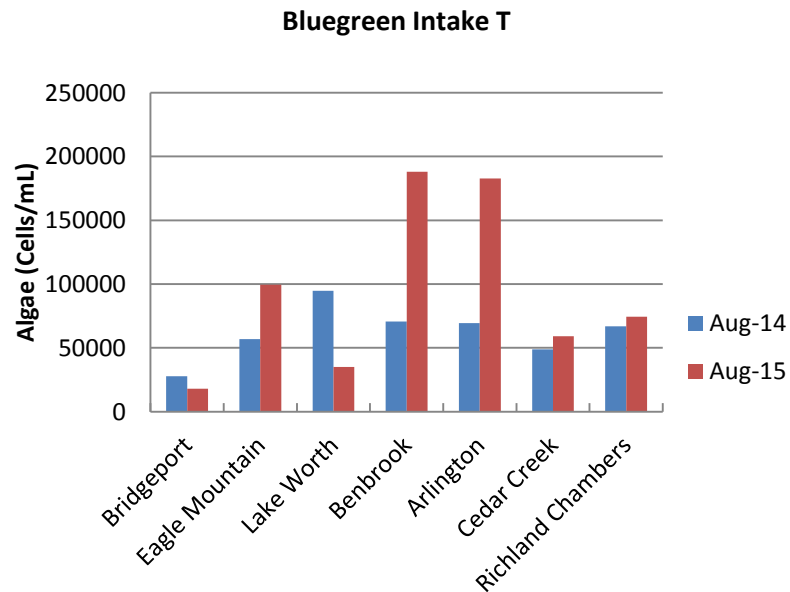
Change From Aug 2014 to Aug 2015



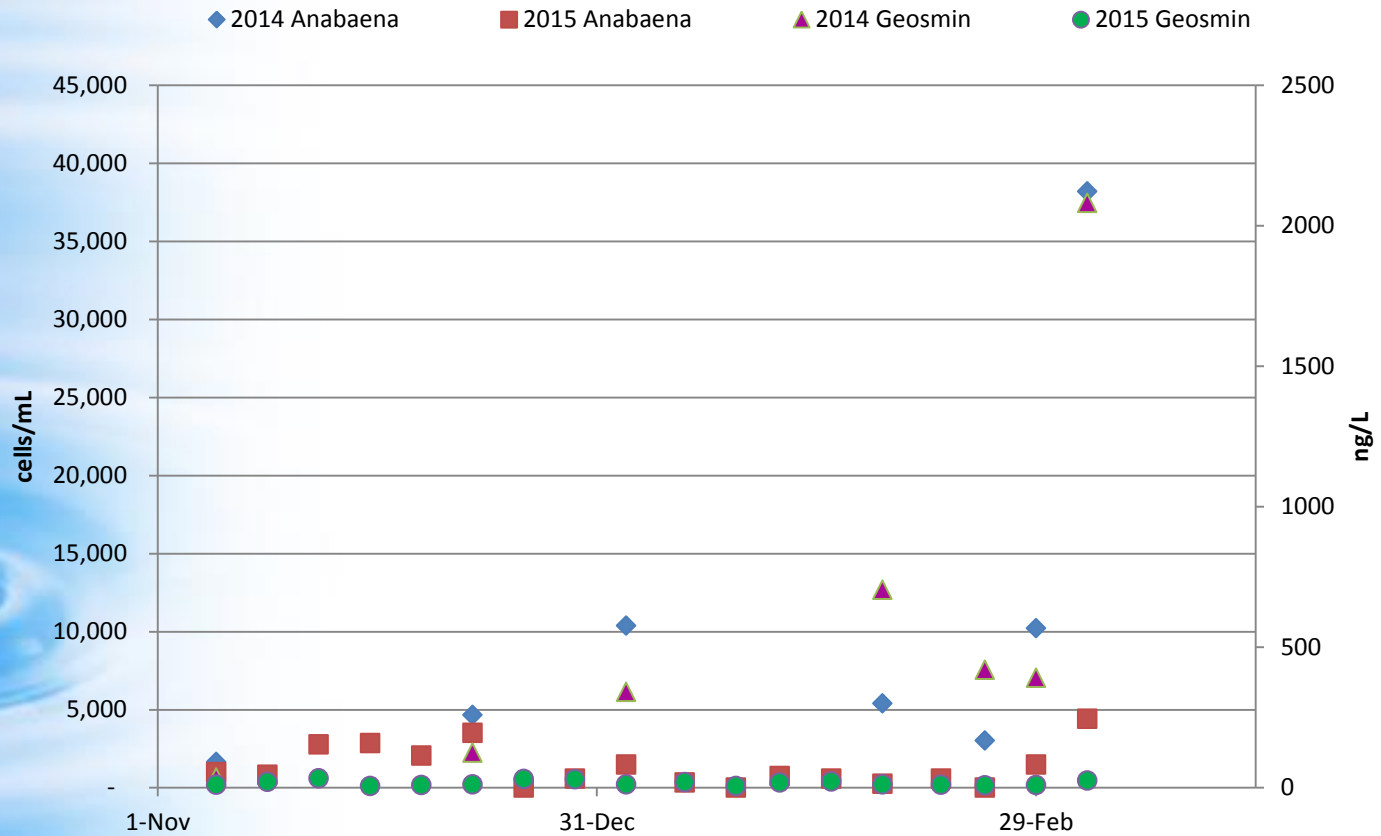
Change From Aug 2014 to Aug 2015



Change From Aug 2014 to Aug 2015



BB Geosmin Levels



What did the spring 2015 flooding do to the water quality of our 7 reservoirs?

Note: A change is determined by at least 5 out of the 7 reservoirs with this change.

Parameter	Units	Increased	Decreased	Remained the Same
Chl'a'	ug/L		5/7 (91%)	
Total algae	Cells/ml	6/7 (44%)		
Bluegreen Algae	Cells/ml	5/7 (53%)		
pH	units	6/7 (6%)		
Alkalinity	mg/L	6/7 (24%)		
Calcium	mg/L	5/7 (29%)		
Magnesium	mg/L		6/7 (32%)	
Sodium	mg/L		7/7 (58%)	
Total suspended solids	mg/L	3/7	3/7	X
Total Dissolved solids	mg/L	3/7	4/7	X
Conductivity	us/cm		5/7 (22%)	
Chloride	mg/L		7/7 (56%)	
Sulfate	mg/L		7/7 (68%)	
Nitrate-Nitrite Nitrogen	mg/L	6/7 (140%)		
TKN	mg/L	5/7 (23%)		
Total Phosphorus	mg/L		7/7 (80%)	
Total Organic Carbon	mg/L	7/7 (17%)		
Total Dissolved Carbon	mg/L	7/7 (20%)		
Total Iron	ug/L	4/7	3/7	X
Total Manganese	ug/L		6/7 (71%)	
Total Silica	mg/L	7/7 (65%)		
Temperature	C	7/7 (6%)		
RTRM	unitless	7/7 (102%)		