2015 PGOLID Stream Monitoring Summary

Compiled by Moriya Rufer, PGOLID Water Resource Coordinator

Overall Summary

Overall, 2015 showed no new large problems; however, there some results that stood out in this year's stream monitoring results. Flow was down in the Pelican River over the historical average. Flow at the other sites was very close to the historical average.

2015 Comparisons to Historical Averages

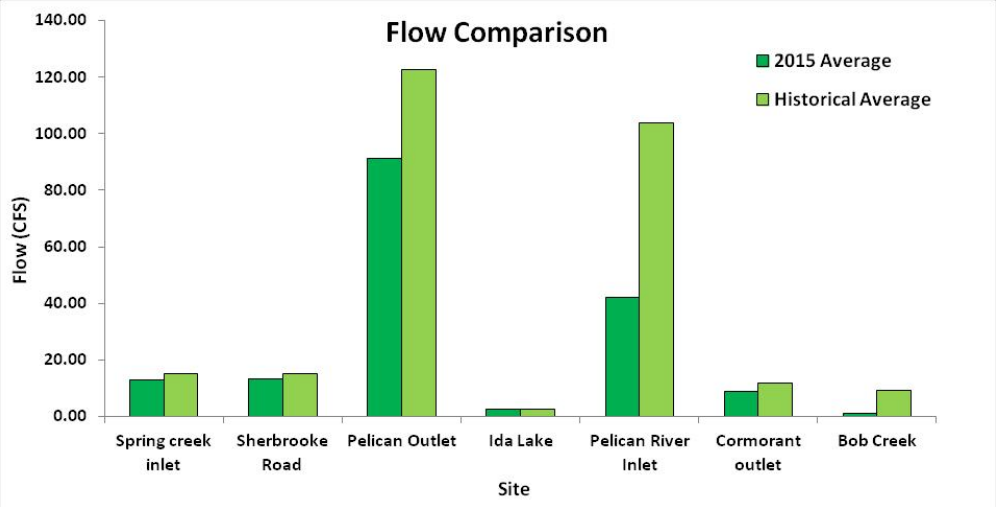

Figure 1. Water flow at each site comparing the historical average to the 2015 average.

The flow at the Pelican River Inlet was lower in 2015 than the historical average (Figure 1). The flow was also lower at the Pelican River Outlet. The sediment loading for 2015 is slightly lower than the historical average, but that is most likely due to the fact that the flow of water running into Pelican Lake was lower.

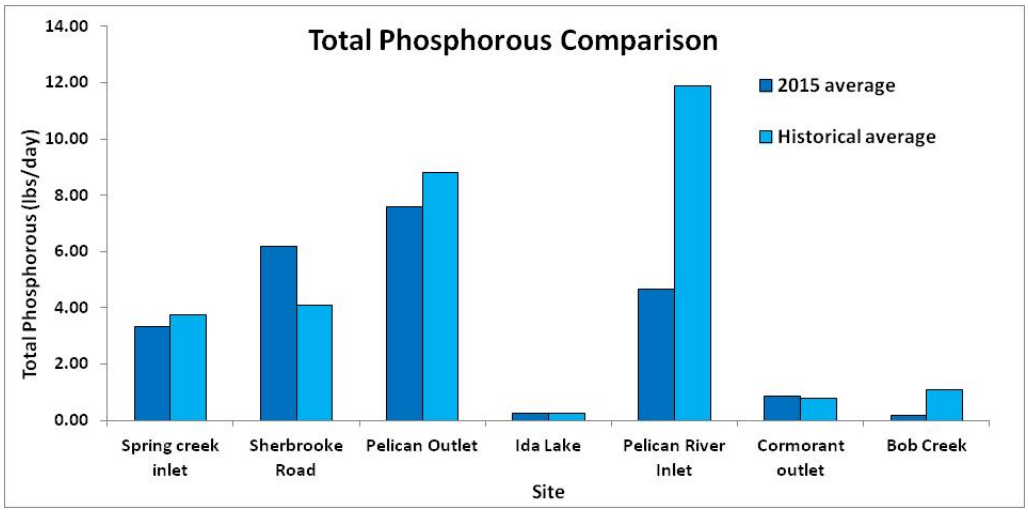

Figure 2. Total suspended solids loading at each site comparing the historical average to the 2015 average.

The Bob Creek Watershed flow was down this year (Figure 1), which cause the nutrient loading to be lower as well (Figure 2).

The Spring Creek Watershed showed slightly lower water flow than the historical averages in 2015 (Figure 1). The phosphorus was higher at the Sherbrooke site, which could be due to erosion (Figure 2). Lake Ida flow was exactly the same as last year, and the Cormorant Lake outlet was about the same as well.

Historically, 81% of the water flowing into Pelican Lake comes from the Pelican River, 12% from Spring Creek, and 7% from Bob Creek (Figure 4). In 2015, Spring Creek increased to 23%, which decreased the portion from the other inlets. The flow from the Cormorant Outlet and the Ida Outlet wasn't higher than previous years (Figure 1), so the increase in flow could have been runoff from heavier rains and groundwater from springs along Spring Creek.

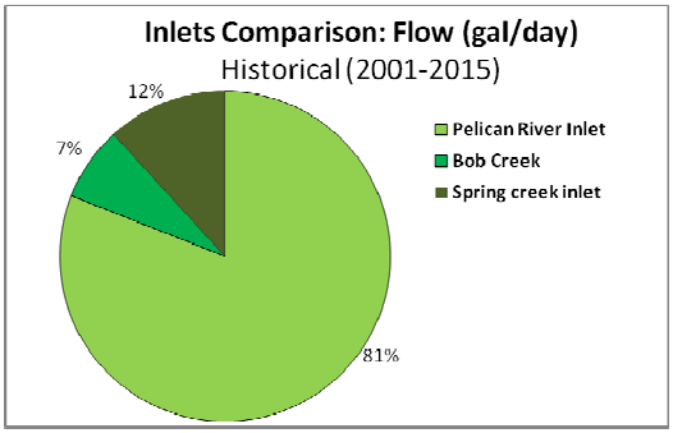

Figure 4. proportions for Pelican Lake inlets Historical inlet flow

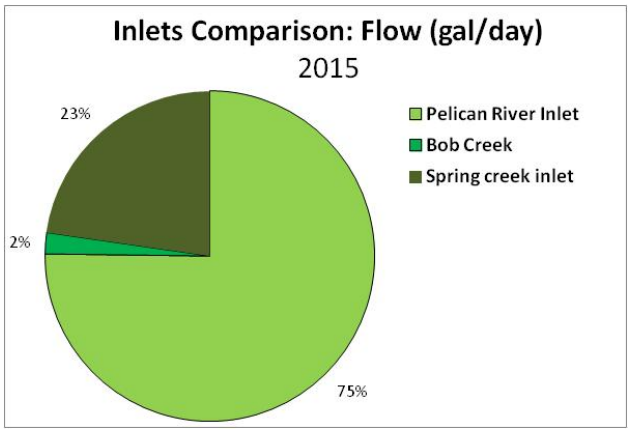

Figure 5. 2015 inlet flow proportions for Pelican Lake inlets

The phosphorus loading into Pelican Lake mirrors the flow in comparing historical phosphorus loading levels to 2015 levels (Figures 6-7). The increase in flow in Spring Creek translated to an increase in phosphorus loading into Pelican Lake from Spring Creek in 2015. Occasional clearing of the culvert running under County Highway 9 near Zorbaz can also release nutrients into Spring Creek.

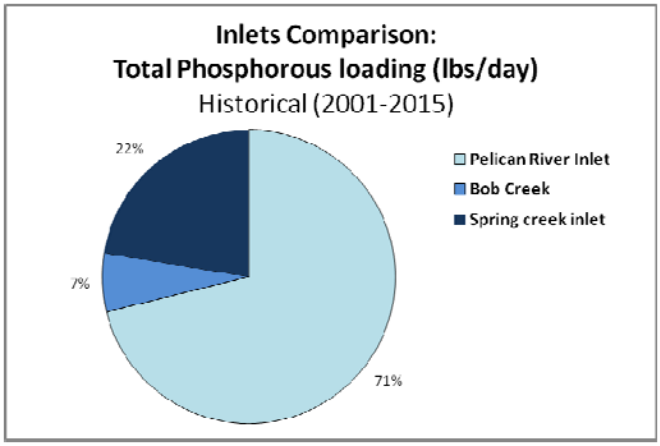

Figure 6. Historical inlet flow proportions for Pelican Lake inlets

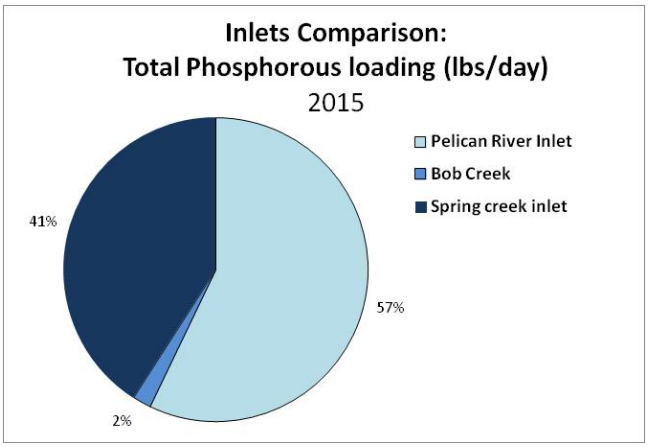

Figure 7. 2015 inlet flow proportions for Pelican Lake inlets

Inlet vs Outlet Flow

The outlet flow follows the inlet flow, which keeps water levels fairly regulated (Figure 8). In addition, the phosphorus coming into and out of the lake follow each other, which means that extra phosphorus is not remaining in the lake (Figure 9). These results are good for water quality. If extra phosphorus was remaining in the lake, it would feed additional plant and algae growth.

The peaks in flow and phosphorus loading occur in the spring months, April-May, and are most likely attributed to spring thaw. In spring of 2013 was the highest recorded flow, and spring of 2015 was high as well.

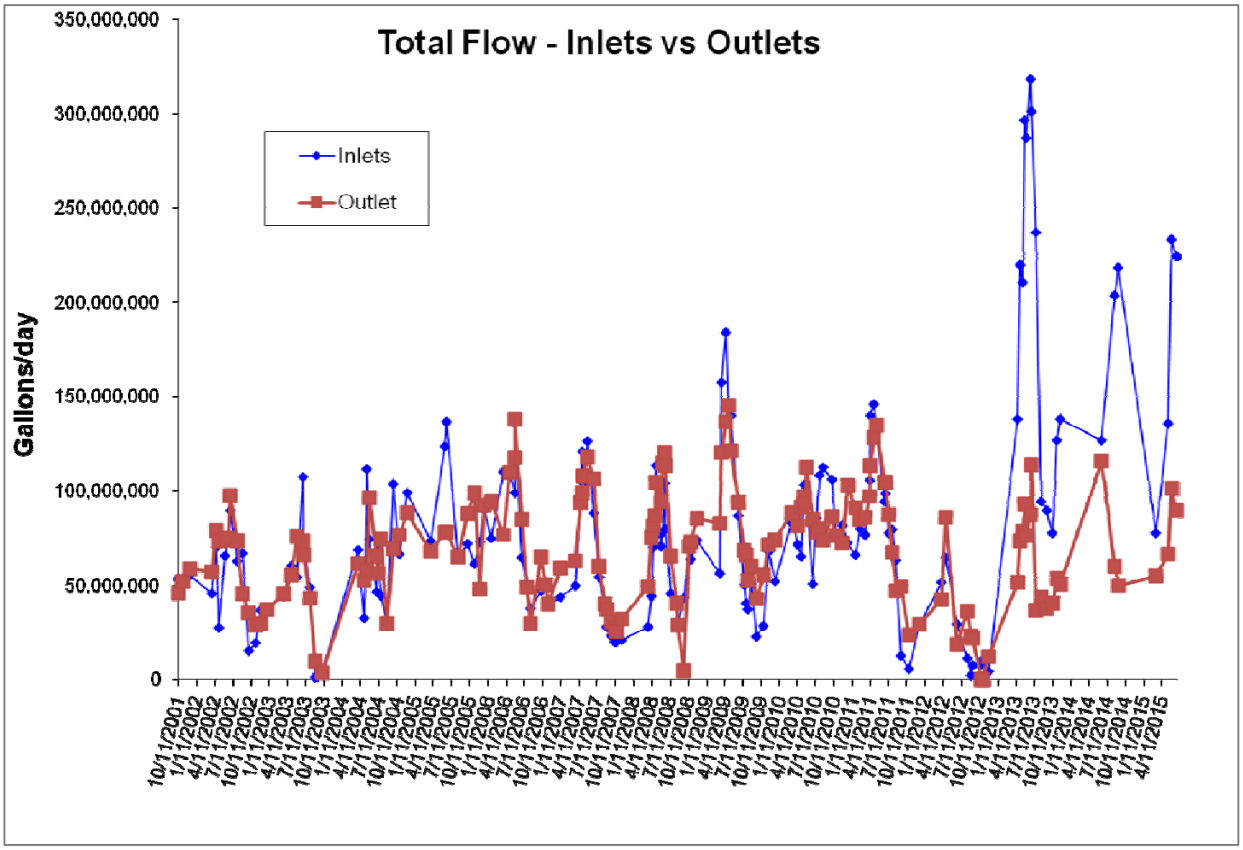

Figure 8. Historical inlet versus outlet flow in Pelican Lake.

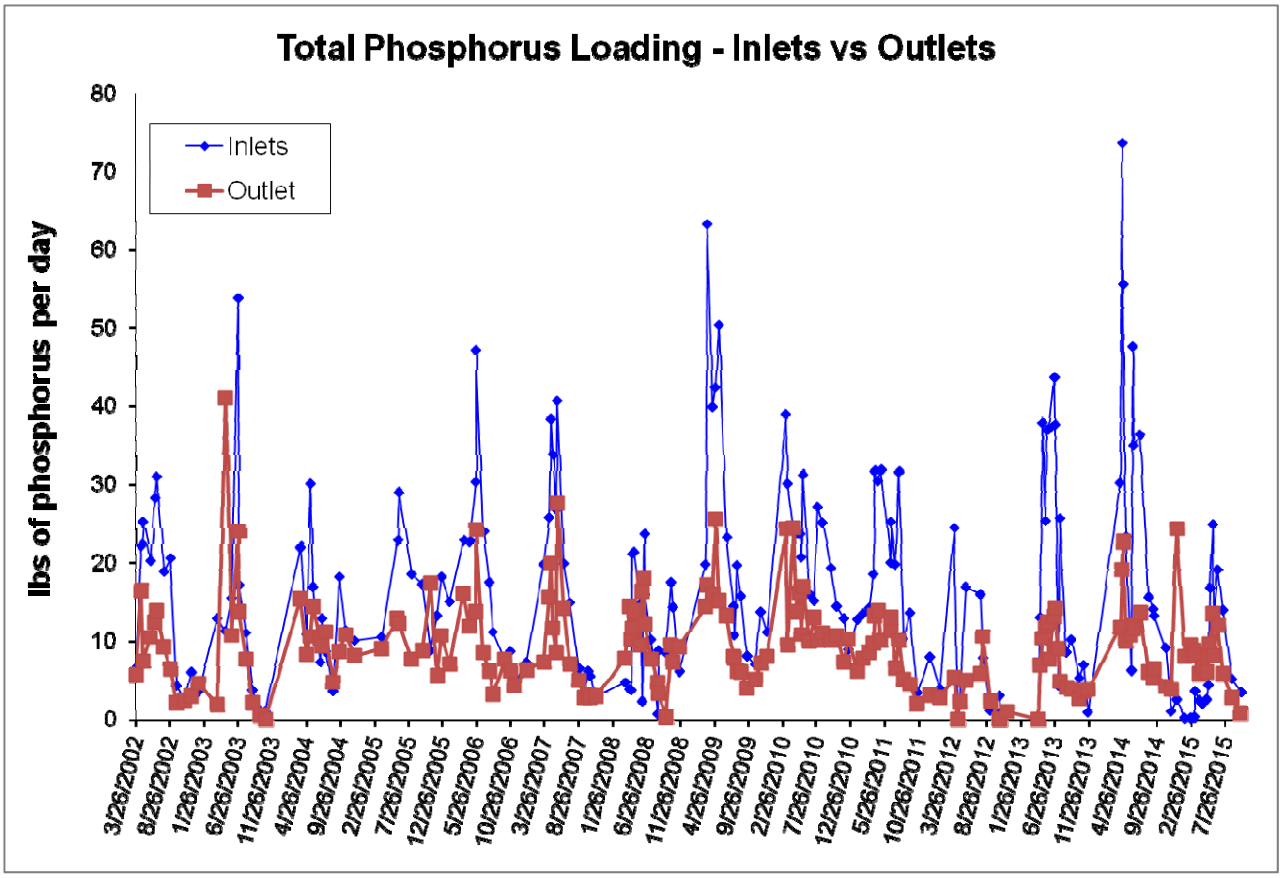

Figure 9. Historical inlet versus outlet phosphorus loading in Pelican Lake.

Bob Creek Monitoring

Bob creek monitoring in 2015 was consistent with previous years (Figure 10). The high *E.coli* counts were measured during or after large rain events (over 1 inch). Therefore, as far as human safety, residents should not swim in Bob Creek on or 1-2 days after a rain event of over 1 inch. We can't be sure the *E.coli* is from cattle anymore now that there is a beaver dam right at the culvert.

In 2015, the highest rainfall was 7 inches on May 1, and the highest recorded E.coli of the year was in Mid-June (Figure 10). Compared to other years though, Bob Creek *E.coli* counts were lower overall.

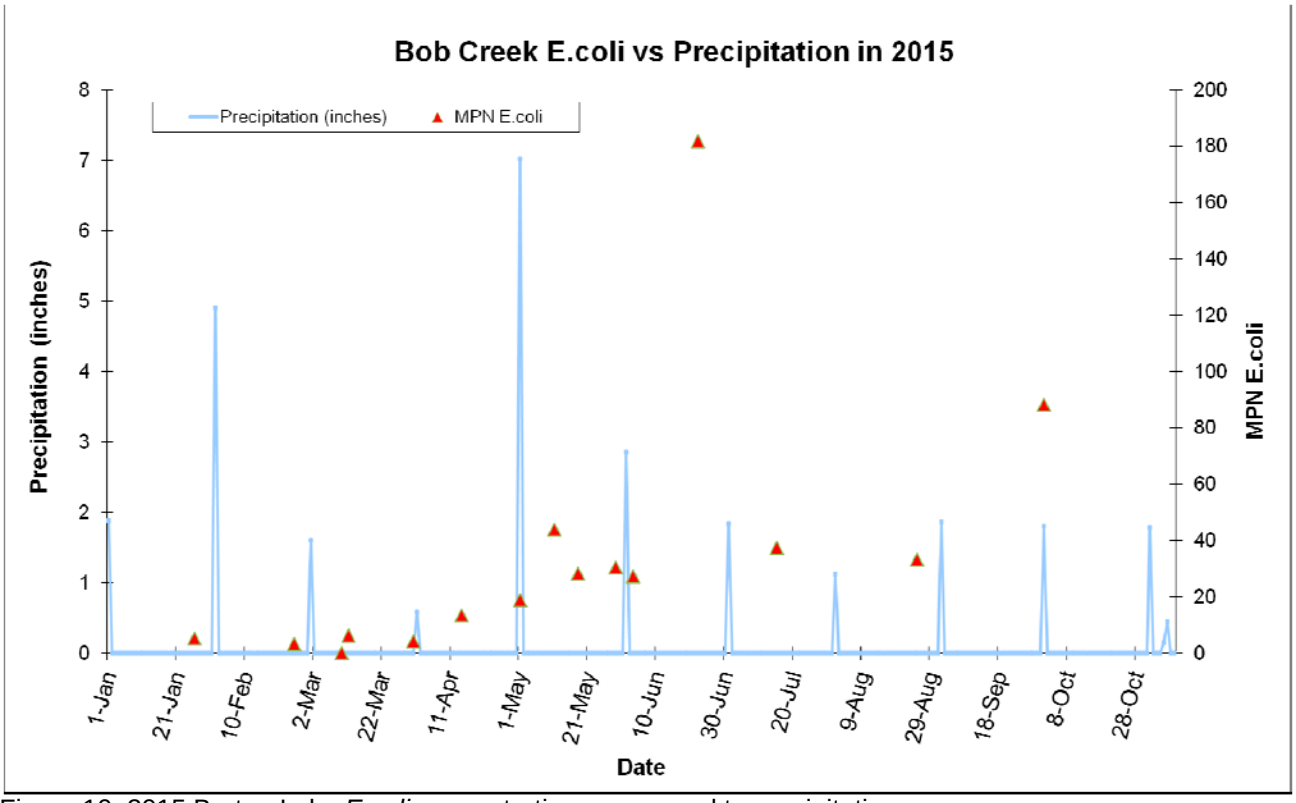

Figure 10. 2015 Burton Lake *E.coli* concentrations compared to precipitation.

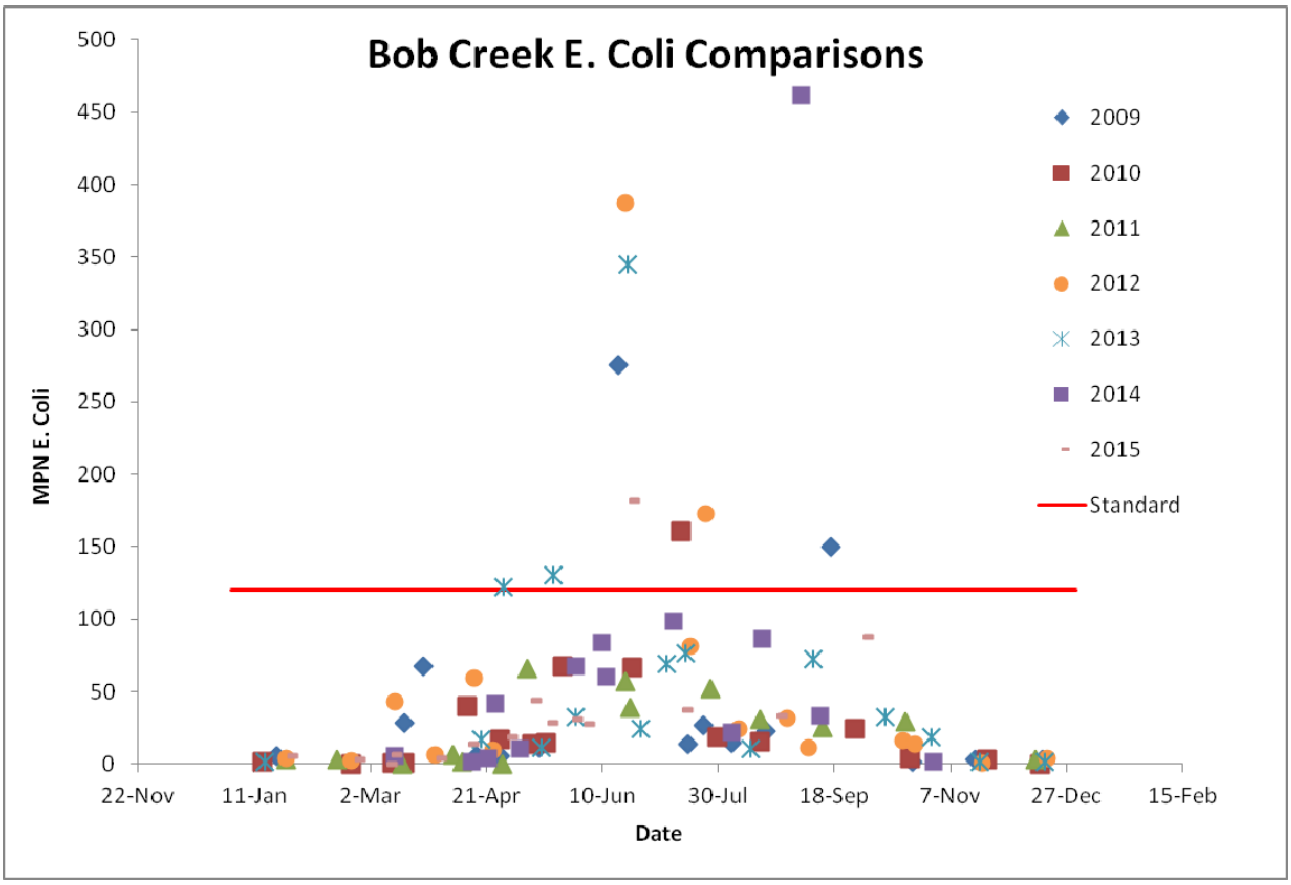

Figure 11. Bob Creek *E.coli* comparisons, 2009-2015.