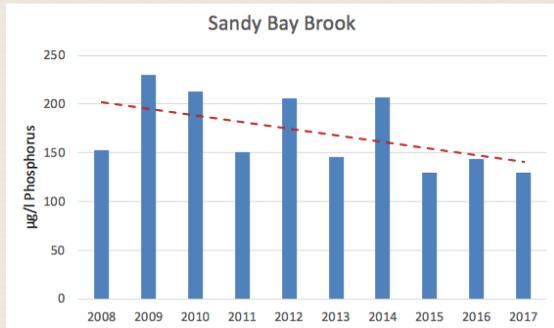
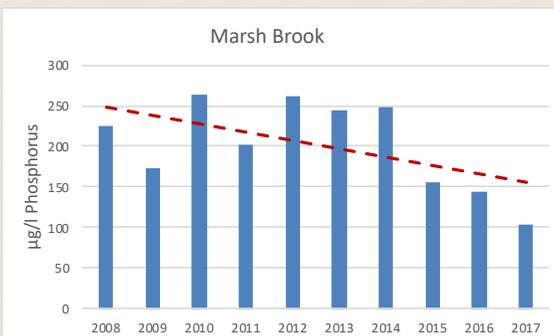


**Sandy Bay Brook** continues to show severe impacts in water quality.

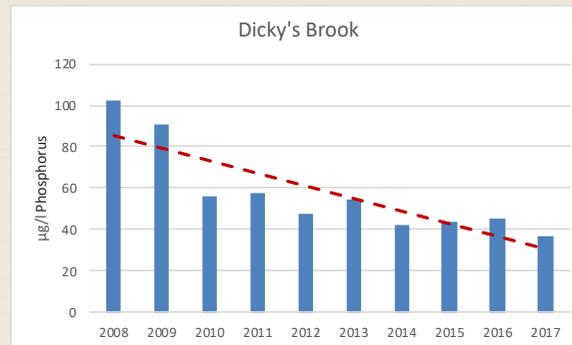
However, there has been some improvement since 2008. A restoration project was completed in 2017, Just upstream of the most impacted site, which will hopefully start to improve conditions over the next few years.



**Marsh Brook** is also highly impacted by nutrient enrichment. Nutrients are the highest at the most headwater sites. Restoration projects are being planned for these areas. There has also been some improvement since 2008 and more is expected soon.



**Dicky's Brook** is an area of concern, although to a much lesser extent than Sandy Bay and Marsh Brooks. Water quality slightly diminishes along the stream and is poorest at the mouth, but is also has shown some improvement in recent years.



**Other Streams** feeding Lake Carmi are generally low in phosphorus, with the exception of Kane's and Dewing Brooks, which have moderate phosphorus concentrations. In recent years, nutrients in Dewing Brook have been decreasing.

**To Learn More Visit:**

[www.franklinwatershed.org](http://www.franklinwatershed.org)  
[dec.vermont.gov/watershed/cwi/restoring/carmi](http://dec.vermont.gov/watershed/cwi/restoring/carmi)  
 Find the full science report discussed here at:  
[https://www.franklinwatershed.org/uploads/1/0/6/3/106302261/2017\\_lake\\_carmi\\_spatial\\_trend\\_s\\_final\\_report\\_\\_4\\_.pdf](https://www.franklinwatershed.org/uploads/1/0/6/3/106302261/2017_lake_carmi_spatial_trend_s_final_report__4_.pdf)

**Q:** If a stream or a site have very high phosphorus concentrations, is that spot adding the most pollution to the lake?

**A:** No. Lets think about a bag of super phosphate fertilizer. The phosphorus in the fertilizer would be an extremely high concentration, but if we added added a spoonful to the lake, it wouldn't measurably effect the phosphorus in the lake. But if you added it to your bath water, it would. This is a concept we call nutrient loading. Both concentration and total amount of water at that concentration are important.

**DO YOUR PART**

Water quality is largely the result of human activity. Even if you are not directly on the water, what you do matters! Better water quality is found in less disturbed areas. The best way to maintain good water quality is to leave your property as natural as possible. There are several things you can do at your home:

- Vegetate shorelines with native plants
- Use eco friendly soaps and cleaners
- Maintain your septic system
- Pick up animal waste
- Refrain from chemical lawn treatments
- Leave the grass at least 4" tall to absorb runoff

**LAKE CARMI  
STREAM  
WATER**



The streams that feed the lake can help to forecast the water quality of the lake to come. It is in the streams that effects of our hard work will be seen first, as well as warnings of emerging problems.



Based on Gerhardt 2017, Lake Carmi Report



Funded by:

Vermont DEC Watershed Grant, 2018



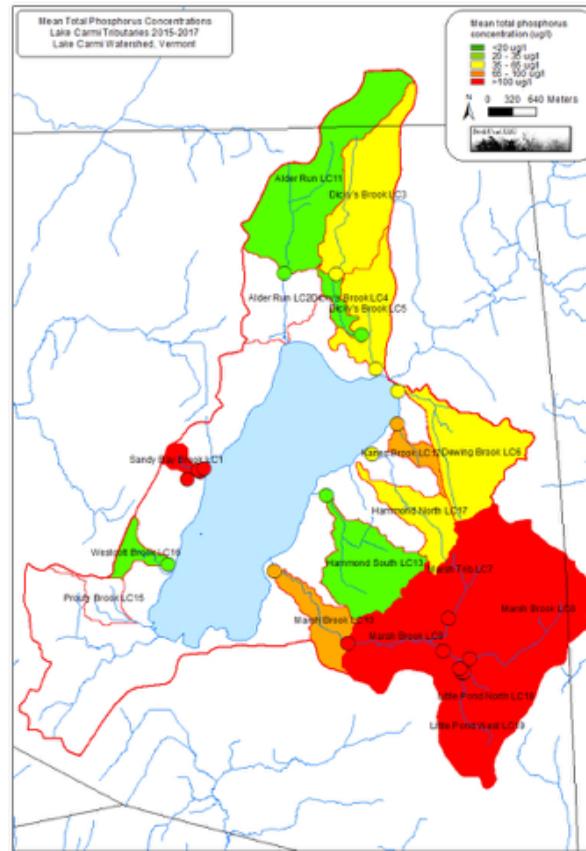
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ginaleclairphotography@gmail.com

Over the last 20 years or so there has been a concerning increase in phosphorus (a nutrient essential for growth in most life forms) in Lake Carmi. With this increase, there has also been an increase in potentially toxic algae blooms. In a partnership between the Franklin Watershed Committee and the VT Dept of Environmental Conservation lake and stream water quality is monitored throughout the watershed.

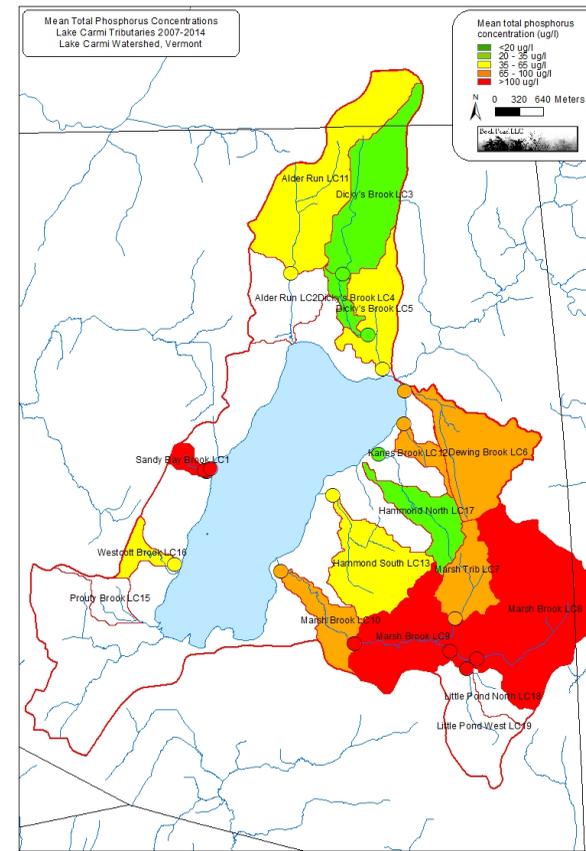
Vermont stream water quality standards consider most streams over  $27\mu\text{g/l}$  of phosphorus to be impaired. Marsh Brook and Sandy Bay Brook are generally quite high in phosphorus (more than  $100\mu\text{g/l}$ ). Kane's Brook is also a concern with phosphorus generally exceeding  $65\mu\text{g/l}$ . However, we are optimistic that restoration efforts are starting to pay off.

# WATER QUALITY NOW AND THEN

Throughout the Lake Carmi watershed there are still some areas of very concerning water quality, but improvement over the last 4 years is encouraging. This is likely due to water quality improvement projects throughout the watershed and the state-wide changes to agricultural practices to protect water quality.



**NOW:** Mean phosphorus concentrations at the 19 sample locations for 2015-2017 data.



**THEN:** Mean phosphorus concentrations at the 19 sample locations for 2007-2014 data.



*What does all this mean?*

Although there is recent improvement in stream water quality, the most heavily impacted and most densely populated area of the watershed surrounds the shoreline. Any impacts from areas on the lake front are not captured by stream sampling and can have considerable impact on lake water quality.

This study confirms that we are on the right path for water quality, but we will need to add rigor to meet our nutrient goals as described in the Total Maximum Daily Load (TMDL).

To meet the nutrient goals for the Lake Carmi watershed we need to work together as a community to reduce road and driveway stormwater run off, check and update septic systems, wetland protection, buffer plantings, river corridor protection and ambitious nutrient retention plans in area agricultural areas. If we all do our part, we can make a big difference for the next generation.

*Written By: Emily Porter-Goff, Ph.D*