

Lake Water Testing – General Information

Hello everyone.

My name is Mike Raynovic. I have taken over the lake water testing from Bob Barfknect in 2013. I think we all owe Bob a big "Thank You" for his many years of service in that area.

When I took over in spring of 2013, Bob was ready to place an order for about \$700 worth of supplies. Fortunately, I own a company that sells environmental testing supplies. We have all of this stuff on hand, and I have been using our supplies and equipment at NO CHARGE to the Lake Association. This should save \$700 every year or two. I know that's not a lot, but every little bit helps. I also have access to state-of-the-art testing equipment, which is quicker, more-accurate and easier to use. Again, I can use all of this equipment at no cost to the Lake Association.

Bob (and all of his predecessors) tested three different depths at one location once a year. Since taking over, I have added two locations: inlet and outlet. I have also increased the testing to monthly. I think this is important because if you only test once a year, you may not get representative results. For example, one time in 2013, I got pH results above 10.0. I looked back in the records and Bob had those results several times also. Obviously, fish could not live or reproduce in water having a pH over 10.0. This was probably right after a big storm which resulted in massive runoff resulting in that pH spike. Looking at the other 2013 results, you will see that the typical pH was around 7.4, which is normal.

So, if we only test once a year, we do not get a true picture of the lake's chemistry. Anything can happen once. That is also the reason I added several testing locations, specifically the inlet (where the river comes in) and the outlet (just above the dam). I think the chemistry at the outlet gives the truest picture of the average conditions of the lake. I had also added a sampling point in McFaul Bay, but I have already dropped that point because the results were almost identical to those at the "inlet".

I have added a few analytes to the list:

1. Total phosphate. There are two reasons for this. All of my predecessors have only tested for ortho-phosphate (which I continue to do). You can test for ortho-phosphate quickly and easily with a color-wheel test kit. The problem is that this test detects only SOME of the phosphate, and there is no way to know what percent it detects on a given sample. The test for total phosphate is more complicated and lengthy. However, at work we run this test often, and it is not

a big problem to add 8 or 10 samples to a day's run. Some of you may know that I also took over the job of taking monthly samples and sending them to the Wisconsin State Lab of Hygiene which tests for chlorophyll and total phosphate. This is a good way to verify their accuracy. Last year, out of four samples we tested that were the same as those submitted to the State, two of the results were within 0.02 ppm. Two other samples were a little too far apart (more than 0.10 ppm). I wondered what caused this. A few months later, I received an email from the State saying that they had "compromised" those two samples so their results were invalid.

2. Chloride. Calcium chloride is used by many counties to settle the dust on dirt roads during the summer. The subsequent runoff can cause high levels of chloride if it gets into surface water that eventually runs into the river.
3. Mercury: I can't believe that someone hasn't tested for mercury yet, but I can find no record of it. I am in the process of getting this set up and hope to have at least one result this summer.

I intend to cut back on the following tests:

1. Carbon dioxide. The test for carbon dioxide is the same as the test for acidity, so there is no point in running the same test twice on every sample.
2. Calcium: Likewise the test for calcium is identical to the test for hardness, except that the calculation factor is different. Calcium is part of Calcium Carbonate, which is hardness.
3. I am considering cutting back testing for sulfate and nitrite only once a year as my predecessors have done. Sulfate is not harmful in the low concentrations detected, and most results have been zero or almost zero. Nitrites in high concentrations can be harmful, but the results over the past 20 years have always been zero. There is no route that I know of for either sulfate or nitrite to naturally find their way into surface waters in our environment.

I have increased the testing approximately tenfold. I think this was necessary to get a handle on what is happening with our lake. After gathering sufficient data, I may cut back a little from what I am doing now, but I intend to continue testing monthly at several locations.

