

On Course *With Nature*

Water Quality Testing — The Agony and the Ecstasy

It's not difficult to test the water on a golf course, and the knowledge gained can be valuable.

BY SAM FRIED

Several years ago, when my hometown of Bloomfield, Conn., decided to build a golf course on an old farm property, the town engaged my services to do a wildlife census to monitor the environmental impact of the course. The farm was on a beautiful piece of land, with several extensive wetlands, a small Army Corps of Engineers flood control reservoir, an irrigation pond, open meadows, and upland second-growth forest. The course was constructed with the aid of an environmental consultant to ensure that the highest standards of care were employed to protect the natural habitats on and around the layout. Once the course was completed and management was turned over to Billy Casper Golf, Inc., they in turn hired me to continue the project and take the additional step of having the course certified in the Audubon Cooperative Sanctuary Program (ACSP).

My background as an expert birder and semi-knowledgeable naturalist allowed me to document the wildlife over a two-year period, finding 153 species of birds, 19 mammal species, and numerous insects, reptiles, and amphibians. I carefully followed the ACSP for Golf Courses guidelines and enjoyed working through the certification requirements for the Site Assessment, Environmental Case Study, Wildlife and Habitat Management, Chemical Use Reduction and Safety, and Outreach and Education categories. But when it came to Water Quality Management, I ran into a wall.



The LaMotte kit can be purchased from a variety of suppliers, including LaMotte, Ben Meadows, Carolina Biological Supply Co., Forestry Suppliers, SK Science Kit & Boreal Labs, and others. The kit costs approximately \$350 and contains supplies for 50 tests of the various types necessary to perform the water quality assessment required for certification.

Water quality monitoring is easier and more fun when you have someone to assist you. Marlee Forsthoffer assisted with checking the water samples at Wintonbury Hills Golf Course.



WANTED: CHEMIST, NO PREVIOUS EXPERIENCE REQUIRED

We had taken careful steps to employ Best Management Practices around the course to protect the local watershed and water sources. But when it came time to actually test the water on and around the course, the task seemed daunting. My previous experience in chemistry was in high school, limited to sticking a piece of litmus paper into a tube of some unknown liquid, for reasons I can't recall. I told myself I couldn't possibly do the complex tests that were required for certification!

I contacted the University of Connecticut about having some agronomy students do the testing as part of their curriculum. After many months of correspondence and delays, there were no takers. I asked the State of Connecticut if they could do the testing. Not interested. I wrote to the Environmental Consultant. No help. In desperation, I again contacted Shawn Williams, staff ecologist at Audubon International, who recommended that I purchase a LaMotte "Water Quality Educator Monitoring Outfit" and do the monitoring myself.

When the package arrived, it contained an impressive-looking black case lined with molded material to hold in place all of the test kits, tubes, measuring devices, chemicals, pills, and reagents. There also was a separate plastic jar, filled with cellulose, gently holding a bottle of sulfuric acid that contained

warnings as to the horrors that might befall the user if proper precautions were not taken. The book of instructions, at first, seemed much too large and complex for my meager abilities, but then I slowed down and took a careful look. Each test kit (dissolved oxygen, pH, alkalinity, phosphates, nitrates, turbidity, temperature) contained its own set of instructions and was written in comprehensible English. Perhaps I could do this testing after all.

WADING IN

I was fortunate to have an assistant working with me, Marlee Forsthoffer, an Environmental Studies student at Nova Southeastern University in Florida. Between the two of us, we managed to go carefully through each test. Only once did we misunderstand the directions and ruin the test, and the error was easily corrected. In fact, after the first set of tests on the irrigation pond, we repeated them on the reservoir in about one-half the time. After the initial run, we determined that each set of tests can be performed in about one hour.

We wore protective eyewear and rubber gloves when handling the caustic chemicals, and we took turns wading in for water samples, collaborating on how to evaluate the results. It was helpful to have two people doing the testing, as one of us would carefully read the directions while the other worked with the materials. It actually turned out to be a lot of fun once we got the hang of

the test procedures. I always liked the "magic" of making a purple tube of liquid suddenly go clear with a few drops of some reagent, making me feel like I was "Mr. Wizard" on the TV program of my youth.

Many of the tests were fairly straightforward, while others were more complicated. The key was to follow the directions to the letter and then record the results on a test chart made up for the specific site.

EVALUATING THE RESULTS

Although every body of water will produce different test results, it is very useful to learn about the baseline conditions at the course and the effect of implementing Best Management Practices on overall water quality. The numbers from our in-and-out irrigation holding pond were quite different from those of the small stream-fed reservoir, but everything, except phosphate levels, were within acceptable limits.

Evaluating the results has to be done with consideration of prior land uses. For example, this golf course was a heavily fertilized farm for 100 years, probably accumulating significant amounts of nitrates and phosphates in the soil over that time. This would likely account for high test levels that have little to do with course management. Learning the history of your site can be very important in obtaining an accurate picture of the test results.

How do I rate the overall experience? Surprisingly fun! So if you're timid about water testing, I recommend you get yourself a test kit, put on some rubber boots, and wade right in. It's easier each time you do it, and the knowledge you gain can make your course a better place to live for the plants, creatures, and people that make it their home.

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