

OWLA Water Sampling Data Analysis Report

2011

INTRODUCTION

The OWLA water testing program in 2011 continued the partnering with Cayuga county established in 2010. Under the County Planning Department through Bruce Natale and Michele Wunderlich, the same ten sites used in 2010 were again used in 2011 with the addition of an eleventh site at Firelane 26 on the west side of the lake. This site was added because of spills that had occurred earlier in the year. The other changes made for 2011 were to drop testing for nitrate and phosphorous since Dr. Halfman was covering these items in the extensive studies he was conducting on the lake and major tributaries. By eliminating these tests there was sufficient money available to allow weekly sampling from June 28th through September 13th. Fecal Coliform was the only laboratory determination made.

SUMMARY

Samples were grouped into five stream samples and six lake samples to facilitate analysis. Fecal Coliform data showed an increase when the weekly rainfall increased suggesting that run-off was affecting the results. The two Inlet sites produced the highest fecal Coliform values and the lake sites gave much lower numbers. The stream at Firelane 26 gave higher numbers at the end of July and throughout August and into September. The monitor noted that there was little flow in the stream in August.

The water temperatures in 2011 were slightly higher than In 2010 both in the lake and in the streams. The temperatures in both sets started out higher and remained higher throughout the testing period.

Algae observations were made at most sites throughout the testing. A number of monitors reported a greenish color to the water for the first half of the testing. I personally had noted the green color in the water starting with ice out. It appeared to be suspended material which made it very hard to see the bottom of the lake in as little as two to three feet of water. In early October a blue-green algae bloom was documented in the lake. People saw the bloom from the north end to at least the Boy Scout camp in the middle of the lake.

DETAILED ANALYSIS

As has been the approach in previous years, the data was handled in sections. Each parameter was evaluated over the course of the testing by comparing it to the weekly rainfall recorded at the Auburn Water Filter Plant on Swift Street. Data Sheet 1 shows the fecal Coliform data and Chart 1 graphically displays the results for the five stream samples and Chart 2 displays the results for the six lake samples. Looking at the results in Chart 1, it is clear that there is an increase in fecal Coliform as rainfall increases.

The affect is smaller for Sucker and Dutch Hollow brooks, intermediate for the Firelane 26 stream, and highest for the Inlet at Rounds Lane and Long Hill Road. A closer look at Long Hill Road and Rounds Lane results shows an up and down variation from the end of June to the beginning of August for Long Hill that does not follow the rainfall or the trend at Rounds Lane. Since this was during a period of drought that nearly wiped out the corn and soy bean crops, rainfall could not account for the variation. A look at the flow in the Inlet at the Rte 38 bridge in Moravia was interesting. The plot of the flow rate from June 28th through September 13th is given in Chart 5. There is definitely a variation in the flow rate in the Inlet measured at the Rte 38 bridge.. Over a period of a few days the flow rate doubled and actually nearly tripled at the beginning of August. These changes in flow rate would cause the water volume to rise from about 6.5 million gallons per day to 13 million and even as high as nearly 20 million gallons per day. The source of water to fuel these changes is a total mystery. During the same period the flow rate in the Owasco Outlet was relatively constant as show in Chart 6.

I talked with the personnel at the Moravia Waste Treatment Plant and they confirmed that their discharge rate ran between 300,000 and 400,000 gallons per day throughout the summer and that they had not been involved in any major construction or renovations that would use those quantities of water. They further confirmed that their fecal Coliform numbers ranged between 10 and 20 and that their highest reading for any specific test was about 150 for the entire summer. The variation in fecal Coliform between June 28th and August 2nd at the Long Hill Road sampling site remains unexplained.

Firelane 26 also provided unusual results. High fecal Coliform numbers began appearing on August 2nd and continued into September. During this period numbers as high as 2500 were reported with dips into the 1500 range and a couple of times as low as 500. The source of this behavior was not located positively but the large CAFO (concentrated animal feeding operation) at the top of the hill was suspected. The sampler did report that the stream flow had nearly stopped which may have offered stagnating conditions to exacerbate the fecal Coliform situation.

The results of the lake sampling sites are shown in Chart 2. These sites more closely track the rainfall amounts. A few higher readings were found in mid-July at Fay's Point, Firelane 34E, and Seward Point which was during the drought. These results may be related to water stagnation and the increase in bird activity (particularly ducks with new ducklings) near the shore. The rest of the sampling times show close correlation between fecal Coliform and weekly rainfall indicating run-off from the land.

The water temperature data is shown in Data Sheet 2 with graphical results plotted for the stream sites in Chart 3 and the lake sites in Chart 4. Generally for both sets the temperatures rose through July and then receded during August and September. The heaviest rainfall the week of August 16th did noticeably alter the downward slope of the curve for most sites. The highest temperature recorded was 31 degrees Centigrade at Dutch Hollow Brook mouth on July 12th. Most of the lake sites were between 20 and 25 degrees Centigrade throughout the testing period. It was noted that the temperatures in 2011 started out higher than those in 2010 and they stayed higher throughout the testing period.

The algae reports from the monitors are recorded in Data Sheet 3. No algae reports were ever made for the mouth of Dutch Hollow Brook or for the Inlet sites at Rounds Lane and Long Hill Road. The flow at the mouth of Dutch Hollow may have prevented the algae from accumulating. The clay and silt channel in the Inlet is probably inhospitable to the algae. At the rest of the sites green, brown, and green and brown, algae were reported weekly either on rocks, suspended in the water, or washed up on

shore. The drought allowed the lake temperature to climb more rapidly than normal providing a better growth environment for all of the algae types in the lake. As a point of interest, a blue-green algae bloom was confirmed in the lake in early October similar to 2010.

The results presented and discussed above along with numerous observations and talks with other lakefront owners and lake users inevitably leads to the conclusion that Owasco Lake is in trouble and needs remedial action to reverse the downward spiral it is in. All of us both as individuals, politicians, concerned citizen groups, educators, and local foundations need to step up and devise and fund meaningful plans to restore our lake while there is still time. We literally cannot wait.

ACKNOWLEDGEMENTS AND RECOGNITION

Each year OWLA hopes that it can learn a little more about the complex factors that are impacting Owasco Lake while at the same time realizing that there are inherent year-to-year variations superimposed on these study parameters. The invaluable assistance of the OWLA Water Quality Monitors allows OWLA to produce data to be studied and evaluated in an attempt to better understand our watershed. Only with the continued dedicated efforts of this special class of volunteers can OWLA hope to achieve the level of knowledge and understanding that is sought. The financial assistance provided by Cayuga County to cover the cost of testing is greatly appreciated. Without that assistance, OWLA would have had to abandon its testing program this year. The assistance of Bruce Natale and Michele Wunderlich in getting the data from the lab to us is also greatly appreciated. The assistance from Cayuga County Soil and Water Conservation District and the Owasco Watershed Inspector in providing summer watershed inspectors Katie Jakaub and Alex Valle to pick up the samples as well as personally take several of the samples is greatly appreciated. An added bonus provided by Katie and Alex was keying in the results in an Excel spreadsheet. Finally we wish to thank Anthony DeCaro and the City of Auburn Water Treatment Plant for providing the rainfall data used throughout this report.

On behalf of the OWLA Board, I want to personally thank all of the above for all of their fine efforts and to assure them that their contributions are deeply appreciated.

Submitted by: Dick Coalson, Water Testing Group, Environmental Committee