

Bluewater Shoreline Residents' Association

2009 Water Quality Report

“There is a lot going on but nothing is happening” (nor will it in the immediate future).

Introduction:

The Bluewater Shoreline Residents' Association (BSRA) and its member associations have been working on solutions to the surface water quality issue in Bluewater and Huron County since 1996, over 13 years. Annually BSRA has reported on activities and outcomes. Occasionally BSRA has produced a more in-depth report, usually in response to significant findings or events. The last of these in-depth reports was in 2006, the year of a major manure spill in Bluewater. In view of a number of events that took place in 2009, BSRA is presenting this expanded water quality report. BSRA now believes that sufficient data has accumulated to allow us to draw conclusions about factors that prevent the development of actions plans to address this issue.

The report outlines the usual water testing results and a summary of 2009 activities. In addition, the report describes a major scientific paper that was published in 2009, it outlines BSRA's expanded collaborative efforts in Bluewater and regionally, and it explains why no improvements in surface water quality have occurred over the past 13 years or are likely to occur in the near future. Additionally, it gives comprehensive answers to frequently asked questions.

1.0 Water Testing Results 2009:

BSRA has, for a number of years, conducted water quality testing in four ravines and adjacent beaches in the Municipality of Bluewater. In recent years the testing has been conducted for BSRA by the Ausable Bayfield Conservation Authority (ABCA). The Province of Ontario water quality guideline testing protocol is the methodology used and these results determine if the water quality meets recreational water guidelines (*E. coli* <100/ 100 ml). BSRA uses the internationally accepted Blue Flag standard (over guidelines <20%) for interpreting results and measuring improvements year over year. The actual week by week results are published on the BSRA web site (www.bsra.ca). Previous years results are also available on the BSRA web site. Additional details can be obtained through the ABCA report to BSRA which will be released soon and will be available on the BSRA web site. The following is a summary of the ravine and beach results in 2009:

Ravine	% of time over guidelines
Wildwood	91
Houston Heights	100
St. Joseph	100
Ridgeway	100

Lake	% of time over guidelines
Wildwood	27
Houston Heights	9
St. Joseph	27
Ridgeway	36

In 2009 none of the ravines and only one of the beaches (Houston Heights) met the Blue Flag standard.

2.0 Corrective Action:

In the past four years BSRA has expanded its water quality initiatives. BSRA believes that water quality initiatives should not be limited to measuring and recording water quality results, but should also include corrective action designed to address water quality contamination sources. BSRA has increased the number of sites and the number of corrective projects in those sites.

In past years BSRA has provided funding to assist with projects designed to address contamination sources in the St. Joseph watershed. Over twenty projects on individual properties have been initiated to date. In 2009, this concept was expanded to add the Ridgeway watershed. We have also experienced an increase in participation in our water quality initiatives. Participants include BSRA, ABCA, watershed property owners and the Grand Bend Rotary Club. BSRA believes these community based projects which are focused on individual watersheds will prove to be an effective approach to improving surface water quality in ravines and the Lake.

In addition, during 2009, BSRA has partnered with other community groups interested in the water quality issue. These include the Ashfield Colborne Lakeshore Association (ACLA), the Bayfield Ratepayers Association (BRA) and the coalition “It All Ends Up In The Lake” (IAEUITL), the group that has sponsored annual water quality workshops. In 2009, this coalition has worked on the development and implementation of a strategy to lobby senior levels of government for funding for property owners to undertake water quality enhancement projects. A similar project provides funding to property owners in the Lake Simcoe area. BSRA would like to see this type of funding made available for Lake Huron. However, despite the reality that the agricultural industry would be the main recipient of the funds, to this point the initiative has failed to gain the support of the local agricultural leadership.

3.0 Ministry of Environment, University of Guelph Study

A study of the sources of *E. coli* in the south east shore of Lake Huron (Tanya Kon et al) was printed in the March issue of the Canadian Journal of Microbiology, published by the National Research Council. The study was a multi year analysis based on the Lake and 18-mile creek in North Huron.

The study stated “Our results demonstrated that the dominant source of *E. coli* pollution of the lake was agriculture, followed by environmentally adapted *E. coli* strains, wildlife, and then humans. A similar ratio of contributing sources was observed in all samples collected from various locations including the river discharging to the beach in both 2005 and 2006.”

The study confirms that agriculture is the main source of *E. coli* contamination in the Lake. The rivers and streams flowing into the Lake are the primary means by which pathogens and nutrients enter the Lake. These results confirm what has been commonly understood about contamination of the water in the lake and are consistent with BSRA historical test results.

The study further confirms the existence of environmentally adapted *E. coli* strains (EAS) in the sediments of the streams, lake, and beach wash zones. The health risks associated with EAS are

unknown but the concept of lake bed contamination has been suggested (Palmateer) as a health risk that responsible government organizations are not considering.

4.0 Impediments to Progress

Improvement in surface water quality is not likely to occur in the near future – for the following reasons.

4.1 We have encountered two distinct methods of data collection and analysis of that data which are confusing and make it difficult to develop widely accepted action plans.

4.2 The international Blue Flag water quality standard has come to be accepted by the lakefront communities, the media and the public in general. However, this standard differs greatly from the one used by the Huron County Health Unit.

4.3 The Health Unit and the Conservation Authority use statistical calculations that generate a single figure representing yearly water quality. By basing their conclusions on the mathematical calculation called a “geometric mean” of all the water quality measurements made during the swimming season, the Health Unit downplays the readings when the pollution levels are at their highest levels. Meanwhile, ABCA’s watershed report card grades water quality as a C. These two different calculations and standards are not easily understood or clear to the public.

4.4 Even though the water quality measurements reveal that lake water pollutants rise above provincial water quality guidelines 20-30 % of the time in some of our beaches, local organizations responsible for surface water quality appear to consider this poor level of lake water quality to be acceptable.

4.5 The leaders of the agricultural industry, primary contributor to water quality contamination as found in the Kon study, seem to consider the current levels of lake pollution to be acceptable. Agriculture needs investment, research and support in moving to best farming practices with regard to future water management and processes for removing contaminants from waste. The key stakeholders in this environmental issue have not been successful in gaining the agricultural commitment to changes in manure management practices necessary for improvement. Although we are seeing some model farms adopting responsible practices and monitoring the waste run off, we have not yet been successful in gaining significant momentum in this regard and in bringing agriculture to the table.

5.0 Conclusions of Interest to Lakeshore Residents:

5.1 Ravines should be treated as never safe for recreational purposes (i.e. swimming). Areas where ravines flow through the beach are very attractive to children. They are frequently calm as they are protected from lake wave action. Because they are shallow, they are often warmer than the lake. Use of these areas for recreational purposes should be discouraged.

5.2 Ravine stream outflows are the major source for pathogens entering the Lake and should be treated as never safe for recreational purposes.

5.3 Despite the widespread popular belief that the Public Health Office monitors varying pollution levels and, based on those periodic findings, advises beach-goers whether they should swim or not, the Huron County Health Unit only gives one general season-long advisory related to the turbidity of the water. It does not “post” beaches in the traditional sense.

5.4 Lake water is safer the farther you are from a ravine with water flowing into the lake. Some beaches that are not near ravines test safe almost all the time.

5.5 Beachgoers should avoid contact with water and sand in the swash zone (area where lake waves meet beach sand). While the risk is uncertain, high levels of *E. coli* are known to exist in the swash area.

5.7 For the beachgoer, indicators of lake water quality are linked to several factors. Proximity to ravines, recent rains, and cloudy water (turbidity) are all factors indicating elevated health risks. Generally if the water looks clean and clear it probably is safe.

6.0 Frequently Asked Questions:

BSRA has collected frequently asked questions into the following four general categories: (6.1) Lake Water Quality, (6.2) Testing, (6.3) Corrective Action and (6.4) Government Reaction. Our answers follow the questions.

6.1 FAQ’s About Lake Water Quality

1) Why is lake water quality not improving?

There is no effective corrective action being taken to address the main source of the problem, namely, the management of agricultural waste (manure). Additionally, the political will to ensure that changes are made appears to be absent. Much of agriculture does not see the need to change their practices. They do not see the issue as being a significant problem. They are not being forced to change. This may be a matter of high costs. But senior levels of government also appear not to view the surface water quality issue as a serious problem requiring effective corrective action including financial incentives. BSRA and others concerned about the surface water quality issue have been unsuccessful in convincing politicians to take effective action on this issue.

2) What is being done to improve surface water quality in Bluewater?

BSRA is prepared to continue testing to demonstrate there is a problem and to measure the impact of corrective action. In the past BSRA has used funds provided primarily by the Municipality of Bluewater to help finance water quality improvement projects in the St. Joseph, and now, the Ridgeway watersheds. The projects have been administered by ABCA which also provides funding. After the testing costs are covered, any remaining funds are committed to the corrective action projects underway in Bluewater.

3) What are the sources of surface water pathogen contamination?

The recently published Ministry of Environment/University of Guelph research paper (Kon et al) outlines the sources:

Agriculture	60%
EAS (environmentally adapted strains of <i>E.coli</i>)	16%
Wild life	14%
Unidentified sources	8%
Humans	3%

4) Why is it so difficult for beaches in Huron County to obtain Blue Flag status?

Basically the water quality in the Lake does not meet the internationally accepted Blue Flag standard. The water quality standard must be met to obtain Blue Flag status. The water quality standard is that the water must not exceed the provincial standard any more than twenty percent of the time it is tested.

5) How do I know if it is safe to go in the water?

It is never safe to swim in ravine water. Over ten years of testing has demonstrated that ravine water is almost always unsafe for recreational purposes.

Generally speaking, Lake Huron in the Bluewater area may be unsafe about 30% of the time. There are several factors to consider. The closer you are to a ravine or stream that empties into the lake, the higher the risk. Risk is also elevated after recent rains. Heavy rain has the effect of flushing the fields, streams and ravines. The current agricultural drainage system was designed to reduce flooding and increase agricultural production. This system includes little storm water management. The system is designed to get storm water off the field into the drains and into the lake as quickly as possible. Ravine erosion and the movement of sediments and pathogens into the ravines and lake are two of the undesired consequences.

While further analysis is required, there also appears to be a link between water clarity and water quality. In the water at waist depth, if you can not see your feet, the water quality is likely poor.

6.2 FAQ's About Water Testing:

6) What does 100 CFU per 100 mL of water, and % of time over PWQG mean?

Provincial Water Quality Guidelines are published by the Province. The Province outlines the method for water quality sampling, the reporting procedures, and the standards for determining acceptable results. At a municipal level the Health Unit and the Conservation Authority are organizations responsible for water quality. Provincially the Ministry of Environment, Ministry of Health and Ministry of Natural Resources have varying degrees of responsibility. Federally the Ministry of Environment and Oceans and Fisheries share overlapping responsibilities. In Ontario all of the Ontario organizations recognize and follow PWQG in collecting and reporting water quality tests.

100 cfu per 100 mL of water is the standard to determine if water is safe for recreational purposes. 100 coliform units is the actual count of *E. coli*. *E. coli* is a living microscopic organism that can be identified and counted in lab tests. The acceptable standard is to have no more than 100 actual *E. coli* in 100 milliliters of water.

At a beach location, five samples about 100 meters apart are taken at waist depth using a reaching pole. At a lab (usually in London) the samples are tested to determine how many *E.coli* there are in each 100 mL sample of water. The geometric mean of the five readings is calculated to give a single figure for that beach on that day. If the calculated figure is 100 or greater the beach is considered to exceed PWQG at the time of the test. It takes several days to obtain test results and since water quality can change within hours, this type of testing is not useful in giving a current indication of water quality.

Percent of time over the accepted standard is the analysis tool used by Blue Flag as their standard for acceptable water quality. The standard is that the daily test results do not exceed the provincial guidelines any more than 20 % of the time during the testing season.

7) We know there is a problem and we know the sources. Why does BSRA keep testing?

The primary reason is to determine if there is any improvement in water quality. It is important for scientists to have data that has been collected over many years. Additionally, without test results there would be some people who would say there is no problem.

8) Why did Bayfield and Goderich not get Blue Flag designation based on 2008 water quality test results when initial results submitted to Blue Flag suggested they would?

Blue Flag relies on water quality testing results reported by the Huron County Health Unit to determine if standards are met. Initially the Health Unit reported only selected results. Once all the test results were reviewed neither location met the standard.

9) The Health unit and ABCA calculate a single annual figure for water quality for each beach they test. How do they obtain this figure? Why do they use this approach?

The calculations are complex. Basically they take the geometric mean of the weekly test results which produces a single figure for the entire testing season. They then point to this result to support their view that the Lake is safe for swimming. This type of analysis is not supported by PWQG and does not recognize that on specific days, as much as thirty percent of the time, the Lake is not safe for swimming. BSRA does not support this type of analysis because the information it provides only gives a generalized picture of the average contaminants to which a swimmer is exposed, not the actual highs or lows.

BSRA believes that the internationally accepted Blue Flag standard is a more appropriate means of measuring water quality. The Huron County Health Unit and ABCA appear to believe that the lake being above recommended safe levels 30% of the time is acceptable. They have developed a method of interpreting results that supports this belief.

6.3 FAQ's About Corrective Action:

10) Why does BSRA not support taking legal action?

To date, BSRA has resisted suggestions that the only way to create immediate water quality improvement is through legal action. BSRA views the Lakeshore residents as one component of

the larger Bluewater community. Using legal action would require identifying community members as offenders and through a successful legal action compel the offenders to take corrective action or pay penalties. This adversarial approach conflicts with BSRA community based values. BSRA prefers a community based approach which encourages all community members to participate together in taking corrective action.

11) Why has corrective action not resulted in ravine water quality improvement?

It is probable that the lack of measurable improvement results from the fact that corrective action has not focused on the main sources. To date, with the exception of one project focused on the creation of a filtering wetland, our projects have not addressed the issue of untreated manure being applied to fields. The application of untreated manure is a common practice used as a method of fertilizing the fields and as a means of disposing of this industrial waste. Wetlands act as a filtering mechanism and a means of controlling flooding. The current flood control mechanism is based on tiled fields, drained wetlands, and altered water courses to get water off fields into watershed streams and into the lake as quickly as possible. There will not likely be any improvements until the manure being applied to fields has pathogens removed before application to the land and/or storm water filtering mechanisms such as wet lands and retention ponds are installed.

12) Why is the agricultural industry not doing more to reduce their portion of the problem?

To understand the answer to this question several factors must be considered. Over the last ten years BSRA has participated in extensive consultation with agricultural interests, both individuals and organizations that represent the industry. Opinions are divided within the agricultural industry and the issue must also be considered within the context of not only environmental issues but also economic and social considerations.

With regard to the environmental issue, we initially encountered a tendency to deny the role of agriculture in causing poor lake water quality. Sometimes we were told that there was no proof of agricultural involvement or that poor water quality was caused by other factors. More recently agricultural interests do admit they play a role in the causes. Typically the discussion has included three main comments. The first is that water quality is no worse now than it always has been, implying that since this is nothing new the concern now is not warranted. A second comment is that water quality is only a minor inconvenience so no corrective action is needed. A third common comment has been that farming has been here for a long time and people who have moved here more recently should accept things the way they always have been.

Our discussion with agricultural people often shifts quickly from environmental to economic issues. The basic message is that agriculture is facing a financial crisis, costs are high, prices for products are low, profit margins are at best thin and as a result enhancement to manure management practices would increase costs, making a bad situation worse.

The third main theme in agricultural responses to water quality concerns can best be described as a sociological issue. Generally the agricultural industry sees itself as being under attack and not being treated fairly. There is a lack of appreciation for the essential work they do (hence “Farmers Feed Cities” bumper stickers) and are taken for granted. Concerns about agricultural links to the water quality issue are viewed as an attempt to discredit the industry and are sometimes considered insulting.

There are some within the agricultural industry who see the water quality issue as an example of a larger issue, a struggle or conflict with urban influences eroding a rural way of life. They link working or making a living related to agriculture as an integral part of the rural way of life. They feel they are not being treated fairly and use this as a reason for resisting change, including the water quality issue which they view as being raised by urban influences.

There are local producers of livestock who are very progressive in their manure management practices. Some large local farms have invested in systems to process manure. The processing reduces pathogens and odors and results in a dry matter that maintains the original nutrient value. This minimizes the transfer of pathogens to the watershed and ultimately to the lake. If all producers followed this lead the issue related to surface water quality caused by agriculture would be largely addressed.

There appears to be a disconnect between the leadership of agriculture and many of the members. This can be seen on issues such as family farming versus corporate farming and on the issue of spreading manure on fields. Government policy is seen as focused on supporting large scale farming operations and not concerned about the small producer. In fact, some programming in the past has been focused on encouraging small producers to get out of the industry. Agricultural leaders will argue that spreading manure on fields is a significant source of fertilizer, while local operators will say the main purpose is to get rid of the manure. This explains why there is fall and winter spreading of manure. Manure has little nutrient value for the land if spread in the fall or winter.

6.4 FAQ's About Government Reaction:

13) Why is the Health Unit refusing to do a health risk analysis of ravine waters?

BSRA has asked the Huron County Health Unit on two separate occasions to conduct a health hazard assessment of waters flowing from streams and ravines into the Lake in the Municipality of Bluewater. In both cases the Health Unit has not conducted any formal review. Notwithstanding the testing results, they believe that the health risks in the ravines are beyond their purview. Few if any reports of illness are received each year directly linking ravine or lake water as a cause. The Health Unit appears to reflect the view that agricultural interests must be protected. The issue of surface water quality is seen as a threat by the agriculture industry.

14) Why are senior levels of government not doing more to correct the problem?

Since Walkerton, there have been no reported deaths due to surface water contamination in Ontario. The current situation is generally not seen as a serious problem requiring immediate action. Ontario has passed clean water legislation that potentially will address the issues, but the implementation time frames are measured in years, and as occurred with the Nutrient Management legislation, agricultural leaders are working to ensure the negative impacts on Agriculture of the legislation are minimized.

15) What can governments do to address the issue?

Local government should recognize the change that is occurring in their jurisdiction, namely the partial urbanization of a traditionally wholly rural community. It should also develop policies that

recognize what is happening and that focus on the needs of its current, and future, residents. Additionally it should do more to support agriculture, particularly the small family farm that is financially challenged.

Senior levels of government should review the current mix of agricultural subsidies and develop a comprehensive subsidy strategy that effectively supports agriculture - providing stable income and earnings for the whole industry. This would allow the industry some stability and allow the industry to face the challenge of recognizing and dealing effectively with the surface water quality issue.