Township Of Georgian Bay

Inland Water Quality Program Report

2013

By

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Executive Summary

The Township of Georgian Bay Inland Water Quality Program has been ongoing for 13 years with the beginning of bacteria sampling in 2001. In 2005, the program was expanded to include water chemistry based on a similar program underway on Georgian Bay. The results of all inland water studies were summarized in a report to the Township in 2010 entitled "Water Quality Monitoring Report, Inland Lakes – Township of Georgian Bay, Summary 2005 – 2010". Annual reports were produced for 2011 and 2012.

During the spring of 2011, talks were held with the District of Muskoka Watershed Council, their environmental consultant and various lake associations to standardized sampling protocol across the District. This led to a number of significant changes to the program that now allow for a direct comparison of Township data to District wide data. Changes included sampling protocol and analytical services (Table 1).

In 2013, a total of five inland lakes were sampled as part of a Township wide volunteer program for water quality and bacterium. The inland lakes sampled were Severn River (above the Big Chute), Gloucester Pool, Six Mile Lake, Gibson Lake, and Go Home Lake. Galla Lake will be sampled every two years starting again in 2014 due to year over year water quality consistency. However, Galla Lake will report bacteria results each year. Stewart Lake was not sample under this program this year due to a specialized consultant study initiated by the Township. It will join the program again in 2014.

Water quality results for 2013 were compared to summarize results from 2005 – 2012.

While analyses of conductivity and clarity were similar to previous years, there was a noticeable reduction of Total Phosphorous (TP) across all the lakes this year. Also new this year was that in most deep water samples (1 meter off the bottom) TP was lower due to the presents of sufficient oxygen in all the samples (> 3 mg/L).

The Severn River continues to have the highest levels of TP (> 10 µg/L) then all the other inland lakes (< 10 µg/L).

Gloucester Pool TP values were very consistent across all sample sites (7.5 – 9.8 µg/L) and below the 2005 – 2012 mean of 10.1 µg/L.

Although Six Mile Lake receives all of its water from the Severn River where the 2013 TP mean was 12.5 µg/L, the TP mean value in Six Mile Lake this year was much reduced (6.7 µg/L). It was even below the 2005 – 2012 mean of 10.6 µg/L. All bottom water samples on Six Mile Lake this year had sufficient oxygen levels to reduce the TP mean to 10.3 µg/L as compared to the 2005 – 2012 mean of 18.7 µg/L.

TP values in Gibson Lake remained in the 8.7 – 10.5 µg/L range this year which is slightly down from the 2006 – 2012 mean of 12.7 µg/L. Bottom sample values were also

slightly down (22.4 – 30.8 µg/L) from the long term trend (38.6 µg/L) due to the presents of oxygen .

TP values in Go Home Lake were down this year (5.8 – 7.4 µg/L) compared to the 2005 – 2012 mean (9.0 µg/L) except for Crystal Bay (18.2 µg/L). This is unusual for Crystal Bay and no explanation can be provided.

For most lakes, the results for both Total Coliform (TC) and E. coli bacteria were inline with previous years with very few values over the preferred criteria. Gloucester Pool had one high TC reading at its Black River site while Go Home Lake had most readings over the criteria in August at all sites.

August seems to be a problematic month for Go Home Lake with respect to both TC and E. coli. TC by year and sample site (1997 – 2013) exceed the provincial criteria of 1000 TC/100mL sample over 40% of the time. Of more concern are the values of E. coli in August each year where E. coli routinely exceed the Georgian Bay and Inland Lakes criteria of 10 EC/100 mL sample over 10% of the time.

Go Home Lake has a bacterium concern in the summer months that needs to be further investigated, especially the E. coli issue. It is recommended that an E. coli DNA identification program be initiated in 2014, based on funding, to determine the origin of this bacterium - human or animal. A similar program will be running on Georgian Bay in 2014.

1.0 Introduction

In 2013, a total of five inland lakes were sampled as part of a Township wide volunteer program for water quality and bacteria. The inland lakes sampled were Severn River (above the Big Chute), Gloucester Pool, Six Mile Lake, Gibson Lake, and Go Home Lake. Galla Lake will be sampled every two years beginning again in 2014 due to year over year water quality consistency. However, Galla Lake will report bacteria results each year. Stewart Lake was not sampled under this program this year due to a specialized consultant study initiated by the Township. It will join the program again in 2014.

Water quality analysis included vertical temperature and oxygen profiles (top to bottom at every meter), conductivity and total phosphorous at the surface and below the thermocline (1 meter off the bottom) and water clarity at the surface.

In early spring, lake water temperatures, oxygen levels and chemistry tend to be uniform from top to bottom. As the surface waters warm up in late spring and summer, the lakes stratify whereby a thermocline is formed at about the 5-8 meter depth. A thermocline is a horizontal layer of water about 3 meters wide where temperature and oxygen levels suddenly drop. This thermocline prevents the mixing of the top and bottom water columns. It is also a barrier to vertical fish movement and chemical mixing.

Total Phosphorous (TP) above the thermocline tends to be a result of local surface runoff (wetlands, septic systems, storm runoff, etc.), while TP below the thermocline tends to be dominated by the release from bottom sediments. This TP release from the bottom happens when oxygen levels are <1 mg/l (anoxic conditions). TP levels < 10 µg/L are considered good, 10-20 µg/L moderate and > 20 µg/L of concern.

Conductivity is used as an indicator of water movement and mixing throughout the lake. A thermocline prevents this mixing and thus conductivity can be used to determine surface and bottom horizontal water movements.

Clarity is measured to determine the turbidity of the surface waters. High turbidity is usually the result of high biological productivity (algae growth) which is a result of higher nutrient (TP) levels. It can also be caused by sediments from storm runoff.

Bacteria samples were mostly collected on a bi-monthly basis from late June to early September. The ColiPlate test kit was used to analyze all water samples for Total Coliform and fecal coliform (E. coli). This method has been approved by the American Public Health Association and the Environmental Protection Agency. Water samples are incubated for 24-26 hours. After incubation, individual cells in the microplate turn blue in the presence of Total Coliform indicating contamination from runoff. If cells exhibit fluorescence under a UV light then fecal *E. coli* is present. The Most Probable Number technique is used to convert the positive well counts to cell density in cfu's/100mL sample.

The criteria are:

Total Coliform (Provincial) – 1000 TC/100 mL sample
E. coli (Provincial) – 100 EC/100 mL sample
E. coli (Georgian Bay and Inland Lakes Objective) – 10 EC/100 mL samples

2.0 Water Quality Analyses

The 2013 field results for the five inland lakes are outlined in Tables 2 - 6. The 2013 data is compared to the mean results collected over 2005 – 2012 as summarized in the Township report – "Water Quality Monitoring Report, Inland Lakes – Township of Georgian Bay, Summary 2005 – 2010" and the 2011 and 2012 annual reports, all available on the Township web site. In 2011, due to valued input from the District Watershed Council and their consultant - Hutchison Environmental, critical changers were made to the present program as summarized in Table 1. The results of these changes will allow for a direct comparison to the 2011 and 2012 results but may not necessarily allow for a direct comparison to the 2005 - 2010 results.

Table 1

Sample and Analytical Differences Between Previous Years 2005 -2010 and the Present Sampling Program (2011 – 2013)

Parameter	**2005-2010 Methodology**	**Present Methodology**
Sample filtration	Not filtered	Filtered through 80 µ mesh
TP Laboratory Used	Maxxium Analytical	Dorset – Trent University
Collection of bottom samples for TP	Collected 2-3 meters below thermocline	Collected 1 meter off the bottom.

2.1 Results

The 2013 results are presented in tabular form and compared to the mean of results from 2005-2012. All five lakes were sampled from Sept 6-14, 2013. Due to year over year consistency of results from Galla Lake, this lake will be sampled every 2 years.
In 2012, this Inland Lake Program and a separate study by Laura Briggs, University of Waterloo, identified an anomaly of significant TP increases from samples collected in the middle deep spot of Stewart Lake. This lead to a Township sponsored consultant study by Bev Clark. His 2013 study entitled "Water Quality Testing and Reporting on Stewart Lake" was released in January 2013 and is available on the Township web site.

2.1.1 Severn River

Four sites were sampled on the Severn River – Russian Bay, Wood Bay, Lost Channel and Copp Bay. The results and summarized in Table 2.

Conductivity seems to be consistent year over year, but Lost Channel still shows an additional source of water. This additional source tends to reduce the level of TP in comparison to the other bays sampled.

Table 2
Severn River
2013 Water Quality Results

Water Quality Indicators	T Bottom	Mean 2006-2012	Russian Bay	Wood Bay	Lost Channel	Copp Bay	Mean 2013
Conductivity (µS/cm)	T	298.2	297.4	301.3	264.7	302.1	266.3
	B				187.6		
Secchi Disk (meters)		4.7	7	5	4	4	5
Total Phosphorous (µg/L	T	15.3	15.1	10.1	11.0	13.9	12.5
	B				6.8		

The Severn River had a consistent level of clarity (5 m.) when compared to the 2006-2012 mean (4.7 m.) expect for Russian Bay below the Swift Rapids Lock. (7 m.). The 2013 levels of TP are slightly below (10.1 – 15.1 µg/L) the long term mean (15.3 µg/L). Never the less, the Severn River tends to have the highest TP values recorded within the Inland Lake Water Quality Program. The source water for the Severn River is Lakes Simcoe and Couchiching.

For the first time, the Lost Channel TP bottom sample (6.8 µg/L) is below the surface measurement of 11.0 µg/L. This is because the deep bottom sample had a reasonably high level of oxygen this year (9.25 mg/L).

2.1.2 Gloucester Pool

Nine sites continued to be sampled on Gloucester Pool – Big Chute Bay, Six Mile Channel, White Falls Bay, Main Pool, Little Go Home Bay, Black River Channel, Upper Little Lake, Lower Little Lake and Baxter Lake. The results are outlined in Table 3.

Table 3
Gloucester Pool
2013 Water Quality Results

Water Quality Indicators	T Bottom	Mean 2005-2012	Big Chute Bay	Six Mile Channel	White Falls Bay	Main Pool	Little Go Home Bay	Black Rive Channel	Upper Little Lake	Lower Little Lake	Baxter Lake	Mean 2013
Conductivity (µS/cm)	T	238.5	311.1	297.5	294	305.8	276	279.9	190.2	186.7	167.4	256.7
	B						210.1				123.2	
Secchi Disk (meters)		4.9	5.5	4	5.5	5	4.5	bottom	5.5	bottom	5	5
Total Phosphorous (µg/L	T	10.1	10.5	9.8	8.8	8.9	8.4	7.5	8.5	8.7	9.2	8.9
	B						22.7				15.1	

As in previous years, conductivity in Big Chute Bay (311.1 µS/cm) reflects the upstream Severn River value in Copps Bay (302.1 µS/cm). As additional sources of water are added to Gloucester Pool from Six Mile Lake via Six Mile Channel and White Falls Bay and from MacLean Lake via Black River Channel conductivity values are slightly reduced (280 – 297 µS/cm). Although conductivity rebounded in down stream Little Lake last year, this year it continued to drop to levels of around 190 µS/cm.

Gloucester Pool mean TP level in 2013 (8.9 µg/L) is slightly below the 2006 – 2012 long term mean of 10.1 µg/L. This is the consistent story for all the lakes sampled in 2013. Values across the inland lakes were down from previous years and more in line with the District spring sampling program.

2.1.3 Six Mile Lake

Six sites were sampled in Six Mile Lake (SML) – Lost Channel, Main Lake, Crooked Bay, Long Lake, Hungry River and TransCanada Bay. From previous years, East Crooked Bay and West Crooked Bay were combined into one sample site in 2011. Results are outlined in Table 4.

Based on conductivity, SML continuous to stratify into five separate basins over the summer months. Lost Channel and the Main Lake remain as one single large basin.

Clarity, as measured via secchi disk readings, was higher this year (mean 6.4 m.) compared to the 2005 – 2012 mean of 5.7 m.

Although Six Mile Lake receives all of its water from the Severn River where the 2013 TP mean was 12.5 µg/L, the TP mean value in Six Mile Lake this year was much reduced (6.7 µg/L). It was even below the 2005 – 2012 mean of 10.6 µg/L.

The bottom TP value in Long Lake (15.3 µg/L) has rebounded from the all time high level of 66.6 µg/L in 2012 and from the highs of 2005 (32 µg/L) and 2008 (33 µg/L). This is because of the bottom waters in 2013 had an oxygen level of 4.86 mg/L, sufficient for fish to survive. Usual levels are below 1 mg/L. All bottom water samples on Six Mile Lake this year had sufficient oxygen levels to reduce the TP mean to 10.3 µg/L as compared to the 2005 – 2012 mean of 18.7 µg/L.

Table 4
Six Mile Lake
2013 Water Quality Results

Water Quality Indicators	T Bottom	Mean 2005-2012	Lost Channel	Main Lake	Crooked Bay	Long Lake	Hungry River	TransCanada Bay	Mean 2013
Conductivity (µS/cm)	T	198.1	281.5	270.4	234.6	137.4	247	233.6	234.1
	B	151.9	126.8	128.4	158.9	96.7			
Secchi Disk (meters)		5.7	6.5	6.5	6	5.5	8	6	6.4
Total Phosphorous (µg/L	T	10.6	6.9	6.4	6.5	4.8	7.9	7.7	6.7
	B	18.7	8.0	7.6	10.3	15.3			10.3

2.1.4 Gibson Lake

Sampling continued at three sites on Gibson Lake– South Lake, Middle Lake and North Lake.

Conductivity continues to remain consistent from year to year (33 – 38 µS/cm).

Gibson Lake, which receives its source water from wetlands to the south, contains a high level of tannins which colour its water and reduces its clarity. This usually results in the reduction of oxygen levels below the thermocline at around the 5 meter depth. While historical oxygen levels below the thermocline reach < 2 mg/L, this year levels remain at 3.5 – 6.5 mg/L. Fish require levels above 3 mg/L to survive.

TP values in Gibson Lake remained in the 8.7 – 10.5 µg/L range this year which is slightly down from the 2006 – 2012 mean of 12.7 µg/L. Bottom sample values were also slightly down (22.4 – 30.8 µg/L) from the long term trend (38.6 µg/L) due to the presents of oxygen.

Table 5
Gibson Lake
2013 Water Quality Results

Water Quality Indicators	T Bottom	Mean 2006-2012	South Lake	Middle Lake	North Lake	Mean 2013
Conductivity (µS/cm)	T	38.4	33.2	33	38.2	34.8
	B	40.6	29.4	29.7	43.8	34.3
Secchi Disk (meters)		3.2	2.3	2.5	2.5	2.4
Total Phosphorous (µg/L	T	12.7	10.5	9.6	8.7	9.6
	B	38.6	29.1	30.8	22.4	27.4

2.1.5 Go Home Lake

Seven locations were sampled in Go Home Lake – Control Dam, Blue Lagoon, Four Seasons Bay, Bay of Many Winds, Crystal Bay, Swallow Bay, and Manning Bay.

Conductivity has been very consistence over the years as seen in Table 6. While clarity increased by an average of 1 meter last year, it decreased by an average of 0.5 m. in 2013 compared to the 2005 – 2012 mean of 5.1m.

TP values were down this year (5.8 – 7.4 µg/L) compared to the 2005 – 2012 mean (9.0 µg/L) except for Crystal Bay (18.2 µg/L). This is unusual for Crystal Bay and no explanation can be provided.

Manning Bay that receives much of its flow from Irvine Lake was down this year (7.4 µg/L) compared to last year TP level of 14.7 µg/L. Its bottom waters were also down this

year (19.4 µg/L) compared to 23 µg/L in 2005, 47.4 µg/L in 2011 to 57.5 µg/L in 2012. Again, this is the result of having an acceptable level of oxygen 1 meter off the bottom of 10.45 mg/L.

Table 6
Go Home Lake
2013 Water Quality Results

Water Quality Indicators	T Bottom	Mean 2005-2012	Control Dam	Blue Lagoon	Four Seasons Bay	Bay of Many Winds	Crystal Bay	Swallow Bay	Manning Bay	Mean 2013
Conductivity (µS/cm)	T	55.3	52.1	52.2	51.9	52.2	52.4	52	41.7	50.6
	B				39.5	46.8			35.2	
Secchi Disk (meters)		5.1	4.9	4.3	5.2	4.6	5	4.5	3.4	4.6
Total Phosphorous (µg/L)	T	9.0	7.4	6.1	7.4	5.8	18.2	6.8	7.4	8.4
	B				12.2	7.8			19.4	

3.0 Bacteria Results

As mentioned in the introduction, bacteria samples were collected on mostly a bi-monthly basis from late June to early September. The ColiPlate test kit was used to analyze all water samples for Total Coliform and fecal coliform (E. coli). This method has been approved by the American Public Health Association and the Environmental Protection Agency. Water samples are incubated for 24-26 hours. After incubation, individual cells in the microplate turn blue in the presence of Total Coliform indicating contamination from runoff. If cells exhibit fluorescence under a UV light then fecal *E. coli* is present. The Most Probable Number technique is used to convert the positive well counts to cell density in cfu's/100mL sample.

The criteria are:

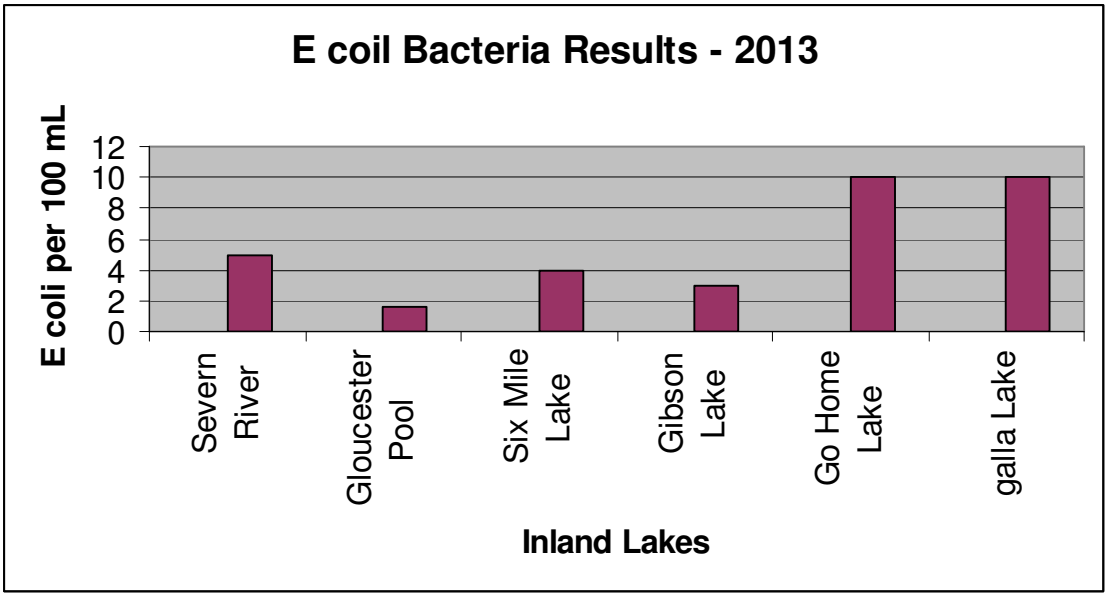
Total Coliform (Provincial) – 1000 TC/100 mL sample
E. coli (Provincial) – 100 EC/100 mL sample
E. coli (Georgian Bay and Inland Lakes objective) – 10 EC/100 mL sample

The 2013 bacteria results are outlined in Appendix 1. Numbers highlight in red exceed one of the above limits.

For most lakes, the results for both Total Coliform and E. coli bacteria results were inline with previous years with very few values over the above criteria. Gloucester Pool had one high Total Coliform reading at its Black River site while Go Home Lake had most readings above the criteria in August at all sites.

In general, E. coli values were low on most lakes at most sites except for Go Home Lake in August and Galla lake in June. Although this is the first time for higher readings in Galla Lake this is not the first time for Go Home Lake.

Graph 1



Go Home Lake

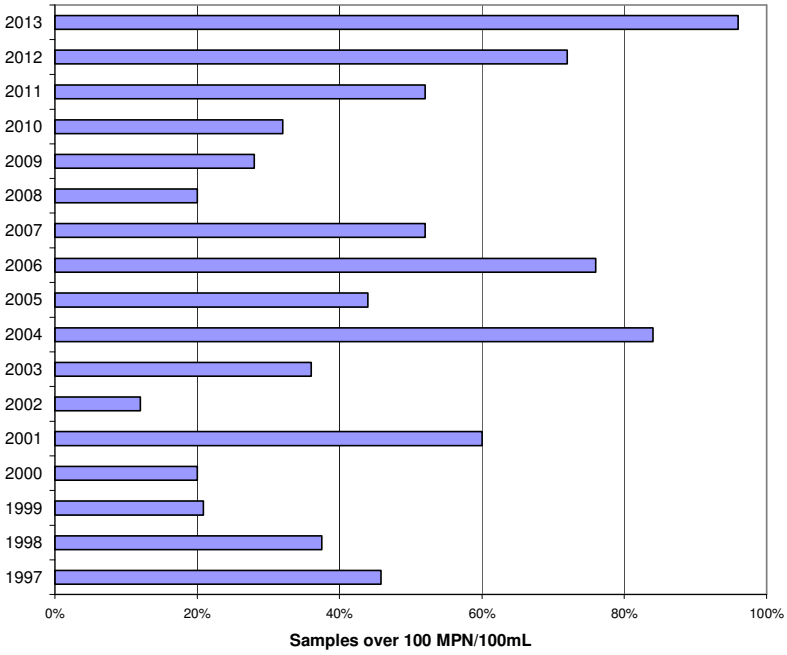
August seems to be a problematic month for Go Home Lake with respect to both Total Coliform (TC) and E. coli. Simon Edwards, Go Home Lake, kindle summarized results dating back to 1997 for both TC by year (Graph 2) and sample site (Graph 3) and E. coli by year (Graph 4) and sample site (Graph 5).

As can be seen in Graphs 2 and 3, TC by year and sample site exceed the provincial criteria of 1000 TC/100mL sample over 40% of the time in August. TC values originate from sediment runoff but the clarity measured in August, 2013 were normal (4.1 – 4.7 m.) compared to the mean September value of 4.6 m.

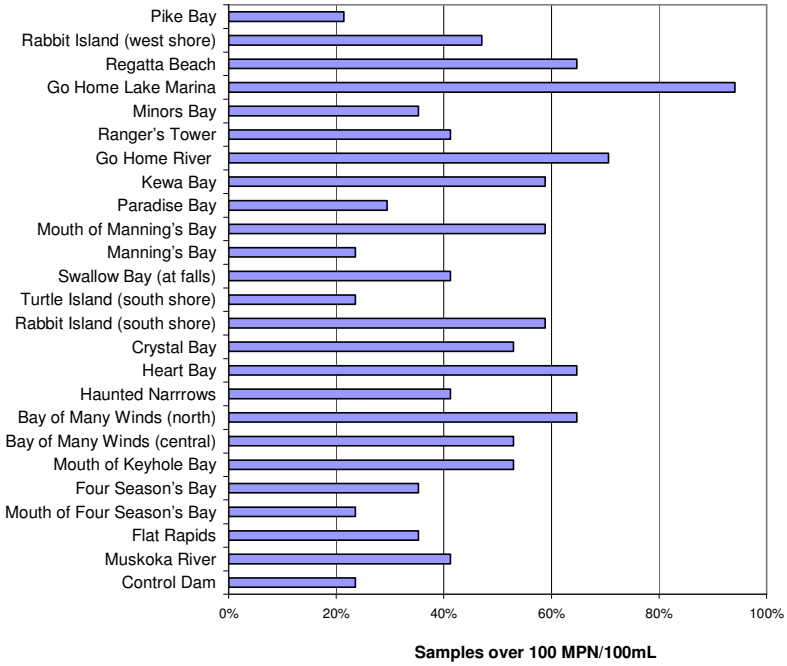
Of more concern were the values of E. coli in August each year. Both Graphs 4 and 5 indicate that E. coli routinely exceed the Georgian Bay and Inland lakes criteria of 10 EC/100 mL sample over 10% of the time.

Go Home Lake has a bacterium concern in the summer months that needs to be further investigated, especially the E. coli issue. It is recommended that an E. coli DNA identification program be initiated in 2014, based on funding, to determine the origin of this bacterium - human or animal. A similar program will be running on Georgian Bay in 2014.

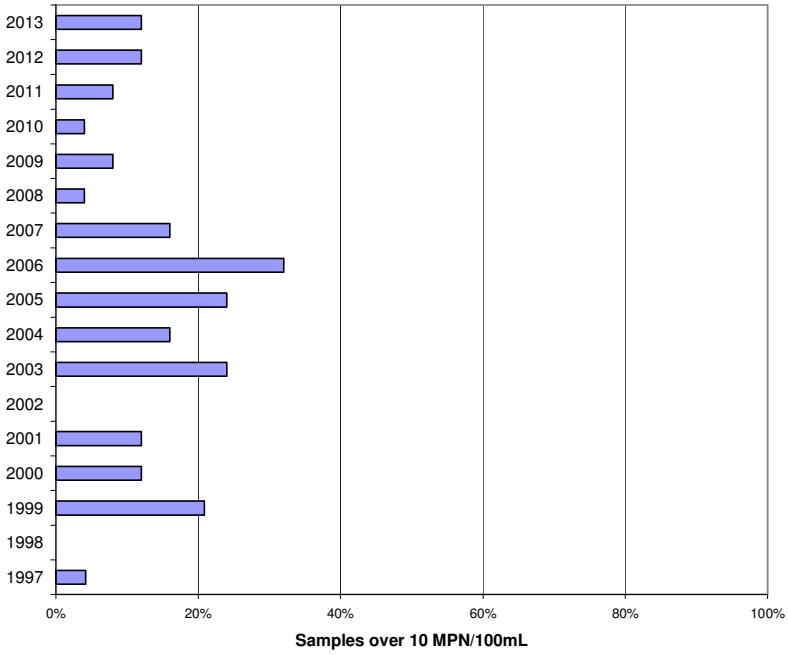
Graph 2
Go Home Lake Total Coliforms August 1997 - 2013 by Year



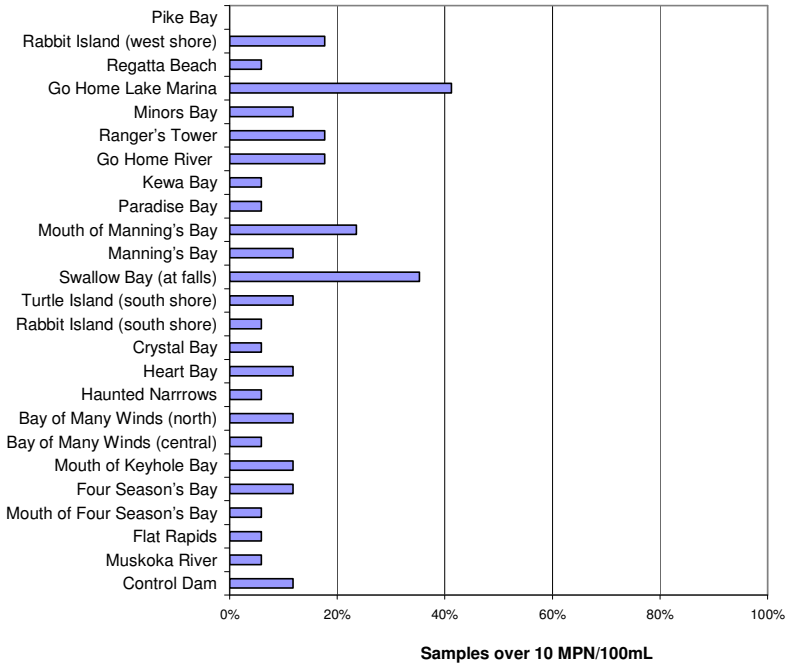
Graph 3
Go Home Lake Total Coliforms August 1997 - 2013 by Site



Graph 4
Go Home Lake E. Coli August 1997 - 2013 by Year



Graph 5
Go Home Lake E. Coli August 1997 - 2013 by Site



4.0 Recommendations

- Go Home Lake has a bacterium concern in the summer months that needs to be further investigated, especially the E. coli issue. It is recommended that an E. coli DNA identification program be initiated in 2014, based on funding, to determine the origin of this bacterium - human or animal.

- The Inland Lake Water Quality Program should continue in 2014 and include Galla Lake and Stewart Lake in both the bacteria and water quality study.

Appendix 1
Total Coliform and E coli Monitoring Results for Inland Lakes - 2013

BACTERIOLOGICAL WATER QUALITY MONITORING for Severn River (SRAPO)

2013	MPN TOTAL COLIFORMS per 100ml sample					
	Sampling Dates					
Sample Locations	July 2	July 15	July 29	Aug 12	Aug 26	
Copp Bay	8	*	16	30	13	
Coulters Bay	13	*	87	36	13	
Lost Channel	8	13	16	39	43	
Wood Bay	13	13	13	28	49	
Severn Falls	13	858	25	16	13	
Cherry Creek	19	28	22	16	8	
Hungarian Bay	3	22	22	46	11	
Russian Bay	13	46	22	19	11	
Control Site	5	350	19	30	19	
Pretty Channel	146	*	13	36	39	
Big Chute	3	*	102	62	33	
Aver. Lake Temp ?F (11 locations)	**71.5?**	**78.5**	**74.5**	**73.5**	**73**	

MPN E COLI per 100ml sample					
Sampling Dates					
July 2	July 15	July 29	Aug 12	Aug 26	
3	*	<3	<3	<3	
3	*	16	<3	<3	
5	3	<3	3	5	
<3	5	<3	<3	3	
<3	3	8	3	3	
<3	5	3	8	3	
<3	5	5	3	3	
<3	<3	5	<3	5	
3	3	5	3	<3	
19	*	5	<3	<3	
<3	*	5	3	22	

BACTERIOLOGICAL WATER QUALITY MONITORING for Gloucester Pool

2013	MPN TOTAL COLIFORMS per 100ml sample					
	Sampling Dates					
Sample Locations		July 2		Sep. 11		
Six Mile Channel		8		19		
Big Chute		16		5		
Whites Falls		8		5		
Gloucester Pool Center		11		3		
Little Go Home Bay		5		5		
Black River		19		2400+*		
Narrows		11		5		
Little Lake Center		3		43		
Lock 45		11		3		
Dam G		13		16		
Aver. Lake Temp ?F (10 locations)		20.5c/69f		22.3c/72f		

MPN E COLI per 100ml sample					
Sampling Dates					
	July 25		Sep. 11		
	3		8		
	0		0		
	3		3		
	0		0		
	0		0		
	0		5		
	0		0		
	0		0		
	3		5		
	3		0		

MPN = Most probable number Unsafe for recreation at: Coliform +1000 or E.Coli +100
Unsafe for consumption unless treated at: Coliform +10 or E.Coli +1

* We have noted unusual results at Black River in the past. The sample is taken under the power lines. Note that E.coli was in the safe range!

BACTERIOLOGICAL WATER QUALITY MONITORING for SIX MILE LAKE

2013	MPN TOTAL COLIFORMS per 100ml sample					
Sample Locations	July 3	July 25	Aug 9	Aug 23	Sept 6	
East Crooked Bay	8	22	19	22	16	
Grand Island (N of center cut)	13	79	13	22	114	
Gov't Dock	25	16	16	16	13	
East Hungry Bay (river mouth)	36	49	98	132	136	
Battleship Island	49	263	33	25	510	
Claire Bay (north end)	43	46	43	46	307	
Whites Bay	43	65	11	8	49	
Whites Falls (above dam)	83	418	87	127	65	
Six Mile Marina (behind)	62	489	255	141	350	
Prov.Park (south of beach)	11	166	59	177	271	
Aver. Lake Temp ?F (10 locations)	75.4	76.9	75.4	76.2	70.5	

(see note)

NOTE Water spilling into Six Mile Lake due to Hydro One Big Chute Generator shut down

MPN E COLI per 100ml sample					
Sampling Dates					
July 3	July 25	Aug 9	Aug 23	Sept 6	
? 3	? 3	3	? 3	5	
3	16	3	3	? 3	
3	3	? 3	3	? 3	
? 3	3	? 3	3	8	
? 3	? 3	? 3	? 3	? 3	
? 3	5	5	3	8	
3	3	? 3	? 3	3	
? 3	8	13	5	5	
3	3	3	8	3	
5	5	5	11	5	

BACTERIOLOGICAL WATER QUALITY MONITORING for Gibson Lake

2013	MPN TOTAL COLIFORMS per 100ml sample					
	Sampling Dates					
Sample Locations	6/6/13	6/30/13	7/14/13	7/29/13	8/15/13	8/29/13
South Bay	30	19	46	25	11	8
Landing	43	19	8	13	3	5
Middle	8	19	8	8	11	5
Island	8	33	123	5	5	3
Wahta lot 115	0	22	33	5	5	11
Wahta lot 118	16	28	94	11	5	11
North River	16	22	28	28	16	3
Centre North (Braid's)	11	8	79	11	3	8
Aver. Lake Temp ?F (10 locations)	61	64	82	68	68	79

MPN E COLI per 100ml sample					
Sampling Dates					
6/6/13	6/30/13	7/14/13	7/29/13	8/15/13	8/29/13
11	3	3	5	0	0
8	3	0	3	0	0
0	3	0	3	3	0
0	13	11	0	0	0
0	5	13	3	0	3
5	5	16	3	0	0
5	5	8	3	0	0
0	0	0	3	0	0

BACTERIOLOGICAL WATER QUALITY MONITORING for Go Home Lake

2013	MPN TOTAL COLIFORMS per 100ml sample							
	Sampling Dates							
Sample Locations	08-Jun	22-Jun	06-Jul	20-Jul	05-Aug	16-Aug	31-Aug	14-Sep
Four Seasons Bay	8	16	5	90	2424	2424	350	65
Bay of Many Wiinds	22	19	19	36	2424	2424	434	123
Bay of Many Winds Campsite	11	5	8	33	2424	2424	1038	98
Heart Bay	33	52	39	62	2424	362	132	151
Go Home Lake Marina	49	65	194	83	2424	2424	1370	102
Pike Bay	11	28	13	49	2424	25	13	33
Aver. Lake Temp ?C (6 locations)	15.3	20	23.4	26.4	22.7	21.6	23.5	19.1
Aver. Secchi depth M	4	4	4.1	3.7	4.1	4.7	5.5	5.2

MPN E COLI per 100ml sample					
Sampling Dates					
08-Jun	22-Jun	06-Jul	20-Jul	05-Aug	16-Aug
0	0	0	22	0	0
0	3	3	8	33	0
0	0	3	11	52	0
0	0	3	5	0	0
19	5	146	28	0	0
0	0	0	8	0	0

BACTERIOLOGICAL WATER QUALITY MONITORING for Galla Lake

2013	MPN TOTAL COLIFORMS per 100ml sample					
	Sampling Dates					
Sample Locations	June 23	Aug. 4	Aug. 31			
Mike's	52	28	65			
Ray's	83	16	76			
Landing	194	19	114			
John's	127	30	33			
Aver. Lake Temp ?F (10 locations)						

MPN E COLI per 100ml sample					
Sampling Dates					
June 23	Aug. 4	Aug. 31			
16	<3	5			
16	3	11			
19	5	3			
46	5	<3			