

Volunteer Water Quality Monitoring Program Report of 2008 Sampling Data



**Township of The Archipelago
April 2009**

Acknowledgements

This monitoring program represents a successful partnership between the Township of The Archipelago, cottager associations, and numerous volunteers in areas along the coast and inland lakes that has lasted since its inception in 1999. The volunteer-based program provides an important avenue for relaying information about our environment to ratepayers and for providing valuable information to the Township.

We owe continued thanks to all the volunteers who commit time and resources toward the ongoing success and long term vision that is water quality monitoring. Additionally, we are grateful to the ongoing support and interest of Dr. Karl Schiefer who provides advice on various technical aspects of the program and continues to be passionate about environmental quality on the Georgian Bay coast and inland waters.

The Township wishes to thank all of you for your passion and drive to ensure our high quality environment is maintained.

Report Compiled by Greg Mason, Georgian Bay GENERATIONS and the Township of The Archipelago

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Area Data

Sturgeon Bay

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Naiscoot Lake

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1.0 Introduction

This report provides the summary of results from the 2008 Water Quality Monitoring Program for the Township of The Archipelago. The program purpose, rationale, and methods have been presented in previous year's reports and were followed for the 2008 season. Similar to past reports, the purpose here is to present the data gathered in the 2008 sampling season in detail but also to indicate summaries of past year's results to enable comparison of ongoing trends. It should be noted that this report was created by Township of The Archipelago staff and by Greg Mason of Georgian Bay GENERATIONS and no analysis or review is provided internally. An additional Water Quality Review is available from the Township. For information on this report and/or the volunteer water quality monitoring program in The Archipelago, please contact Ted Thompson at the Township of The Archipelago.

A draft report of some recent studies, completed by Ngan Diep of the Ministry of Environment, are available at the Township of The Archipelago. This work focused on the eastern coast of Georgian Bay and provides a better understanding of the changing water quality from open Georgian Bay into inner bays. It also looked into water quality differences between undeveloped and developed areas of the Bay. As well, The Archipelago commissioned Dr. Karl Schiefer to complete a comprehensive water quality review of the inland lakes; this report is also available through the Township office.

The Township is very committed to addressing environmental issues and ensuring the maintenance of the high quality environment we all enjoy. This philosophy is integrated into the day to day functioning of the municipality from public works operations to detailed planning analysis.

2.0 Results

The following results were tabulated from data gathered in 2008. Different locations were sampled with different intensity and for varying lengths of time. It is not the purpose of this report to provide analysis or draw conclusions from the data. Rather, what is provided are:

- outlines of the standards against which data can be compared; and
- tables outlining the different data sets and averages for each location for each sample area; and where possible, the averages from the previous sampling years.

It should be noted that in order to assess the relevance of the data, comparisons should be made between averages and standard deviations (not individual data points per se), previous year averages and against established standards.

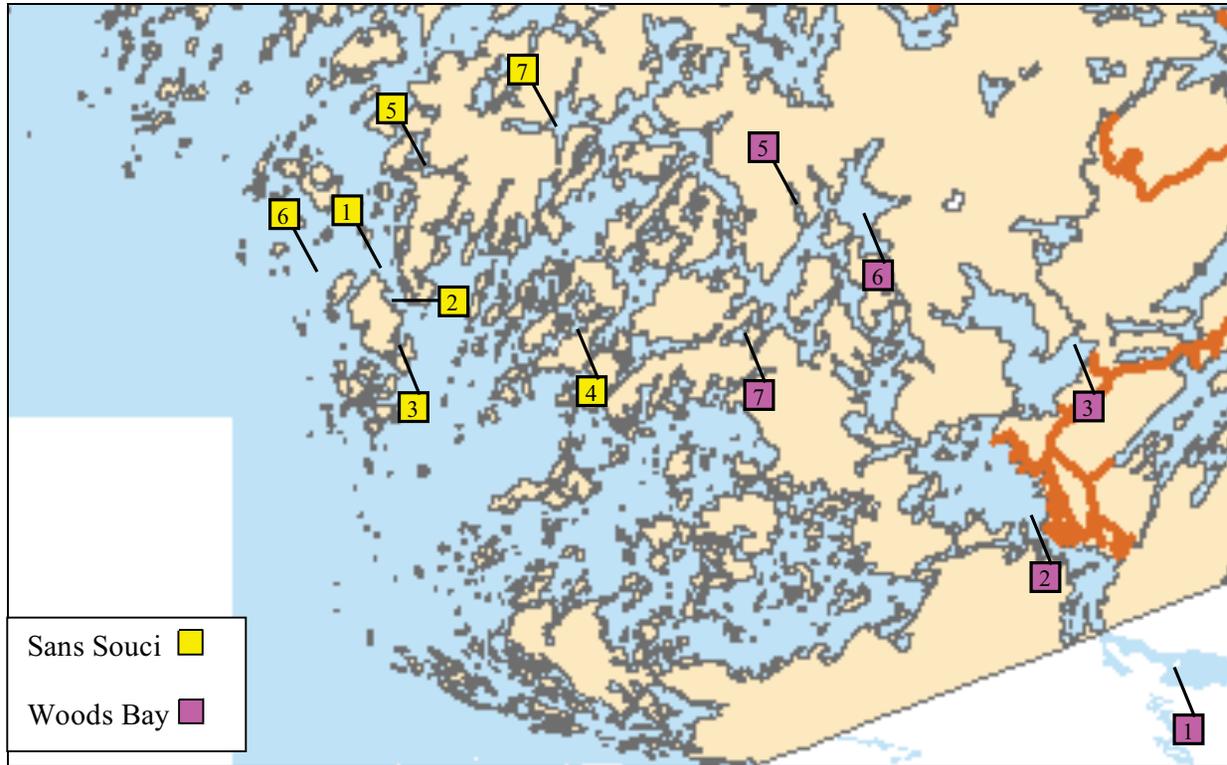
Charts are provided comparing water quality in the inland lakes, open bay sampling areas, and back bay sampling areas. When reviewing these data please keep in mind similarities and differences in the surrounding ecosystem and potential differences in sampling methodology (i.e. sampling times).

2.1 Sample Locations

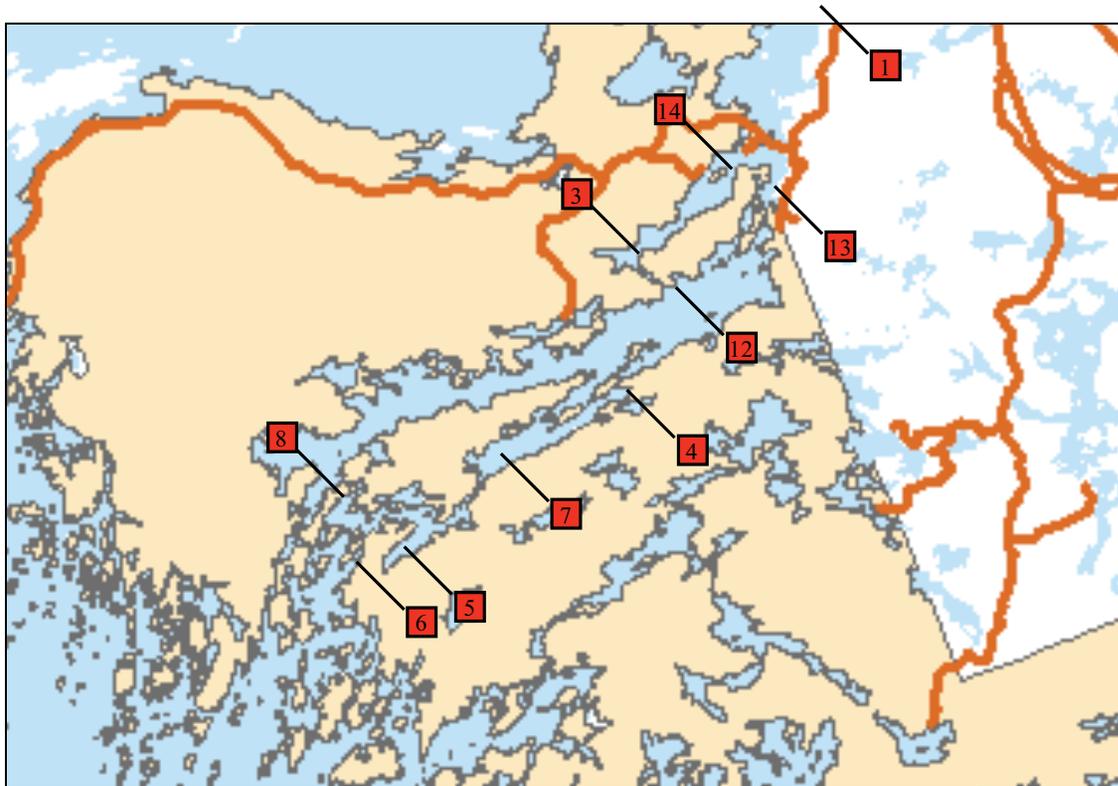
Sampling sites have typically been focused on known or expected “hot spots”; areas that may be more likely to suffer water quality impairment related to human activities. Some sample areas have also been selected as control stations; these allow comparison between the variety of ecosystem types that exist along the coast and within inland lakes. Maps of the sample areas indicate the sampling locations for the different areas throughout the township. The sample sites include many of the sampling stations used in

previous years and volunteers are encouraged to return to those sites in subsequent years. Unlike previous years, results for the different parameters are shown in table format, not on individual maps; refer to the maps when positioning the different samples.

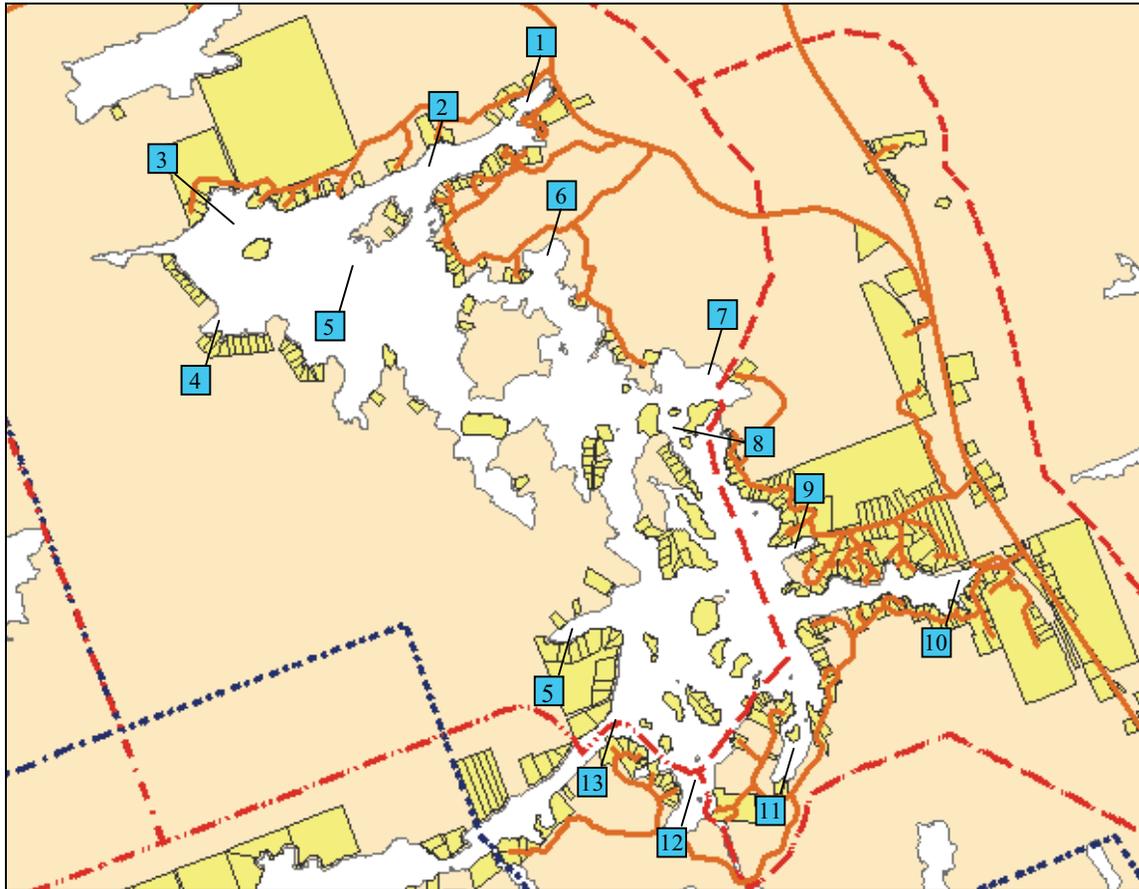
2.1.1 Sans Souci and Woods Bay Sampling Locations



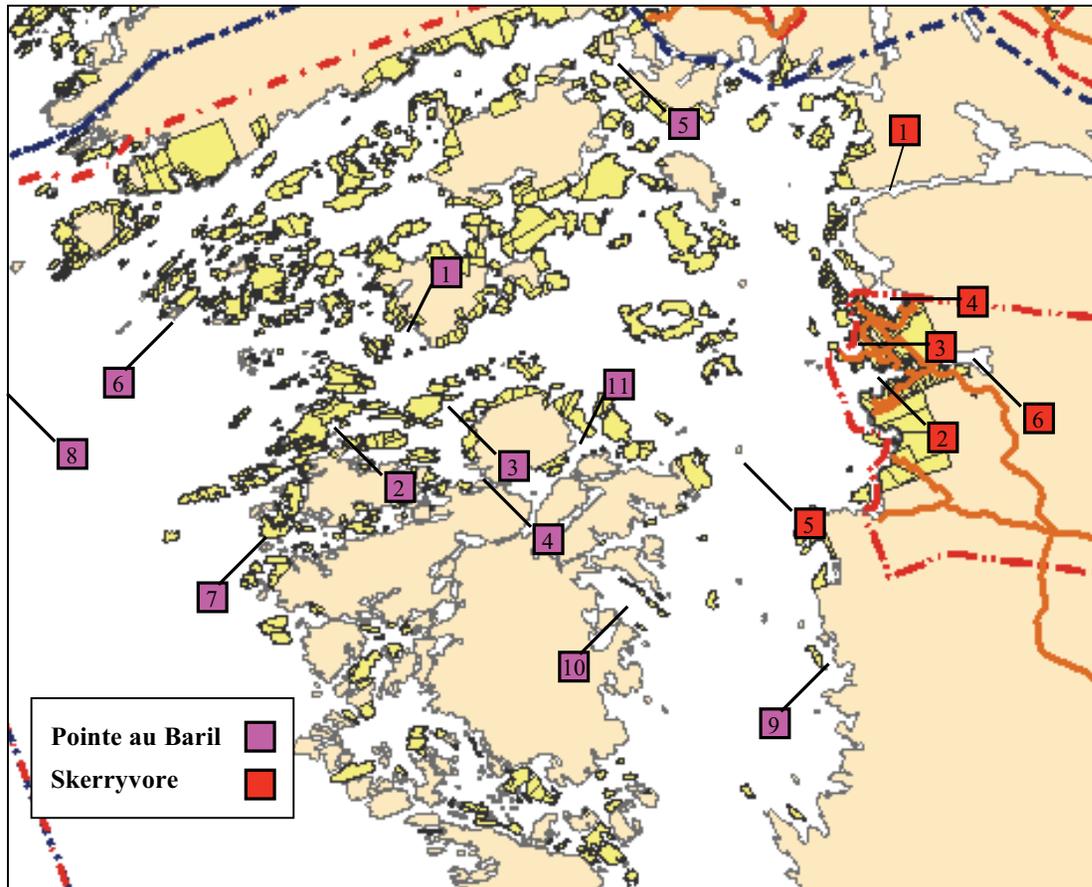
2.1.2 South Channel Sampling Locations



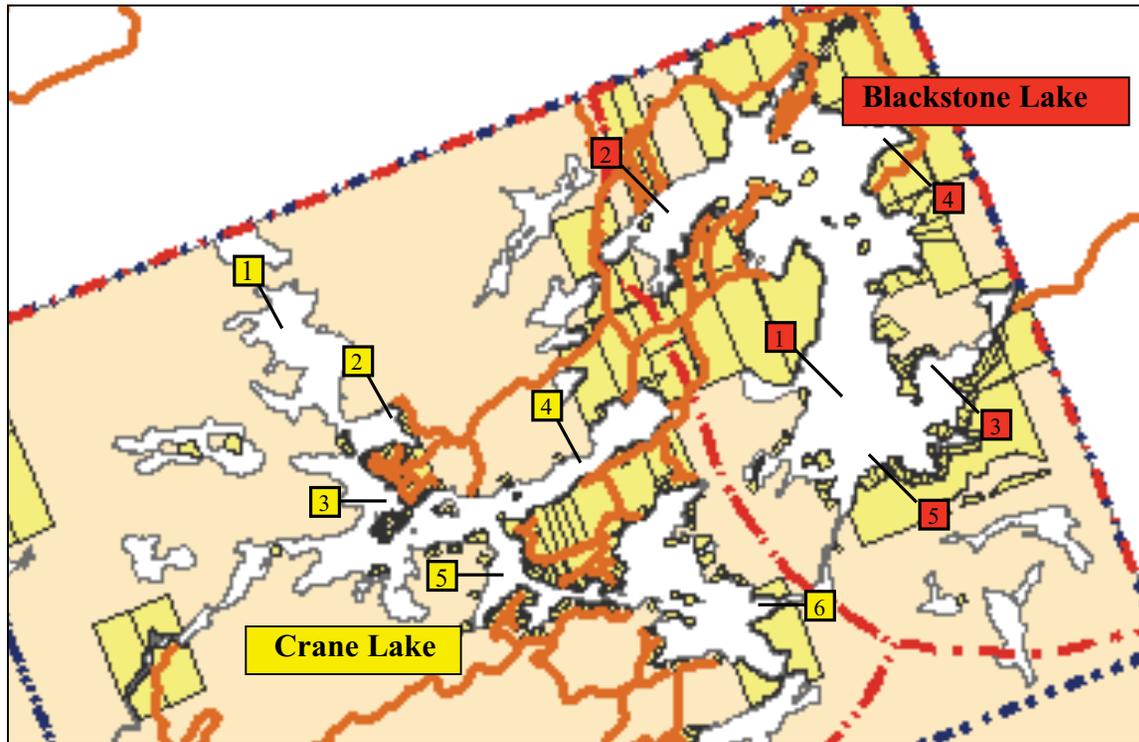
2.1.3 Sturgeon Bay Sampling Locations



2.1.4 Skerryvore and Pointe au Baril Islands Sampling Locations



2.1.5 Blackstone and Crane Lake Sampling Locations



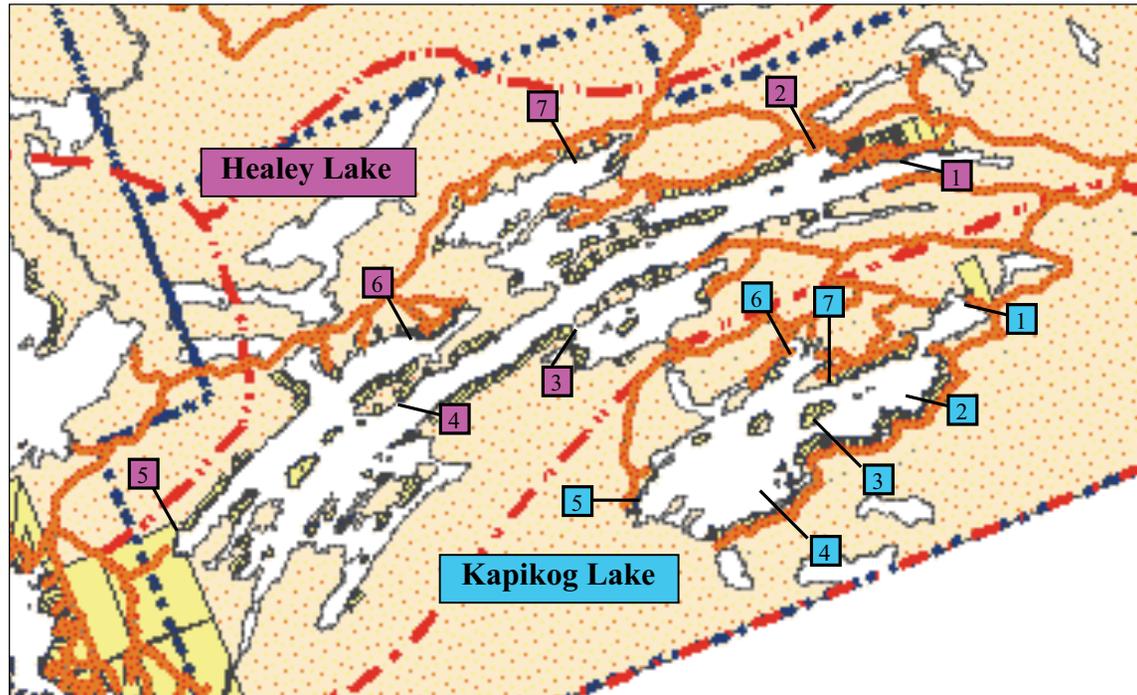
Blackstone Lake Sampling Sites:

- | | | |
|----------------------------------|-----------------|-------------------|
| 1 Centre of Lake (Peanut Island) | 2 McRoberts Bay | 3 Lawson Bay(old) |
| 4 Blackstone Landing | 5 Mallet | |

Crane Lake Sampling Sites:

- | | | |
|---------------------|--------------------------|----------------------------------|
| 1 North End | 2 Goebel's Bay | 3 Aga Ming Private Dock/Mead Bay |
| 4 Crane Lake Resort | 5 Overflow Bay (Narrows) | 6 South End |

2.1.6 Healey Lake and Kapikog Lake Sampling Locations



2.1.7 Naiscoot Lake Sampling Locations



2.2 Water Clarity

Water clarity is usually measured using a black-and-white Secchi disc which is lowered into the water until it just disappears from view. This depth is the Secchi depth of visibility, which is directly related to water clarity and can be used as a simple yet effective monitoring tool for determining the effects of human activities on water clarity and, indirectly, on eutrophication. In general, water clarity, as measured by Secchi depth, tends to be higher in open areas of Georgian Bay and in bays with good water circulation. Water clarity tends to diminish (smaller Secchi depth values) in enclosed bays, near wetlands or sources of organic material, and in lakes or areas that may naturally be more nutrient enriched. When examining the data, expect to see a small decline in Secchi depth throughout the year with lowest depths reading near the end of the summer and into September, however a major decline in the readings should be evaluated more carefully. A multi-year comparison of data is of particular value here to assess the water clarity trends for a particular area and where possible, data from previous years have been included with the tables.

2.2.1 Secchi Depths (Water Clarity) in the Sans Souci Area, 2008

Date	Station							Average for All Stations
	1	2	3	4	5	6	7	
08-Jun	7.6			4.6	4.6	9.1	3	5.8
22-Jun	7.6	6.1		3	2	7.6	4.6	5.2
06-Jul	6.1	6.1		4.6	3.7	9.1	4.6	5.7
19-Jul	7.6	6.1		3	4.6	9.1	4.6	5.8
03-Aug	7.6	7.6		4.6	4.6	9.1	4.6	6.4
17-Aug	9.1	9.1		4.6		9.1		8.0
31-Aug	9.1	9.1			6.1	10.6		8.7
14-Sep	7.6	7.6		4.6	4.6			6.1

Average	7.8	7.4		4.1	4.3	9.1	4.3	6.5
Std. Dev.	1.0	1.3		0.8	1.2	0.9	0.7	1.2

Previous Years Average

2007	8.8	4.7	3.3	5	6	10.9	4.3	6.2
2006	8.5	6.2	3.7	4.5	5.3	9.1	5.0	6.0
2005	7.8	5.2	3.5	4.3	5.4	8.9	3.8	5.5
2004	8.9	5.5	3.5	4.5	5.2	12.1	5.0	6.5
2003	8.3	3.4	2.5	4.1	5.6	9.8	5.1	5.5
2002								7.8
2001								8.5

Depths in metres (m)

2.2.2 Secchi Depths (Water Clarity) for Woods Bay Area, 2008

Date	Station						Average for All stations
	1	2	3	5	6	7	
21-Jun	4	4	4	2	3	4	3.5
15-Jul	4	4	3.5	2.5	4.5	4.5	3.8
31-Jul	4	2	3	2.5	3.5	4	3.2
19-Aug	3	3	3	2	5	4	3.3
04-Sep	4	3	3	2	4	4	3.3

Average	3.8	3.2	3.3	2.2	4.0	4.1	3.4
Std. Dev.	0.4	0.8	0.4	0.3	0.8	0.2	0.3

Previous Years Average

2007	3.3		2.8	4.2	4.2	4	3.7
2006	3.3			3.8	3.8	4	3.7
2005	2.8		3	3.6	3.3	3.3	3.2
2004	2.8	1.7	2.9	3.3	3.3	3.4	2.3
2003	3.1	1.9	3.2	3.9	3.6	3.6	3.2
2002		3.2			3.8	4.2	
2001		4.5			5.0		

Depths in metres (m)

2.2.3 Secchi Depths (Water Clarity) for the South Channel Area, 2008

Date	Station										Average all Stations
	1	3	4	5	6	7	8	12	13	14	
1-Jun	2.1	3	5.1	4.6	7	5.4	6.1	4	2.7	2.7	4.3
15-Jun	2.4	3	4.6	4.6	7.9	4.6	4.8	4	2.4	2.7	4.1
6-Jul	3	3	5.5	4.6	6.4	4.3	4.6	4.3	2.4	3	4.1
10-Aug	2.4	4	4	4.3	5.8	4	4.9	5.5	2.7	3.3	4.1
6-Sep	3.6	4	5.5	4.9	7.3	5.8	6.4	4.8	3.6	4.3	5.0
28-Sep	3.3	4.3	5.2	5.5	7.3	5.2	6.4	5.2	3.6	4.7	5.1
Average	2.8	3.6	5.0	4.8	7.0	4.9	5.5	4.6	2.9	3.5	4.4
Std. Dev.	0.6	0.6	0.6	0.4	0.7	0.7	0.9	0.6	0.6	0.9	0.5
Previous Years Average											
2007	3.1	3.8	5.5	4.4	6	4.7	5.8	5.1	3	3.6	4.5
2005	3.3	3.7	5.0	4.5	6.5	4.7	5.1	4.6	2.8		4.5
2004	2.7	3.7	4.8	4.3	6.2	4.2	5.1	4.2	2.9		4.3
2003	2.7	3.3	4.5	4.5	6.1	4.2	4.9	3.8	2.9		4.0
2002	3.5				5.5	4.6		5.5			
2001	3.0				6.0						

2.2.4 Secchi Depths (Water Clarity) for the Sturgeon Bay Area, 2008

Date	Station														Average for All Stations
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
14 Jun**	1.0	1.0	1.0	1.2	1.6	1.1	1.2	1.2	1.3	0.5	1.1	1.6	1.6	1.0	1.1
22-Jul	1.7	1.7	1.8	1.8	1.7	1.6	1.8	1.6	1.7	0.9	1.9	2	2	1.8	1.6
13-Aug	1.2	1.2	1.2	1.2	2.0	1.2	1.5	1.7	1.6	1.1	1.7	1.7	1.7	1.6	1.4
26-Sep	1.0	0.7	0.5	0.3	1.5	1.1	1.7	1.7	1.7	1.0	1.8	2.0	2.0	1.8	1.1
Average	1.2	1.2	1.1	1.1	1.7	1.3	1.6	1.6	1.6	0.9	1.6	1.8	1.8	1.6	1.3
Std. Dev.	0.3	0.4	0.5	0.6	0.2	0.2	0.3	0.2	0.2	0.3	0.4	0.2	0.2	0.4	0.2
Previous Years Average															
2007	1.6	1.5	1.7	1.7	1.7	tb	1.8	2.0	1.9	1.5	1.9	1.9	2.2	1.8	1.7
2006	1.7	1.8	1.7	1.7	1.8	2.0	2.4	2.2	2.2	1.3	2.5	2.5	2.6	1.7	1.9
2005	2.1	2.3	2.5	2.5	2.4	1.6	2.6	2.2	2.4	2.7	2.5	2.5	2.5	2.2	2.4
2004	1.9	2.0	1.9	1.9	2.0	1.6	2.2	2.2	2.6	2.0	2.6	2.3	2.7	2.4	2.0
2003	1.2	1.4	1.5	1.5	1.5	1.3	1.6	1.6	1.9	1.6	1.9	2.1	2.0	1.5	1.6
2002	0.6				0.7						2.1				
2001	1.2				1.6						2.8				
** Rain	Depths in metres (m)														

2.2.5 Secchi Depth (Water Clarity) in Skerryvore Area, 2008

Date	Stations					Average for All Stations
	1	2	3	4	5	
25-Jun	2.4			3.6		3.0
09-Jul	1.5	4.6		2.8		3.0
24-Jul	2.0	4.6			5.0	3.9
10-Aug	1.8	3.1		3.7	4.6	3.3
25-Aug	2.4	4.6		4.0	5.0	4.0
09-Sep	2.4	4.3		3.7	4.3	3.7

Average 2.1 4.2 3.6 4.7 3.5
 Std. Dev. 0.4 0.7 0.5 0.3 0.4

Previous
 Years
 Averages

2005 5.8 3.3 3.3 4.6 4.3
 2004 3.6 4.5 3.0 4.5 3.9
 Depths in metres (m)

2.2.6 Secchi Depth (Water Clarity) in Point au Baril Islands Area, 2008

Date	Station											Average for All Stations
	1	2	3	4	5	6	7	8	9	10	11	
30-Jun	4.6	2.7	5.8	4.0	2.6	3.0	2.6	1.7	2.4	3.3	1.7	3.1
14-Jul				3.7	3.5							3.6
28-Jul	4.1	3.0	5.2	4.0	4.3	2.7	2.1	1.9	2.2	3.2	1.5	3.1
11-Aug			13.4	4.9								9.2
25-Aug				4.3								4.3

Average 4.4 2.9 8.1 4.2 3.5 2.9 2.4 1.8 2.3 3.3 1.6 3.4
 Std. Dev. 0.4 0.2 4.6 0.5 0.9 0.2 0.4 0.1 0.1 0.1 0.1 2.6
 Depths in metres (m)

2.2.7 Secchi Depth (Water Clarity) in Blackstone Lake, 2008

Date	Station					Average for All Stations
	1	2	3	4	5	
16-Jul	5.0	5.0	5.0	5.0	5.0	5.0
29-Jul	5.4	5.4	5.4	5.4	5.4	5.4
18-Sep	4.8	4.8	4.8	4.8	4.8	4.8
10-Oct	5.1	5.1	5.1	5.1	5.1	5.1

Average	5.1	5.1	5.1	5.1	5.1	5.1
Std. Dev.	0.3	0.3	0.3	0.3	0.3	0.3

**Previous
Years
Average**

2007			6.0			6.0
2005	5.4	4.7	5.8	5.3	4.6	5.1
2004	4.1	4.6	4.4	3.8	4.4	4.3
2003	4.7	4.5	4.8	4.9	4.2	4.6

Depths in metres (m)

2.2.8 Secchi Depth (Water Clarity) in Crane Lake, 2008

Date	Station						Average for All Stations
	1	2	3	4	5	6	
15-Jun	4	4.5	4.3	4	3.5	4	4.1
29-Jun	3.3	4	4	4	4	4.8	4.0
13-Jul	4	3.5	4	4	4.3	5	4.1
04-Aug	5	4.5	4.8	4		5	4.7
18-Aug	4	4	4.5	4.8	4	4.3	4.3
01-Sep	5	5	5			6	5.3

Average	4.2	4.3	4.4	4.2	4.0	4.9	4.4
Std. Dev.	0.7	0.5	0.4	0.4	0.3	0.7	0.5

Previous Years Average

2007	5.3	4.8	4.6	4.2	4.2	5.1	4.7
2006	4.2	4	4.2	4.1	4.3	5.1	4.3
2005	4.7	4.7	4.7	4.5	4.8	4.8	4.7
2004	4.3	4.4	4.1	4.4	4.1	4.4	4.3
2003	2.6	2.6	2.6	2.5	2.8	2.9	2.7

Depths in metres (m)

2.2.9 Secchi Depth (Water Clarity) in Healey Lake, 2008

Date	Station							Average for all stations
	1	2	3	4	5	6	7	
4-Jun	2.7	2.7	3	3.4	3.4	2.7	1.5	2.8
15-Jul	2.4	2.4	3	2.7	2.7	2.7	1.5	2.5
12-Aug	3	2.7	3	3.4	3	3	2.1	2.9

Average	2.7	2.6	3.0	3.2	3.0	2.8	1.7	2.7
Std.Dev.	0.3	0.2	0.0	0.4	0.4	0.2	0.3	0.2

Previous Years Average

2007	3.3	3	3.5	3.375	3.1	3.2	1.7	3
2006	3.1	2.8	3.7	3.375	3.5	3.45	1.7	3.1
2005	3	2.9	3.5	3.58	3.2	3.52	1.6	3.0
2004	2.9	3.2	3	3.3	3.2	3.2	1.1	2.9
2003	2.6	2.5	3	2.9	3.1	2.7	1.3	2.8

2.2.10 Secchi Depth (Water Clarity) in Kapikog Lake, 2008

Date:	Station								Average all stations
	1	2	3	4	5	6	7	8	
7-Jul	3.7	4	3.7	t.b.	4	4.3	4	3.5	3.9
21-Jul	3.7	3.7	3.4	t.b.	3.7	4	3.7	3.5	3.7
5-Aug	4	4	4.4	t.b.	4.3	4.3	4.3	4.3	4.2
17-Aug	4	4.3	4.3	t.b.	4.3	4.3	4.3	4.3	4.3
3-Sep	4.6	4.3	4.3	t.b.	4.3	4.6	4.3	4.3	4.4

Average	4.0	4.1	4.0		4.1	4.3	4.1	4.0	4.1
Std. Dev.	0.37	0.25	0.44		0.27	0.21	0.27	0.44	0.3

Previous Years Averages

2007	3.7	3.8	3.9		4.1	4	4	4	4
2006	4.0	4.0	3.9		4.3	4.2	4.2	4.2	4.1
2005	4.3	4.5	4.3		4.3	4.5	4.4	4.6	4.4
2004	3.8	3.7	4.2		3.8	4.3	4.3	4.2	4.1
2003	3.1	3.4	3.3	2.9	3.1	3.2	3.1	3.4	3.2

2.2.11 Secchi Depth (Water Clarity) in Naiscoot Lake, 2008

Date	Station					Average for All stations
	0	1	2	3	4	
16-Jul	3.2	3.1	2.9	3.2	2.4	3.0
27-Jul	3.1	3	3.1	2.9	3.2	3.1
17-Aug	4	4.1	4	3.1	3	3.6
30-Aug	4	3.8	4.2	4	3.9	4.0

Average 3.6 3.5 3.6 3.3 3.1 **3.4**
Std. Dev. 0.5 0.5 0.6 0.5 0.6 0.5

**Previous
Years
Average**

2007 4.1 3.9 3.9 3.9 3.6 3.9

Depths in metres (m)

2.3 Bacterial Monitoring

Results of bacterial monitoring in a number of locations of the Township of The Archipelago are provided by location in this section of the report

2.3.1 Bacterial Reference Guidelines and Objectives

The following bacterial guidelines and objectives are provided to assist in the interpretation of bacterial monitoring results presented in this report.

Provincial Regulatory Guideline levels for total coliforms (TC) are as follows:

- 1,000 – levels higher than this are considered unsuited for recreational water use;
- 200 – levels higher than this are considered to be indicative of deteriorating water quality; and
- 10 – levels higher than this are considered unsafe for human consumption

NOTE: total coliforms are no longer used as a regulatory guideline in Provincial Water Quality Objectives. Total coliform levels have been found to be too variable and are largely considered to be a natural component of ecosystems

The objectives for *E. coli* (EC) are as follows:

- 100 – levels higher than this are considered unsuited for recreational water use
- 0 – levels higher than this are considered unsafe for human consumption without prior treatment.

NOTE: provincial bacterial levels are to be based on a geometric mean of five samples taken in the same local area at the same time.

Based on a number of years of intensive bacterial monitoring throughout the Township of Georgian Bay and the Township of The Archipelago, the following has been recommended as a suggested bacterial objective for recreational waters of Georgian Bay and the associated inland lakes:

- **Total Coliforms (annual average):** - **100 TC**
- ***E. Coli* (annual average):** - **10 EC**

The following tables present the data by sample area for each sampling location and date within that area. A calculated standard deviation and average is presented for each sample locations and an average of all sampling locations for each general area is also provided.

Recent heavy rain events are indicated by (**) beside the sampling dates and medium to light recent rain events are indicated by (*) beside each sample date.

2.3.2 Bacterial Sampling of Surface Water for Total Coliforms (TC) and E. Coli (EC) in the Sans Souci Area, 2008

Date	Station														Average for All Stations	
	1		2		3		4		5		6		7		TC	EC
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC		
*08-Jun	52	16	43	5	13	3	39	8	298	171	0	0	22	0	66.7	29.0
**22-Jun	55	3	55	3	30	8	39	0	83	0	3	3	8	0	39.0	2.4
06-Jul	8	0	5	0	25	0	11	0	30	0	3	0	22	0	14.9	0.0
19-Jul	65	5	33	0	72	13	22	3	76	3	8	0	30	0	43.7	3.4
03-Aug	8	0	28	0	30	0	11	3	182	0	0	0	587	5	120.9	1.1
**17-Aug	2424	90	16	0	33	0	36	8	52	11	28	0	16	3	372.1	16.0
31-Aug	5	0	36	0	52	0	46	3	213	0	0	0	106	0	65.4	0.4
*14-Sep	166	3	72	0	79	0	39	3	59	3	22	0	13	3	64.3	1.7

Average	347.9	14.6	36.0	1.0	41.8	3.0	30.4	3.5	124.1	23.5	8.0	0.4	100.5	1.4	98.4	6.8
Std. Dev.	840.5	30.9	21.2	1.9	23.5	4.9	13.7	3.1	95.5	59.7	10.9	1.1	199.1	2.0	114.8	10.4

Previous Years Averages

2007	avg	12.6	1.0	29.8	2.2	37.0	2.2	51.4	1.2	106.4	3.2	9.4	0.0	131.6	0.6	54.0	1.5
	std	8.6	2.2	32.5	2.2	37.6	2.2	36.8	1.6	126.0	5.6	9.1	0.0	154.8	1.3	38.6	1.2
2006	avg	86.7	1.4	33.6	1.6	47.9	2.3	40.4	0.9	132.1	3.0	18.9	0.9	453.6	23.3	116.2	4.8
	std	122.1	2.4	28.5	2.1	31.8	2.3	15.0	1.5	122.3	2.2	15.4	1.5	882.7	54.2	128.7	8.2
2005	avg	39.3	0.9	27.1	2.0	40.7	1.6	77.0	5.0	61.9	3.6	15.2	0.0	56.1	2.4	46.4	2.4
	std	27.3	1.5	15.3	2.0	42.4	2.1	66.3	6.9	48.0	4.4	22.5	0.0	39.9	4.0	20.2	2.5
2004	avg	24.7	0.4	40.1	1.6	42.6	2.7	72.3	2.4	67.7	4.6	9.0	0.0	48.0	1.3	43.5	1.9
	std	21.4	1.1	25.5	2.1	27.1	3.0	52.8	2.9	51.6	5.2	12.0	0.0	35.2	1.6	19.4	1.0
2003	avg	415.0	19.3	37.6	0.6	35.6	2.8	366.6	45.6	109.7	12.3	8.6	3.6	8.6	3.6	140.9	10.3
	std	889.0	24.3	38.1	1.3	37.4	4.8	744.0	71.8	70.9	19.8	6.8	5.7	6.8	5.7	133.64	12.46
2002	avg	32.7	0.3	28.0	1.6	15.6	2.4	16.5	1.1	300.0	4.4	4.4	0.0	41.3	1.4	70.9	1.7
	std	48.0	1.0	35.0	3.0	11.9	4.5	12.0	1.6	748.0	5.7	3.4	0.0	27.7	2.0	316.0	3.4
2001	avg	14.9	0.0	240.0	1.3	49.5	3.7	42.1	5.1	139.0	1.3	11.7	0.0	81.2	1.4	82.6	1.8
	std	14.4	0.0	724.0	1.8	43.3	5.7	24.7	5.1	204.0	2.2	9.0	0.0	55.1	1.9	260.3	2.2

2.3.3 Bacterial Sampling of Surface Water for Total Coliforms(TC) and E. Coli (EC) in the Woods Bay Area, 2008

Date	Station														Average for All Stations	
	1		2		3		5		6		7		8		TC	EC
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC		
21-Jun	<i>most EC counts were higher than TC counts - results not used</i>															
15-Jul	62	5	13	5	59	11	33	3	25	22	43	19	69	11	43.5	9.5
31-Jul	69	16	136	13	289	28	114	13	49	11	102	3	94	3	125.2	14.0
19-Aug	213	76	219	11	213	30	151	28	33	3	30	5	39	3	144.7	25.2
04-Sep	200	19	52	0	123	25	151	19	62	5	233	5	94	5	113.7	12.2
Average	136.0	29.0	105.0	7.3	171.0	23.5	112.3	15.8	42.3	10.3	102.0	8.0	74.0	5.5	106.8	15.2
Std. Dev.	81.6	31.9	91.7	5.9	100.9	8.6	55.6	10.5	16.5	8.5	92.8	7.4	26.1	3.8	44.1	6.9
Previous Years Averages																
2007	avg	53.8	9.6	108.3	18.3	77.0	30.4	48.5	12.8	171.0	5.5	43.3	9.3		85.2	16.3
	std	31.2	7.8	107.1	20.1	97.6	25.6	71.7	20.3	278.1	3.8	30.8	6.2		59.8	12.1
2006	avg	91.0	28.3	85.3	5.8	43.8	14.3	43.5	5.8	35.0	2.0	19.3	7.3		53.0	10.5
	std	69.2	31.4	20.6	1.5	11.6	5.3	27.2	3.8	34.0	2.4	10.2	2.9		25.2	6.8
2005	avg	77.8	15.3	68.6	5.4	62.8	8.5	104.2	22.2	35.8	3.5	88.6	12.4		73.6	12.6
	std	49.7	14.3	58.2	6.2	32.3	5.3	58.5	38.2	35.9	5.2	95.3	9.2		26.0	10.1
2004	avg	155.8	9.4	95.0	6.2	46.4	11.6	73.6	9.6	189.0	13.4	66.6	10.8		66.6	10.8
	std	199.3	3.5	54.6	3.9	27.8	8.2	49.6	5.5	209.9	10.7	49.7	7.5		49.7	7.5
2003	avg	198.4	28.6	174.8	13.4	182.6	17.0	237.4	13.8	170.4	12.0	132.2	7.0		182.6	15.3
	std	176.7	37.7	65.6	16.3	57.3	13.0	170.0	13.3	86.7	13.9	98.1	8.1		77.1	15.9
2002	avg	75.0	4.8	108.0	6.0	46.6	8.0	107.2	11.4	73.4	1.2	66.6	8.2		79.3	6.6
	std	48.0	4.9	37.0	4.7	26.1	8.0	39.7	9.9	33.1	1.6	35.4	7.4		40.5	6.9
2001	avg	158.0	5.8	113.0	5.6	21.4	3.4	70.5	6.0	39.1	2.1	60.4	3.6		77.1	4.4
	std	171.0	7.2	91.2	2.7	17.0	5.4	21.3	6.1	16.9	2.8	33.1	4.3		62.0	1.8

2.3.4 Bacterial Sampling of Surface Water for Total Coliforms (TC) and E.Coli (EC) in the South Channel Area, 2008

Date	Station																				Average for All Stations		
	1		3		4		5		6		7		8		12		13		14		TC	EC	
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	
01-Jun	156	16	46	3	11	0	13	0	8	0	16	0	13	0	33	5	323	25	55	22	67.4	7.1	
15-Jun	161	19	22	0	55	0	30	3	30	3	25	3	489	3	90	13	350	25	62	3	131.4	7.2	
06-Jul	146	16	55	3	39	3	5	0	13	0	22	0	28	0	46	3	62	8	362	5	77.8	3.8	
10-Aug	434	72	79	13	350	22	119	33	94	11	94	3	72	5	52	3	289	0	22	3	160.5	16.5	
Average	224.3	30.8	50.5	4.8	113.8	6.3	41.8	9.0	36.3	3.5	39.3	1.5	150.5	2.0	55.3	6.0	256.0	14.5	125.3	8.3	109.3	8.7	
Std. Dev.	140.0	27.5	23.6	5.7	158.5	10.6	52.5	16.1	39.6	5.2	36.7	1.7	227.1	2.4	24.5	4.8	131.7	12.6	158.8	9.2	44.2	5.5	
Previous Years Averages																							
2007	avg	1495.9	73.8	74.0	2.4	84.1	3.6	38.7	2.4	34.7	2.3	62.9	3.1	107.6	4.0	87.4	10.6	178.2	19.0	64.3	2.6	222.8	12.4
	std	1108.8	60.5	45.1	2.8	81.5	4.1	23.3	2.8	25.3	4.4	47.3	4.0	148.6	4.8	51.1	8.7	132.0	19.1	38.2	2.5	124.7	5.7
2006	avg	477.0	56.9	250.8	4.4	35.9	3.3	87.3	0.4	48.3	2.8	40.4	3.8	43.6	1.0	57.4	6.1	264.1	12.9	452.1	29.5	175.7	12.1
	std	397.7	36.1	334.8	4.8	30.2	3.0	171.6	1.1	42.9	2.8	29.5	6.5	47.0	1.9	57.5	7.9	375.8	10.5	807.2	60.3	145.0	9.2
2005	avg	819.5	219.7	125.7	1.2	203.1	0.0	632.7	4.2	72.5	0.3	320.2	4.3	271.4	3.2	69.1	2.7	61.7	7.8	70.0	1.0	278.8	25.5
	std	1110.4	305.1	263.6	1.5	423.5	0.0	1034.3	10.2	118.8	0.9	745.1	10.3	757.8	6.2	92.6	4.1	34.0	8.9	39.3	1.7	319.6	31.3
2004	avg	529.1	43.7	1114.3	8.2	1202.6	2.8	1115.9	2.7	833.3	4.2	901.9	1.1	564.3	3.3	1408.6	10.7	1058.2	27.1			969.8	11.5
	std	777.4	23.8	1243.0	8.7	1186.8	4.1	1062.9	4.3	1193.3	7.7	1146.7	2.2	763.6	5.1	1205.3	13.1	1059.2	52.5			609.6	6.9
2003	avg	677.9	38.0	48.3	5.0	26.1	0.9	94.6	14.0	353.3	0.0	374.1	1.7	23.4	0.4	450.9	6.0	77.1	8.6			231.2	8.0
	std	834.1	26.3	65.6	11.2	17.3	1.5	122.2	37.0	913.1	0.0	904.4	2.0	24.6	1.1	883.3	4.5	39.1	9.5			213.4	5.8
2002	avg	1789.0	91.0	794.0	3.4	489.0	0.9	136.0	0.9	726.0	1.6	748.0	0.9	631.4	2.4	462.0	14.6	1210.0	17.7			780.0	14.0
	std	1085.0	59.0	784.0	2.9	862.0	1.5	89.0	1.5	1160.0	3.0	942.0	1.5	923.3	1.8	870.0	14.2	972.0	21.1			961.0	32.0
2001	avg	2148.0	113.0	860.0	11.9	1021.0	5.3	874.0	8.9	866.0	9.9	1139.0	3.0	375.0	3.0	998.0	11.0	1330.0	27.4			1067.9	21.5
	std	731.0	87.1	887.0	16.2	1009.0	10.1	1066.0	9.2	1081.0	9.0	1209.0	1.7			999.0	11.1	1039.0	34.5			142.1	27.9

2.3.5 Bacterial Sampling of Surface Water for Total Coliforms (TC) and E. Coli (EC) in the Sturgeon Bay Area, 2008

Date	Station																				
	1		2		3		4		5		6		7		8		9		10		
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	
14-Jun*	76	16	42	11	90	39	30	3	11	0	55	19	65	16	72	13	79	25	132	16	
22-Jul	114	0	39	0	161	0	418	0	36	8	94	0	22	8	102	3	102	11	13	0	
13-Aug	46	11	49	3	43	3	25	3	13	0	123	36	136	5	52	0	94	5	59	8	
26-Sep	76	3	46	0	46	0	55	0	11	0	8	0	62	3	62	5	55	11	127	3	
Average	78.0	7.5	44.0	3.5	85.0	10.5	132.0	1.5	17.8	2.0	70.0	13.8	71.3	8.0	72.0	5.3	82.5	13.0	82.8	6.8	
Std. Dev.	27.9	7.3	4.4	5.2	55.0	19.1	191.1	1.7	12.2	4.0	49.8	17.3	47.4	5.7	21.6	5.6	20.7	8.5	57.2	7.0	
Previous Years Averages																					
2007	avg	507.5	35.0	60.5	8.8	193.8	8.3	137.0	9.0	69.3	2.0	100.0	6.8	137.0	24.8	152.8	15.8	93.8	18.8	125.0	8.5
	std	793.5	28.7	55.4	8.2	217.9	11.8	110.2	18.0	44.5	4.0	5.2	3.5	66.1	32.2	177.0	15.3	39.0	27.2	54.1	7.3
2006	avg	218.2	17.5	500.7	132.5	85.5	15.0	88.8	14.2	94.8	63.0	156.2	19.8	225.2	22.8	127.8	43.8	218.8	47.8	783.2	98.0
	std	267.0	21.6	947.8	277.1	55.8	21.5	60.8	22.3	175.1	140.9	164.0	27.4	242.7	16.3	111.2	74.2	128.7	71.9	1019.4	106.6
2005	avg	271.3	24.3	383.7	11.3	46.6	7.6	29.7	7.7	41.0	7.3	124.7	26.1	105.6	18.9	46.1	11.3	117.7	16.3	277.4	17.6
	std	268.1	27.2	899.9	8.9	56.5	8.8	24.0	12.1	61.3	7.6	93.2	30.5	93.1	11.4	22.3	9.5	133.4	23.1	486.3	20.0
2004	avg	159.4	5.0	267.4	2.0	395.0	2.3	311.1	1.6	186.0	0.4	88.6	3.6	247.9	11.3	174.7	2.6	419.7	4.3	186.6	11.3
	std	135.6	3.6	487.5	2.0	619.3	4.9	385.7	2.1	146.8	1.1	48.0	3.7	330.5	12.6	235.7	3.4	884.3	1.9	132.8	10.0
2003	avg	1107.5	4.6	466.5	2.6	744.3	0.4	991.8	1.4	963.4	0.4	570.6	6.8	332.8	2.6	688.0	1.6	664.3	11.5	914.6	6.8
	std	1133.1	6.6	807.9	3.7	1046.0	1.1	1190.7	2.0	1210.4	1.1	799.9	11.5	419.7	5.0	1077.9	3.1	1086.9	26.4	1036.3	11.5
2002	avg	1039.0	9.7	871.0	5.4	548.0	1.8	619.0	2.4	941.0	1.8	488.0	4.1	226.0	6.0	212.0	11.6	186.0	11.5	204.0	6.0
	std	1066.0	10.4	1031.0	8.0	826.0	2.9	669.0	2.1	1229.0	3.9	569.0	6.1	332.0	6.0	193.0	16.8	242.0	14.8	220.0	7.1

Data continued on the following page

Bacterial Sampling of Surface Water for Total Coliforms (TC) and E. Coli (EC) in Sturgeon Bay Continued

Date	Station								Average for All Stations	
	11		12		13		14		TC	EC
	TC	EC	TC	EC	TC	EC	TC	EC		
14-Jun*	22	5	55	8	19	5	171	16	65.6	13.7
22-Jul	226	0	19	0	49	0	127	5	108.7	2.5
13-Aug	65	3	110	8	49	3	52	0	65.4	6.3
26-Sep	22	0	13	0	46	5	52	0	48.6	2.1

Average	83.8	2.0	49.3	4.0	40.8	3.3	100.5	5.3	72.1	6.2
Std. Dev.	97.0	2.4	44.5	4.6	14.6	2.4	58.8	7.5	25.7	5.4

Previous Years Averages

2007	avg	30.3	4.0	65.0	9.5	54.3	1.3	34.3	2.8	125.7	11.1
	std	5.5	3.4	29.7	10.0	39.2	2.5	10.4	2.1	81.7	10.5
2006	avg	346.2	8.2	139.8	10.5	72.0	3.8	507.3	26.7	254.6	37.4
	std	662.3	10.1	108.7	6.8	31.7	3.2	940.0	23.2	208.5	52.8
2005	avg	48.0	9.0	56.0	18.4	74.6	12.9	34.7	7.3	118.6	14.2
	std	28.9	9.4	32.4	16.4	93.0	12.4	11.7	7.6	92.8	11.3
2004	avg	183.7	3.9	109.3	1.6	183.4	2.0	148.0	4.4	218.6	4.0
	std	248.2	4.4	111.3	2.1	299.9	2.0	161.7	4.4	250.5	1.6
2003	avg	508.4	4.3	742.4	5.1	519.8	3.0	1084.1	1.1	729.3	3.8
	std	888.3	8.1	1149.8	13.6	897.3	6.7	1254.5	3.0	836.4	5.5
2002	avg	355.0	4.8	209.0	6.8	145.0	3.0	328.0	8.2	456.0	6.0
	std	837.0	6.4	343.0	10.0	201.0	5.0	469.0	15.8	708.0	9.4

2.3.6 Bacterial Sampling of Surface Water for Total Coliforms (TC) and E. Coli (EC) in the Skerryvore Area, 2008

Date	Stations												Average for All Stations	
	1		2		3		4		5		6		TC	EC
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC
14-Jun	8	0	28	3	11	0	19	0	19	0	1370	22	242.5	4.2
03-Jul	43	5	318	59	151	33	39	19	25	3	200	5	129.3	20.7
17-Jul	30	0	36	0	59	11	13	3	0	0	194	3	55.3	2.8
07-Aug	110	5	102	8	489	94	110	25	16	3	375	11	200.3	24.3
28-Aug	362	5	13	0	25	3	28	5	8	0	219	16	109.2	4.8
11-Sep	794	8	46	0	69	13	123	36	19	0	146	8	199.5	10.8

Average	224.5	3.8	90.5	11.7	134.0	25.7	55.3	14.7	14.5	1.0	417.3	10.8	156.0	11.3
Std. Dev.	307.9	3.2	115.5	23.4	180.7	35.4	48.4	14.3	9.0	1.5	473.2	7.1	69.8	9.2

Previous Years Averages

2007	avg	395.5	6.0	49.0	2.3	93.3	13.3	78.5	18.5	22.2	1.0	994.5	125.3	272.2	27.8
	std	430.8	6.9	25.4	3.1	77.7	12.7	85.7	23.7	28.4	1.5	1109.7	119.4	153.7	22.6
2006	avg	140.2	30.3	53.0	6.3	79.8	16.2	72.2	20.2	10.0	2.3	592.8	33.3	158.0	18.1
	std	112.9	52.5	66.6	7.9	64.3	23.4	106.8	32.9	7.1	2.0	899.9	29.1	140.1	20.2
2005	avg	1007.0	15.4	1051.6	60.0	1007.8	519.8	1010.6	51.0	1110.6	52.2	1501.2	61.0	1114.8	126.6
	std	1294.2	11.3	1253.7	68.6	1292.9	1065.5	1290.3	61.4	1215.3	38.1	985.2	80.1	1196.5	189.8
2004	avg	158.8	6.7	174.3	8.8	484.3	22.2	68.7	6.7	225.3	1.0	1296.0	35.2	401.3	13.4
	std	70.4	6.6	224.4	12.4	951.9	34.1	71.7	6.6	465.4	1.5	1029.3	46.2	258.9	9.1
2003	avg	359.7	5.0	73.4	8.6	179.5	34.2	72.9	19.0	13.3	1.1	326.1	10.6	147.0	12.1
	std	260.7	1.8	42.7	9.7	183.0	35.6	41.3	11.8	4.7	1.2	138.1	3.5	57.2	7.3
2002	avg	1905.0	10.8	65.2	7.3	81.2	10.8	332.0	10.8	878.0	3.2	1392.0	40.3	775.0	13.9
	std	961.0	9.1	65.0	9.6	66.8	8.8	465.0	7.3	1003.0	4.4	1156.0	37.3	993.0	19.9
2001	avg	52.2	4.4	78.4	8.2	55.4	1.6	42.4	7.6	523.0	0.6	2070.0	40.6	470.2	10.5

2.3.7 Bacterial Sampling of Surface Water for Total Coliforms (TC) and E. Coli (EC) in the Pointe au Baril Islands Area, 2008

Date	Station											
	1		2		3		4		5		6	
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC
30-Jun	55	19	13	8	0	0	22	5	16	3	11	3
14-Jul	13	3	49	11	3	0	8	0	22	3	62	11
28-Jul	5	0	11	3	0	0	3	0	36	0	11	5
11-Aug	30	3	16	8	8	3	30	0	13	3	19	3
25-Aug	8	3	25	8	3	0	25	3	11	0	65	11

Average	22.2	5.6	22.8	7.6	2.8	0.6	17.6	1.6	19.6	1.8	33.6	6.6
Std. Dev.	20.7	7.6	15.6	2.9	3.3	1.3	11.5	2.3	10.1	1.6	27.5	4.1

Previous Years Averages

2007	avg	16.4	5.4	39.0	3.4	23.4	6.2	21.4	5.4	37.6	6.0	53.0	17.0
	std	9.2	9.5	45.7	0.9	10.8	3.9	8.7	3.3	32.0	3.5	24.8	22.3
2006	avg	6.4	3.0	23.8	8.2	19.2	6.4	59.8	5.6	19.5	2.0	37.0	4.0
	std	4.2	0.0	11.4	8.0	12.3	4.2	33.7	1.3	9.4	2.4	20.1	1.2
2005	avg	176.4	17.4	54.8	19.6	494.8	2.2	45.5	9.0	34.5	2.0	376.6	8.2
	std	177.7	32.8	46.1	18.0	1079.1	2.2	61.3	11.2	40.0	2.4	739.0	12.3
2004	avg	564.1	9.6	441.0	6.4	526.7	7.4	417.1	24.3	468.0	14.0	455.4	96.7
	std	893.8	10.9	600.3	3.9	915.1	7.4	548.5	31.6	865.5	18.8	868.7	216.3
2003	avg	64.3	7.3	93.7	11.0	57.0	2.7	60.7	13.7	60.3	3.3	856.0	815.3
	std	29.2	12.7	46.1	12.2	23.1	2.5	30.0	14.4	33.4	2.9	1357.9	1393.1
2002	avg	56.3	3.0	135.0	2.7	47.7	3.7	52.0	1.7	58.3	3.3	60.0	3.7
	std	41.0	0.0	196.0	4.6	22.3	1.2	39.3	2.9	56.1	2.9	12.3	4.0
2001	avg	178.0	0.5	40.3	5.8	21.3	1.0	55.7	9.7	28.5	2.3	136.0	10.5
	std	335.6	1.2	28.1	9.5	17.5	1.5	29.8	7.0	13.8	2.0	237.0	20.4

Data continued on the following page.

Bacterial Sampling of Surface Water for Total Coliforms (TC) and E. Coli (EC) in the Pointe au Baril Island Area of Georgian Bay Continued

Date	Station										Average for All Stations	
	7		8		9		10		11		TC	EC
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC		
30-Jun	8	0	22	3	28	11	8	5	8	0	17.4	5.2
14-Jul	5	0	33	16	11	0	13	0	30	11	22.6	5.0
28-Jul	59	3	8	0	11	0	3	0	19	0	15.1	1.0
11-Aug	16	5	16	3	79	16	16	3	13	5	23.3	4.7
25-Aug	33	5	11	3	161	36	5	0	13	0	32.7	6.3

Average	24.2	2.6	18.0	5.0	58.0	12.6	9.0	1.6	16.6	3.2	22.2	4.4
Std. Dev.	22.3	2.5	9.9	6.3	64.0	14.8	5.4	2.3	8.4	4.9	6.8	2.0

Previous Years Averages

2007	avg	21.8	2.2	5.0	0.0	20.6	1.8	28.0	1.0	62.2	1.8	29.9	4.6
	std	12.6	3.5	8.0	0.0	18.3	1.6	11.0	2.2	78.4	1.6	12.2	2.3
2006	avg			0.8	0.0	41.8	3.4					25.8	4.2
	std			1.5	0.0	14.9	2.9					9.4	1.1
2005	avg			7.8	1.2	508.4	7.0					211.0	8.3
	std			10.0	1.6	1071.0	7.0					374.5	7.5
2004	avg			61.2	0.6	976.9	23.4					493.4	23.5
	std			54.4	1.3	1043.9	27.1					530.4	32.0
2003	avg					643.0	46.7					262.1	128.6
	std					913.0	74.0					333.3	215.6
2002	avg					187.0	41.7					85.2	8.5
	std					56.7	5.1					86.7	14.2
2001	avg					1624.0	812.0					196.1	14.8
	std					1239.0	1249.0					445.3	7.4

2.3.8 Bacterial Sampling of Surface Water for Total Coliforms (TC) and E. Coli (EC) in Blackstone Lake, 2008

Date	Station										Average for All Stations	
	1		2		3		4		5		TC	EC
16-Jul	11	0	25	3	5	0	43	11	19	0	20.6	2.8
29-Jul	119	0	59	0	114	0	559	8	1370	8	444.2	3.2
18-Sep	114	0	119	13	98	0	46	0	79	5	91.2	3.6
10-Oct	16	0	16	5	8	0	28	19	33	3	20.2	5.4

Average	65.0	0.0	54.8	5.3	56.3	0.0	169.0	9.5	375.3	4.0	144.1	3.8
Std. Dev.	59.5	0.0	46.7	5.6	57.8	0.0	260.1	7.9	663.7	3.4	202.9	1.1

Previous Years Averages

2007	avg	92.7	7.3	99.5	15.5	144.3	6.0	258.3	15.3	161.3	22.0	163.5	15.0
	std	115.5	7.5	70.0	12.6	84.2	7.7	226.8	20.6	176.0	38.0	137.0	19.1
2006	avg	24.5	0.0	33.5	0.0	86.5	6.5	94.5	12.0	53.0	1.5	58.4	4.0
	std	7.8	0.0	7.8	0.0	4.9	9.2	46.0	9.9	32.5	2.1	0.6	0.6
2005	avg	524.0	0.0	1034.8	2.0	852.5	1.5	725.8	0.8	324.5	0.8	692.3	1.0
	std	648.3	0.0	1220.6	2.4	1132.9	1.7	846.3	1.5	360.6	1.5	799.8	0.7
2004	avg	19.0	0.0	34.0	4.0	17.5	1.5	26.0	4.0	22.0	6.5	23.7	3.2
	std	19.8	0.0	12.7	1.4	2.1	2.1	9.9	5.7	15.6	9.2	1.0	2.3
2003	avg	23.7	2.7	43.0	0.0	18.3	0.0	52.0	2.7	21.7	0.0	31.7	1.1
	std	25.4	2.5	51.4	0.0	11.9	0.0	38.3	2.5	25.0	0.0	29.9	0.9
2002	avg	21.7	2.7	43.3	1.0	52.7	3.3	59.0	6.0	38.0	4.7	42.9	3.5
	std	23.9	4.6	26.8	1.7	51.6	2.9	41.4	6.6	35.8	2.9	34.2	3.9
2001	avg	18.3	2.3	13.3	3.3	6.8	1.5	42.3	5.3			20.2	3.1
	std	18.6	1.5	3.8	3.9	3.5	1.7	28.2	2.1			12.1	1.1

2.3.9 Bacterial Sampling of Surface Water for Total Coliforms (TC) and E. Coli (EC) in Crane Lake, 2008

Date	Station												Average for All Stations	
	1		2		3		4		5		6		TC	EC
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC		
15-Jun	40	3	52	11	49	8	30	3	39	5	22	0	38.7	5.0
29-Jun	28	8	39	0	46	19	36	5	52	8	19	0	36.7	6.7
13-Jul	39	8	22	0	13	0	55	28	36	3	30	11	32.5	8.3
04-Aug	36	0	87	30	36	13	69	19	65	25	90	25	63.8	18.7
18-Aug	110	11	106	0	59	11	102	8	141	72	132	43	108.3	24.2
01-Sep	46	3	79	19	87	16	16	0	49	16	30	5	51.2	9.8
Average	49.8	5.5	64.2	10.0	48.3	11.2	51.3	10.5	63.7	21.5	53.8	14.0	55.2	12.1
Std. Dev.	30.1	4.1	31.8	12.5	24.6	6.7	31.1	10.8	39.3	26.0	46.4	17.0	28.4	7.6
Previous Years Averages														
2007	134.8	16.3	101.3	19.0	69.6	19.3	111.7	25.2	64.4	25.3	60.2	13.0	90.3	19.7
2006	62.0	8.0	78.0	18.0	187.0	16.0	199.0	16.0	240.0	13.0	407.0	9.0	195.5	13.3
2005	794.7	8.2	913.0	10.3	501.5	9.2	555.3	8.5	584.8	8.0	844.0	6.5	698.9	8.5
2004	1104.7	4.3	1175.1	12.6	1081.3	6.9	1142.1	7.6	1077.3	7.3	1393.3	8.3	1162.3	7.8
2003	631.0	5.7	726.4	9.3	499.3	7.1	505.9	5.1	511.5	5.9	695.8	5.5	595.0	6.4

2.3.10 Bacterial Sampling of Surface Water for Total Coliforms (TC) and E. Coli (EC) in Healey Lake, 2008

Date	Station														Average for All Stations	
	1		2		3		4		5		6		7		TC	EC
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC		
21-Jun	11	5	9	3	8	2	4	2	12	4	63	2	15	0	17.4	2.6
19-Jul	10	5	9	0	6	3	19	0	11	3	31	0	8	5	13.4	2.3
30-Aug	12	2	29	4	37	2	16	3	26	2	45	1	21	5	26.6	2.7

Average	11.0	4.0	15.7	2.3	17.0	2.3	13.0	1.7	16.3	3.0	46.3	1.0	14.7	3.3	19.1	2.5
Std. Dev.	1.0	1.7	11.5	2.1	17.3	0.6	7.9	1.5	8.4	1.0	16.0	1.0	6.5	2.9	6.7	0.2

2007

avg	101.5	6.3	361.8	8.0	322.8	8.5	323.7	3.7	639.5	2.8	109.3	6.5	660.3	2.0	349.5	5.5
std	99.5	10.6	389.1	5.8	225.1	4.1	169.0	4.0	1190.2	3.8	44.5	4.4	1176.8	4.0	400.7	3.2

2006

avg	77.3	6.5	241.3	3.0	130.0	3.8	44.0	1.3	667.0	15.0	61.3	14.8	664.0	5.5	269.3	7.1
std	52.4	4.4	370.2	0.0	214.2	2.5	53.6	2.5	1172.2	8.9	41.5	15.3	1174.9	4.9	434.7	3.4

2005

avg	31.8	3.6	25.0	4.0	13.2	3.2	11.0	7.0	4.0	1.5	8.3	4.0	51.4	6.8	31.3	4.5
std	42.8	3.5	23.5	1.2	12.5	2.0	17.1	12.1	3.4	1.7	7.5	5.2	74.4	1.6	42.8	3.3

2004

avg	402.7	8.6	89.7	3.1	31.4	2.0	737.3	3.9	47.0	1.1	38.7	2.6	85.3	4.0	204.6	3.6
std	896.1	9.7	115.3	4.6	38.3	3.0	1156.9	4.9	55.1	2.0	46.5	2.5	129.9	4.1	298.6	3.3

2003

avg	79.3	20.0	74.7	2.0	36.3	3.7	62.3	5.3	55.7	2.0	62.0	1.0	79.3	4.7	64.2	5.5
std	30.0	22.9	41.2	1.7	5.8	4.0	43.4	6.8	41.9	1.7	30.6	1.7	59.9	5.7	19.1	5.3

2002

avg	158.0	6.3	94.3	4.3	230.0	5.0	39.3	6.3	17.0	2.0	55.7	1.0	42.7	1.0	91.1	3.7
std	66.4	2.9	11.5	4.0	38.7	0.0	13.7	4.2	6.2	1.7	31.8	1.7	14.8	1.7	19.0	1.5

2001

avg	56.5	3.5	41.5	0.0	113.0	1.3	40.8	0.8	57.8	0.8	33.8	0.8	25.3	0.0	46.1	0.9
std	15.2	3.3	15.9	0.0	107.0	2.5	26.0	1.5	31.7	1.5	33.7	1.5	5.6	0.0	33.5	1.2

2.3.11 Bacterial Sampling of Surface Water for Total Coliforms (TC) and E.Coli (EC) in Kapikog Lake, 2008

Date:	Station																Average all Stations	
	1		2		3		4		5		6		7		8		TC	EC
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC
7-Jul			8	5	3	3	33	0	0	0					3	0	9.4	1.6
21-Jul	30	0	90	46	62	3	11	3			59	11	22	16	11	3	40.7	11.7
5-Aug	2424	5	2424	3	1370	5	62	5	22	0	2424	3	2424	11	213	0	1420.4	4.0
17-Aug	2424	3	11	0	94	0	16	3	2424	5	1174	11	1696	8	2424	5	1282.9	4.4
3-Sep	2424	3	2424	3	2424	3	177	0	49	0	2424	0	794	3	2424	0	1642.5	1.5
Avg	1825.5	2.8	991.4	11.4	790.6	2.8	59.8	2.2	623.8	1.3	1520.3	6.3	1234.0	9.5	1015.0	1.6	879.2	5.4
std	1197.0	2.1	1308.2	19.4	1077.0	1.8	68.5	2.2	1200.3	2.5	1138.5	5.6	1047.6	5.4	1289.0	2.3	790.3	4.4
2007																		
Avg	214.2	19.0	69.8	9.5	597.6	11.6	167.0	1.0	548.4	3.2	93.8	3.8	708.5	8.8	506.0	13.8	345.2	10.2
std	335.5	29.7	47.6	10.0	1025.6	10.5	350.6	2.2	1051.0	3.4	66.7	2.9	1152.6	6.7	1072.5	14.8	438.0	5.0
2006																		
Avg	39.6	5.8	31.4	9.2	76.0	6.2	38.8	0.0	44.8	1.2	98.4	8.2	66.2	9.0	69.0	2.2	58.0	5.2
std	36.4	2.2	30.6	6.8	54.9	4.8	32.2	0.0	37.6	1.6	89.1	7.4	65.3	5.8	83.4	2.2	44.4	0.4
2005																		
Avg	354.3	8.5	53.3	4.5	629.0	2.0	56.3	7.5	58.5	4.0	32.0	3.5	20.5	2.0	55.8	6.0	157.4	4.8
std	320.7	11.0	48.4	3.3	1196.9	2.4	36.0	5.2	47.3	3.4	22.2	5.2	21.0	2.4	73.5	7.7	209.6	4.4
2004																		
Avg	67.5	1.5	38.0	4.0	60.5	1.5	37.0	4.8	20.0	0.8	44.0	6.3	96.3	2.0	297.8	1.5	82.6	2.8
std	29.0	1.7	41.6	3.4	54.1	1.7	28.9	7.6	26.4	1.5	50.8	3.9	83.6	2.4	382.0	1.7	36.5	1.6
2003																		
Avg	38.5	3.2	59.7	4.5	12.8	1.3	43.3	4.0	23.5	1.5	15.8	1.3	55.7	1.5	16.7	2.3	35.6	2.5
std	29.1	1.8	44.8	5.1	13.2	2.2	32.4	6.2	32.7	1.6	6.6	2.2	29.8	1.6	19.0	2.0	9.1	1.6
2002																		
Avg	449	737	764	7	55	3	471	13	410	5	616	9	727	2	446	4	492	6
std	878.0	5.5	1136.0	7.0	54.0	3.6	865.0	16.3	892.0	6.0	1008.0	9.7	1160.0	3.3	878.0	4.4	883.0	8.2

2.3.12 Bacterial Sampling of Surface Water for Total Coliforms (TC) and E. Coli (EC) in Naiscoot Lake, 2008

Date	Station												Average for All Stations		
	0		1		2		3		4		5		TC	EC	
	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC	TC	EC			
16-Jul	19	11	36	11	39	8	98	3	79	0			54.2		
27-Jul	39	8	69	11	65	13	36	0	65	3			54.8	7.0	
17-Aug	33	8	33	0	55	8	59	3	171	11	62	0	68.8	5.0	
30-Aug	102	3	33	0	43	3	141	3	469	5	59	0	141.2	2.3	
Average	48.3	7.5	42.8	5.5	50.5	8.0	83.5	2.3	196.0	4.8	60.5	0.0	79.8	4.8	
Std. Dev.	36.8	3.3	17.6	6.4	11.8	4.1	46.1	1.5	188.0	4.6	2.1	0.0	41.5	2.3	
Previous Years Averages															
2007	avg	32.7	2.7	69.8	2.7	46.8	10.7	54.3	8.0	100.5	57.0	22.0	0.0	62.7	16.0
	std	12.2	4.6	35.8	2.5	25.5	2.5	20.7	9.8	57.5	98.7			26.3	23.3

Figure 2.4.11 Area Comparison of Bacteria Data

Sans Souci			Pointe au Baril Island Area			South Channel Area		
	Average for All Stations			Average for All Stations			Average for All Stations	
Date	TC	EC	Date	TC	EC	Date	TC	EC
*08-Jun	66.7	29.0	30-Jun	17.4	5.2	01-Jun	67.4	7.1
**22-Jun	39.0	2.4	14-Jul	22.6	5.2	15-Jun	131.4	7.2
06-Jul	14.9	0.0	28-Jul	15.1	1.0	06-Jul	77.8	3.8
19-Jul	43.7	3.4	11-Aug	23.3	4.7	10-Aug	160.5	16.5
03-Aug	120.1	1.1	25-Aug	32.7	6.3			
**17-Aug	372.1	16.0						
31-Aug	65.4	0.4						
*14-Sep	64.3	1.7						
Average	98.3	6.8		22.2	4.5		109.3	8.7
Std. Dev.	114.7	10.4		6.8	2.0		44.2	5.5

Blackstone Lake			Crane Lake			Healey Lake			Kapikog Lake			Naiscoot Lake		
	Average for All Stations			Average for All Stations			Average for All Stations			Average for All Stations			Average for All Stations	
Date	TC	EC	Date	TC	EC	Date	TC	EC	Date	TC	EC	Date	TC	EC
16-Jul	20.6	2.8	15-Jun	38.7	5.0	21-Jun	17.4	2.6	7-Jul	9.4	1.6	16-Jul	54.2	
29-Jul	444.2	3.2	29-Jun	36.7	6.7	19-Jul	13.4	2.3	21-Jul	40.7	11.7	27-Jul	54.8	7.0
18-Sep	91.2	3.6	13-Jul	32.5	8.3	30-Aug	26.6	2.7	5-Aug	1420.4	4.0	17-Aug	68.8	5.0
10-Oct	20.2	5.4	04-Aug	63.8	18.7				17-Aug	1282.9	4.4	30-Aug	141.2	2.3
			18-Aug	108.0	24.2				3-Sep	1642.5	1.5			
			01-Sep	51.2	9.8									
Average	144.1	3.8		55.2	12.1		19.1	2.5		879.2	5.4		79.8	4.8
Std. Dev.	202.9	1.1		28.3	7.6		6.7	0.2		790.3	4.4		41.5	2.4

Skerryvore Area			Sturgeon Bay			Woods Bay		
	Average for All Stations			Average for All Stations			Average for All Stations	
Date	TC	EC	Date	TC	EC	Date	TC	EC
14-Jun	242.5	4.2	14-Jun	65.6	13.7	21-Jun		
03-Jul	129.3	20.7	22-Jul	108.7	2.5	15-Jul	43.5	9.5
17-Jul	55.3	2.8	13-Aug	65.4	6.3	31-Jul	125.2	14.0
07-Aug	200.3	24.3	26-Sep	48.6	2.1	19-Aug	144.7	25.2
28-Aug	109.2	4.8				04-Sep	113.7	12.2
11-Sep	199.5	10.8						
Average	156.0	11.3		72.1	6.2		106.8	15.2
Std. Dev.	69.8	9.2		25.7	5.4		44.1	6.9