

WATER QUALITY MONITORING PROGRAM
TOWNSHIP OF GEORGIAN BAY

Summary Report - 2024 Bacterial Results

Prepared for:

Township of Georgian Bay

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October 2024

ACKNOWLEDGEMENTS

For the past 24 years the Township of Georgian Bay has supported this community-based, volunteer water quality monitoring program. Thank you to Caely Nicholson for her assistance in coordinating the program and liaising with the volunteers throughout the 2024 program.

The volunteers whose dedication and efforts are critical to the success of this program deserve acknowledgement and thanks. Over the course of the 24-year program, thousands of bacterial and chemical analyses have been carried out in over 150 sampling locations throughout the Township.

A sincere thank you to the following volunteers involved in the 2024 program:

- Gibson Lake: Richard Renshaw
- Gloucester Pool: Cindy Gilmour, Cat Graydon, Michele Sexsmith, Mitra Doherty, Pam Clemens and Cheryl Elliot-Fraser
- Go Home Lake: Simon Edwards
- Myers Lake: Pam and Cliff Jordan
- Severn River: Debbie Bang and Sarah Papadopoulos
- Six Mile Lake: Kristian Graziano, Doug Osborne and Stuart Saville
- Stewart Lake: Roch Beaulieu
- Oak Bay: David Flower
- Honey Harbour: Al Hazelton

INTRODUCTION

Within The Township of Georgian Bay are the coastal shorelines of southeastern Georgian Bay, along with the Severn River and its connected lakes including Gloucester Pool. The central and eastern portions of the township contain Six Mile and Gibson Lakes while the northern region contains Go Home, Gala, Myers and Stewart Lakes.

Water quality monitoring, focusing on bacterial and water chemistry indicators has been carried out in volunteer-based programs in the coastal regions of southeastern Georgian Bay and these eight water bodies within the township.

In 2023 Dr. Patricia Chow-Fraser and students from McMaster completed a comprehensive long-term water quality assessment of the eight water bodies in the Township of Georgian Bay, as well as nearshore coastal waters of southeastern Georgian Bay. The resulting two reports provide detailed information on coastal Georgian Bay and the inland water bodies and should be referred to for long-term water quality trends.

The purpose of this report is to provide a review of the 2024 volunteer bacteriological water quality program and include a discussion and recommendations for future water monitoring in the township. Gala Lake was not involved in the 2024 program. Data from the Honey Harbour region will be provided in a separate report.

Chemical analyses from the 2024 season will be provided by McMaster University (Phosphorus samples were collected by volunteers and these were picked up and analyzed at the University).

Bacterial Water Quality Monitoring

Regulatory bacterial monitoring is only mandated for public swimming beaches. Concern over the limited scope of this policy, which ignores other shoreline environments, has prompted the development of many community-based water quality monitoring programs. These programs are effective in accurately monitoring the bacterial status of surface waters and these efforts promote education and environmental ethics amongst resource users.

Sources of Bacterial Contamination

Storm water runoff, septic system effluent, run-off from agricultural and recreational areas such as public beaches, trailer parks and marinas, discharge from boats and fecal material from wildlife and pets all represent potential sources of bacterial contamination in surface waters.

Bacterial Indicators and Regulatory Guidelines

Bacterial indicators are enumerated in natural waters to assess the presence and level of fecal contamination and thus determine the potential for disease. Total Coliforms, Fecal Coliforms and *Escherichia coli* (*E. coli*) are widely used in regulatory monitoring of recreational waters. However, *E. coli* is recommended as the main indicator of fecal pollution (WHO 2017). These indicator organisms themselves are not the cause of illness; however, their presence is used to indicate the risk that other pathogenic organisms of fecal origin may be present.

Total Coliforms are abundant in the feces of all warm-blooded animals, but are also found in the natural aquatic environment, in soil and on vegetation. Unlike the general Coliform group of bacteria, *E. coli* is exclusively of fecal origin, and its presence is thus an effective confirmation of fecal contamination.

Ontario Recreational Guideline for *E. coli*

If levels of *E. coli* in surface waters are found to be greater than guideline levels, it is probable that pathogenic organisms are also present. Swimming in bacterially contaminated waters could result in gastro-intestinal symptoms, eye infections, skin complaints, ear, nose and throat infections and respiratory illness.

The most recent Ontario recreational water quality Guideline is a geometric mean concentration (minimum of five samples) of less than 200 *E. coli*/100 mL, and a single-sample maximum concentration of less than 400 *E. coli*/100 mL, while the previous standard was less than 100 *E. coli*/100 mL as a geometric mean. Health Canada is currently using a Beach Action Value (BAV) of 235 CFU *E. coli*/100mL for a single sample, whereby an exceedance of this value will prompt warnings and potential beach closures (Health Canada 2023).

Alternative Water Quality Objective

According to the Provincial Guideline, surface water is safe for recreational purposes if there are less than 200 *E. coli*/100 mL (this concentration represents an acceptable threshold of risk), however the presence of this concentration of *E. coli* in surface waters is indicative of deteriorating water quality. This guideline may be suitable for highly urbanized regions (where water impairment has already occurred) however, a more stringent objective for *E. Coli* may be more suitable for

regions where the water quality has not yet been impaired. For this reason, a **Georgian Bay Water Quality Objective (GBWQO)** of 10 CFU E. coli/100mL has been used in water monitoring programs in this lake community.

2024 BACTERIAL WATER MONITORING PROGRAM DESIGN

Sampling Sites

In the 2024 water monitoring program seven inland lakes and two coastal Georgian Bay regions were sampled and are shown on Map 1.1. Locations of individual sampling sites per region are provided in Maps 1.2-1.9 (provided in the final section of the report).

Sample Collection

Sample collection generally occurred on a bi-monthly basis from late June (or early July) to early September. In some instances, additional sampling was undertaken (i.e. Go Home Lake's annual one-day, larger scale sampling program. Results are provided on their website, www.gohomelake.ca/s/2024-Water-Quality-Test-Results.pdf).

In most cases, samples were collected in the morning before 10 a.m. as solar radiation can impact the survival of bacteria. Water was collected at a depth of 9-15 inches. Labeled sterile bottles with sample water were stored in coolers until they were ready for analysis.

Bacterial Analysis

The ColiPlate™ test kit was used to analyze all water samples for Total Coliforms and E. coli bacteria. This test kit utilizes the defined substrate technology (DST) method of bacterial testing for Coliforms and E. coli. This method for testing recreational waters has been approved by the Environmental Protection Agency (EPA) and has been widely recognized as a more rapid, user friendly and accurate test in comparison to the traditional standard methods.

Water samples were directly poured into Coliplates™ and were incubated at 35°C for 24 hours. After incubation, individual wells in the microplate change colour to blue when Coliforms are present and exhibit fluorescence under a UV light when E. coli are present. These positive wells were enumerated, and the Most Probable Number (MPN) technique was used to convert the positive well counts to cell density values in CFU/100mL sample.

Please see the Resources section of bluewaterbiosciences.com for more detailed information on Sample Collection and Analysis Procedures (including a User Guide, Data Sheets and a Video Demonstration of the ColiPlate™ technique).



DATA INTERPRETATION AND RESULTS

Tables 1-8 provide Total Coliform and E. coli data in CFU/100mL for the seven Inland Lakes and Oak Bay. Standard descriptive statistics were used to evaluate the bacteriological data sets. The Geometric Mean (GM) and Standard Deviation (SD) of Total Coliform and E. coli densities per sampling site are provided for each region. Geometric mean is used to evaluate bacterial data since bacterial concentrations can differ by several orders of magnitude. Total Coliform and E. coli results that were <3 or zero, were changed to a value of 1 so they could be log transformed which is required to formulate the geometric mean. The standard deviation provides a measure of the amount of variation in the data, the larger the number the more variable the data is from the mean.

Since the geometric mean dampens the effect of very high bacterial values, Single Sample Values of E. coli at a specific time are also important to recognize as they can identify immediate water quality problems.

Table 1: Gibson Lake

ID	Sample Location	TC					GM	SD
		26-Jun	19-Jul	26-Jul	4-Aug	24-Aug		
GB01	South Lake	1	3	3	1	1	2	1
GB02	Landing	8	1	5	1	1	2	3
GB03	Middle Lake	8	1	1	1	1	2	3
GB04	Island Beach	1	3	1	3	3	2	1
GB05	Hiawartha	3	3	1	1	1	2	1
GB06	Wahta	13	3	5	5	3	5	4
GB07	North River Outlet	1	1	1	1	1	1	0

ID	Sample Location	EC					GM	SD
		26-Jun	19-Jul	26-Jul	4-Aug	24-Aug		
GB01	South Lake	1	1	1	1	1	1	0
GB02	Landing	8	1	5	1	1	2	3
GB03	Middle Lake	1	1	1	1	1	1	0
GB04	Island Beach	1	1	1	1	1	1	0
GB05	Hiawartha	3	1	1	1	1	1	1
GB06	Wahta	13	3	3	3	1	3	4
GB07	North River Outlet	1	1	1	1	3	1	1

For the duration of the season all Gibson Lake sampling sites yielded extremely low Total Coliform and E. coli levels, well below the Provincial Guidelines and the GBWQO, except for one sample taken at GB16 (Wahta) on June 26th, which had a reading of 13 MPN E. coli/100mL, slightly exceeding the GBWQO (highlighted in bold).

Table 2: Gloucester Pool

ID	Sample Location	TC					GM	SD
		14-May	28-Jun	22-Jul	19-Aug	16-Sep		
GL01	Big Chute	3	5	28	451	146	31	191
GL02	Six Mile Channel	22	39	3	339	240	46	152
GL03	Whites Falls	13	46	36	362	33	48	148
GL04	Little Go Home Bay	3	146	28	136	102	44	64
GL05	Glouester Pool Centre	8	8	5	43	87	16	35
GL06	Black River	36	76	119	375	694	153	276
GL07	Narrows Marina	33	182	43	639	469	151	270
GL08	Little Lake Centre	19	28	226	65	72	56	84
GL09	Lock 45	22	16	76	136	166	57	67
GL10	Dam G	52	22	350	1038	1696	234	722
GL17	Maclean Lake Centre	13	16	52	619	90	57	260
GL18	Burrow's Bay	5	59	28	90	36	31	32
ID	Sample Location	EC					GM	SD
		14-May	28-Jun	22-Jul	19-Aug	16-Sep		
GL01	Big Chute	3	1	3	25	1	3	9
GL02	Six Mile Channel	1	8	8	30	11	7	10
GL03	Whites Falls	3	8	11	33	5	8	11
GL04	Little Go Home Bay	3	30	3	5	3	5	11
GL05	Glouester Pool Centre	1	1	3	1	1	1	1
GL06	Black River	16	62	33	22	146	40	48
GL07	Narrows Marina	1	13	3	11	3	4	5
GL08	Little Lake Centre	8	1	3	1	1	2	3
GL09	Lock 45	1	5	11	5	3	4	3
GL10	Dam G	5	11	11	28	22	13	8
GL17	Maclean Lake Centre	3	3	5	1	5	3	2
GL18	Burrow's Bay	1	1	5	3	1	2	2

During the 2024 sampling period, GL06 (Black River) and GL10 (Dam G) consistently yielded Single Sample values of E. coli which exceeded the GBWQO (except for the May 14th sampling date at GL10). A Single Sample value of 146 CFU/100mL was recorded at site GL06 on Sep 16th, which exceeded the previous Provincial Guideline for E. coli in recreational waters (> 100 CFU/100mL). The geometric mean at sites GL06 and GL10 also exceeded the GBWQO (shown on Figure 1) with values of 40 and 13 CFU/100mL (exceedances are all highlighted in bold font).

Also noteworthy are the Single Sample values for Total Coliform at site GL10 for August 19th and September 16th with values of 1038 and 1696 CFU/100mL. These values exceeded the previous Provincial Guideline for Total Coliform in recreational waters which was >1000 CFU/100 mL (Health Canada no longer uses Total Coliform as an indicator for safe recreational waters).

Historically, GL06 (Black River Channel) has yielded high E. coli readings and has been considered a ‘hot spot’. As reported in Dr. Chow-Fraser’s 2024 report, the long-term geometric mean for GL06 (Black River Channel) exceeds the GBWQO with a value of 13.46 CFU/100 mL (Chow-Fraser 2024).

Continued monitoring, with a minimum of 5 seasonal sampling dates at GL06 and GL10 is recommended.

Table 3: Go Home Lake

		TC								
ID	Sample Location	8-Jun	22-Jun	6-Jul	20-Jul	2-Aug	17-Aug	6-Sep	GM	SD
GH01	F. Seasons Bay	43	298	72	22	59	102	62	69	87
GH02	Heart Bay	123	43	69	161	83	587	13	87	184
GH03	BOMW	151	62	46	171	119	1038	219	153	325
GH04	Pike Bay	194	36	28	1696	119	46	55	100	573
GH05	BOMW Camp	151	55	98	151	177	247	177	138	57
GH06	Marina	213	240	69	110	132	240	161	153	62

		EC								
ID	Sample Location	8-Jun	22-Jun	6-Jul	20-Jul	2-Aug	17-Aug	6-Sep	GM	SD
GH01	F. Seasons Bay	1	3	5	1	1	1	1	1	1
GH02	Heart Bay	1	5	8	1	8	11	1	3	4
GH03	BOMW	1	1	3	3	1	1	1	1	1
GH04	Pike Bay	5	1	3	1	36	1	1	2	12
GH05	BOMW Camp	3	1	3	3	3	1	1	2	1
GH06	Marina	5	22	5	11	11	1	55	9	17

During the 2024 sampling period in Go Home Lake, 6 Single Sample Values of E. coli were greater than the GBWQO (highlighted in bold font). These include a sample from GH02/Heart Bay (11 CFU/100ml on Aug 17th), a sample from GH04/Pike Bay (36 CFU/100ml on Aug 2nd) and 4 samples from GH06/Go Home Lake Marina (22 CFU/100mL on Jun 22nd, 11 CFU/100ml on Jul 20th, 11 CFU/100ml on Aug 2nd and 55 CFU/100ml on Sep 6th). The geometric mean for all sites remained below the GBWQO.

Single Sample Values of Total Coliform at sites GH03, (Bay of Many Winds/BOMW) and GH04 (Pike Bay) exceeded the previous Guideline of 1000 CFU/100mL, with values of 1038 and 1696 CFU/100mL, on Aug 17th and July 20th respectively.

Table 4: Myers Lake

		TC						
ID	Sample Location	17-Jun	1-Jul	16-Jul	29-Jul	12-Aug	GM	SD
ML01	Crisco Bay	52	52	62	156	226	78	71
ML02	Lake in Swamp	55	72	161	106	161	49	51
ML03	Creek Outflow	65	139	25	37	350	134	120
ML04	Heids Bay	52	69	19	22	39	21	20
		EC						
ID	Sample Location	17-Jun	1-Jul	16-Jul	29-Jul	12-Aug	GM	SD
ML01	Crisco Bay	11	3	5	3	1	4	3
ML02	Lake in Swamp	8	1	16	3	1	6	6
ML03	Creek Outflow	8	8	3	3	1	3	3
ML04	Heids Bay	16	1	5	1	1	6	6

During the 2024 sampling period in Myers Lake 3 Single Sample Values of E. coli were greater than the GBWQO (highlighted in bold font). These include a sample from ML01/Crisco Bay (11 CFU/100mL on Jun 17th), a sample from LM02/Lake in Swamp (16 CFU/100mL on Jul 16th) and a sample from ML04/Heids Bay (16 CFU/100mL on Jun 17th). The geometric mean for all sites remained below the GBWQO.

Total Coliform densities throughout the season remained well below the previous Guideline of >1000 CFU/100mL.

Table 5: Severn River

		TC					
ID	Sample Location	12-Jul	26-Jul	6-Aug	31-Aug	GM	SD
SR01	Russian Bay	22	79	127	188	80	71
SR02	Severn Falls	46	83	136	226	104	78
SR03	Wood Bay	106	298	350	213	220	107
SR04	Coulter Bay	28	119	559	2,424	259	1119
SR05	Copp Bay	36	362	403	161	171	173
SR06	Pretty Channel	83	106	182	226	138	66

		EC					
ID	Sample Location	12-Jul	26-Jul	6-Aug	31-Aug	GM	SD
SR01	Russian Bay	1	1	11	19	4	9
SR02	Severn Falls	11	5	5	25	9	9
SR03	Wood Bay	1	3	5	13	4	5
SR04	Coulter Bay	11	1	19	3	5	8
SR05	Copp Bay	8	1	13	11	6	5
SR06	Pretty Channel	3	1	3	13	3	5

During the 2024 sampling period in Severn River 10 Single Sample Values of E. coli were greater than the GBWQO (highlighted in bold font). These include two samples from SR01/Russian Bay (11 and 19 CFU/100mL on Aug 6th and 31st), two samples from SR02/Severn Falls (11 and 25 CFU/100mL on Jul 12th and Aug 31st), a sample from SR03/Wood Bay (13 CFU/100mL on Aug 31st), two samples from SR04/Coulter Bay (11 and 19 CFU/100mL on Jul 12th and Aug 31st), two samples from SR05/Copp Bay (13 and 11 CFU/100mL on Aug 6th and 31st) and a sample from SR06/Pretty Channel (13 CFU/100mL on Aug 31st). The geometric mean for all sites remained below the GBWQO.

A Single Sample Value of 2424 CFU Total Coliform/100mL at site SM04 (Coulter Bay) on Aug 31st, exceeded the previous Guideline of 1000 CFU/100mL.

Table 6: Six Mile Lake

		TC							
ID	Sample Location	4-Jul	23-Jul	8-Aug	26-Aug	GM	SD		
SM01	White Falls Dam	3	182	59	36	33	78		
SM02	SML Marina	13	166	114	119	74	64		
SM03	SML Prov. Park	25	114	79	65	62	37		
SM04	Long Lake	11	11	46	65	25	27		
SM05	Wawa Gov't Dock	8	11	127	25	23	57		
SM06	West Crooked Bay	11	87	65	30	37	34		
SM07	East Crooked Bay	11	5	110	36	22	48		
SM08	Hungry River	11	177	161	188	88	83		
SM09	South Hungry Bay	11	127	94	8	32	60		
SM10	Lost Channel	11	141	110	5	30	69		
		EC							
ID	Sample Location	4-Jul	23-Jul	8-Aug	26-Aug	GM	SD		
SM01	White Falls Dam	1	1	3	3	2	1		
SM02	SML Marina	1	3	3	3	2	1		
SM03	SML Prov. Park	8	3	8	3	5	3		
SM04	Long Lake	3	1	5	1	2	2		
SM05	Wawa Gov't Dock	3	1	83	3	5	40		
SM06	West Crooked Bay	5	3	3	1	3	2		
SM07	East Crooked Bay	5	1	1	8	3	3		
SM08	Hungry River	3	3	3	3	3	0		
SM09	South Hungry Bay	1	3	3	3	2	1		
SM10	Lost Channel	3	1	8	1	2	3		

During the 2024 sampling period in Six Mile Lake, 1 Single Sample Values of E. coli was greater than the GBWQO. This was a sample from SM05/Wawa Government Dock (83 CFU/100mL on Jun 17th (highlighted in bold font). The geometric mean for all sites remained well below the GBWQO.

Total Coliform densities throughout the season remained well below the previous Guideline of >1000 CFU/100mL.

Table 7: Stewart Lake

ID	Sample Location	TC				GM	SD
		20-Jun	9-Jul	2-Aug	23-Aug		
SL01	Kilty Bay	8	33	161	13	27	72
SL02	Big Bay	25	8	52	39	25	19
SL03	North Bay	22	28	59	39	35	16
SL04	Bear Bay	28	39	62	52	43	15
SL05	Buckeye Bay	30	25	65	16	30	21
ID	Sample Location	EC				GM	SD
		20-Jun	9-Jul	2-Aug	23-Aug		
SL01	Kilty Bay	3	13	16	3	7	7
SL02	Big Bay	3	5	1	5	3	2
SL03	North Bay	1	1	3	3	2	1
SL04	Bear Bay	3	3	1	22	4	10
SL05	Buckeye Bay	13	5	5	1	4	5

During the 2024 sampling period in Stewart Lake, 2 Single Sample Values of E. coli were greater than the GBWQO (highlighted in bold font), both were from SL01/Kilty Bay with values of 13 and 16 CFU/100mL, on Jul 9th and Aug 2nd. The geometric mean for all sites remained below the GBWQO.

Total Coliform densities throughout the season remained well below the previous Guideline of >1000 CFU/100mL.

Table 8: Oak Bay

		TC								
ID	Sample Location	25-Jun	6-Jul	21-Jul	23-Jul	25-Aug	29-Aug	31-Aug	GM	SD
1011	Golf Course Point	65		2424	2424	156			494	1208
1011A	Trailer Park		362	362		1696			606	637
1011A	Oak Bay Marina	271		69			132		135	85
1011A	Tug Channel	55		87		403			124	160
1011A	Oak Bay Road	39		263		62			86	102
1204	NE Eden Oak Dev.	55		90	90	19			54	30
1205	Potato Is. Wetland		489	1696	1696			1174	1134	499
1206	Island 62			123			213		162	45
1207	Island 61	69		119		1174			213	524
1208	East Potato Is. Rd.	65		328			510		222	187
1209	West of Green Is.	98		98			233		131	64
1210	East of Green Is.	72		22		182			66	68
1212	Green Is. Channel	65		114			49		71	28
		EC								
ID	Sample Location	25-Jun	6-Jul	21-Jul	23-Jul	25-Aug	29-Aug	31-Aug	GM	SD
1011	Golf Course Point	1		25	25	46			13	17
1011A	Trailer Park		52	33		13			28	16
1012	Oak Bay Marina	33		1			1		3	16
1201	Tug Channel	5		3		19			7	7
1202	Oak Bay Road	1		5		11			4	4
1204	NE Eden Oak Dev.	1		1	1	1			1	0
1205	Potato Is. Wetland		33	11	11			55	22	18
1206	Island 62			1			19		4	10
1207	Island 61	5		1		1			2	2
1208	East Potato Is. Rd.	22		49			22		29	13
1209	West of Green Is.	5		28			22		15	10
1210	East of Green Is.	3		1		1			1	1
1212	Green Is. Channel	1		1			1		1	0

During the 2024 sampling period in Oak Bay all sample locations yielded Single Sample Values of E. coli for at least one sample date, greater than the GBWQO, except for 1204/NE Eden Oak Development, 1206/Island 61, 1210/East of Green Island and 1212/Green Island Channel. The geometric mean at sites 1011/Golf Course Point, 1011A/Trailer Park, 1205/Potato Island Wetland, 1208/East Potato Island Rd and 1209/West of Green Island also exceeded the GBWQO (shown on Figure 1) with values of 13, 28, 22, 29, and 15 CFU E. coli/100mL respectively (exceedances are all highlighted in bold font).

Single Sample Values of Total Coliform exceeded the previous Guideline of 1000 CFU/100mL at 1011/Golf Course Point, 1011A/Trailer Park, 1205/Potato Island Wetland and 1207/Island 61. The geometric mean for Total Coliform at 1205/Potato Is. Wetland exceeded this Guideline as well with a GM of 1134 CFU/100mL (shown on Figure 2).

Concern over water quality in parts of Oak Bay was also expressed in Chow-Fraser and Vinden's 2024 report, whereby Golf Course Point and Potato Island Wetland sampling locations were reported as having poor and very poor water quality (Chow-Fraser and Vinden 2024).

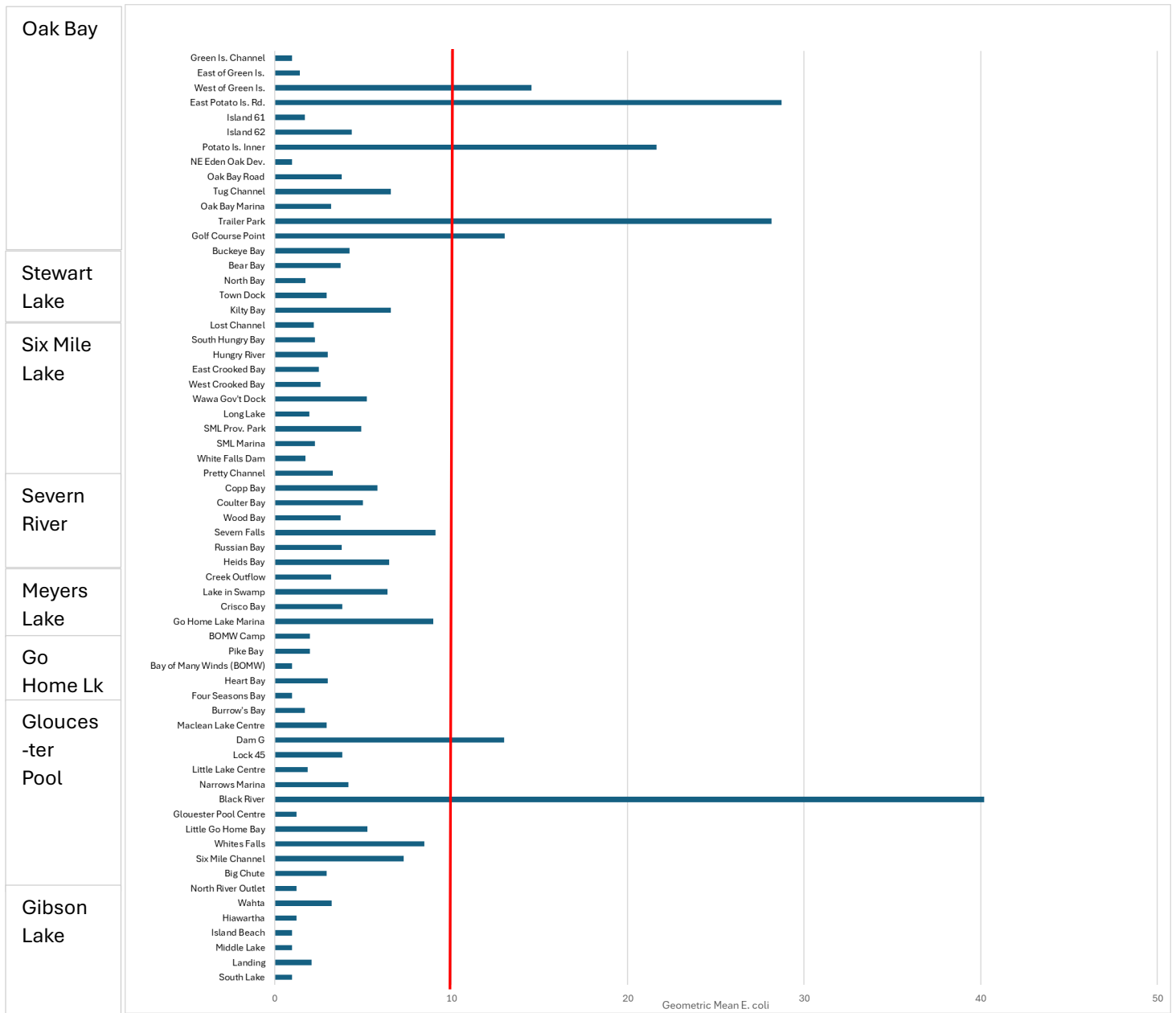


Figure 1: 2024 Geometric Mean E. coli densities (CFU/1000mL) from Inland Lakes and Oak Bay (Coastal Georgian Bay). Red line indicates the GBWQO of 10 CFU/100mL

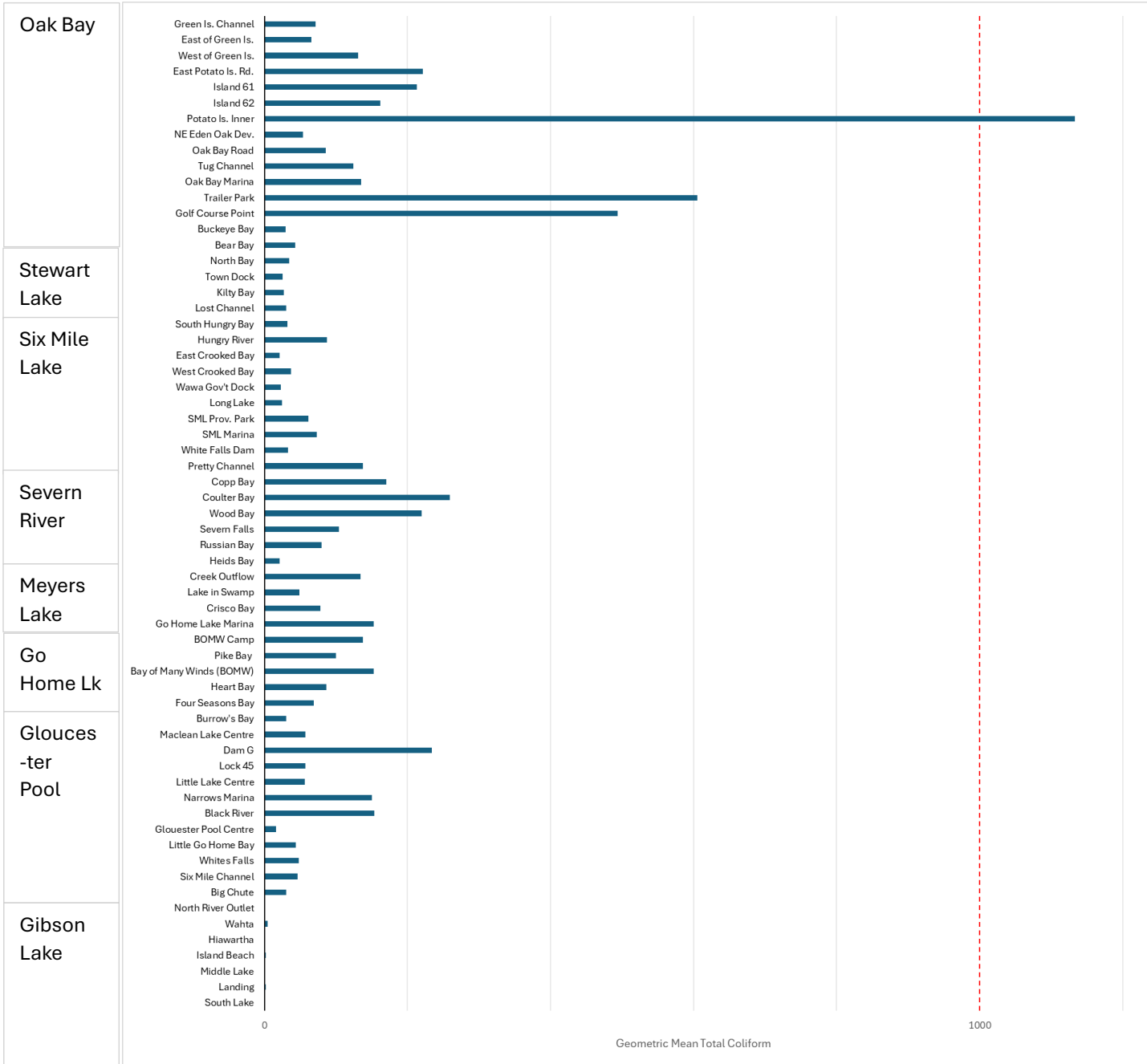


Figure 2: 2024 Geometric Mean Total Coliform densities (CFU/1000mL) from Inland Lakes and Oak Bay (Coastal Georgian Bay). Red dashed line indicates the previous Guideline of 1000 CFU/100mL

DISCUSSION

In 2024 a total of 241 water samples from the seven inland lakes were collected and analyzed for Total Coliform and E. coli. Most of these samples yielded bacterial densities indicative of very good water quality, with only 13% exceeding the GBWQO of 10 CFU **E. coli**/100ml and 2% exceeding 1000 CFU **Total Coliform**/100ml (previous Guideline). All Single Sample Values in the inland lakes were well below the BAV of >235 CFU **E. coli**/100mL.

While the majority of samples from the inland lakes indicate very good to excellent water quality there are several areas of concern. These areas of concern are Russian Bay, Severn Falls, Coulter Bay and Copp Bay in Severn River and Go Home Lake Marina in Go Home Lake which all exceeded the GBWQO for 50% or more of the sampling dates. As mentioned earlier, Gloucester Pool's Black River and Dam G are considered 'hot spots' with high E. coli levels reported for the duration of the season. These areas of concern and hot spots should continue to be sampled a minimum of 5 times a season.

In 2024 a total of 41 water samples from Oak Bay (southeastern Georgian Bay) were collected and analyzed for Total Coliform and E. coli. A significant number of these samples yielded bacterial densities indicative of poor water quality, with 46% exceeding the GBWQO of 10 CFU E. coli/100ml and 17% of these samples exceeding the 1000 CFU Total Coliform/100ml (previous Guideline). All Single Sample Values in the Oak Bay region were below the BAV of >235 CFU E. coli/100mL.

The percentage of GBWQO exceedances in Oak Bay is concerning and is indicative of deteriorating water quality. Continued monitoring in this region is recommended.

RECOMMENDATIONS FOR FUTURE WATER MONITORING PROGRAMS

The value and benefits of this long-established, volunteer-based water monitoring program is significant. Through participation in the program and the reporting of results the level of public involvement and awareness in this community has drastically increased. A network of trained and dedicated volunteers has been created, and an impressive database of water quality parameters has been established. The continuation of the program is recommended.

During the 2024 program several specific recommendations were voiced from the volunteers themselves. Firstly, it was suggested that a master directory of sample site numbers and locations be kept by the Township office so they can be consistently re-sampled in future monitoring programs and inadvertent errors or duplications could be avoided. Secondly, concern over the subjectivity of the volunteers enumerating Total Coliforms in the ColiPlate was expressed, whereby faintly coloured blue wells may have been disregarded, resulting in potential false negatives (any blue coloured well should be counted as positive, regardless of the intensity). This might explain some of the below-normal Total Coliform results. A pre-season, in-person training session might be helpful and prevent potential errors going forward.

Another aspect of the program which could be modified, is the format in which water quality results are reported. It would be helpful if results are relayed to the community as soon as they become available. Real-time (in the case of bacterial results this would be within 48 hours) water quality

reporting could provide more meaningful information and could shed light on cause-and-effect relationships. This type of reporting has been used by Go Home Lake, whereby volunteers update their lake association website with bacterial results after each sampling date. A similar approach to reporting for the other inland lakes and coastal Georgian Bay should be considered.

REFERENCES

Dr. Patricia Chow-Fraser. 2024. Longterm water quality assessment of eight water bodies in the Township of Georgian Bay (2001-2023): Galla Lake, Gibson Lake, Gloucester Pool, Go Home Lake, Myers Lake, Six Mile Lake, Severn River and Stewart Lake.

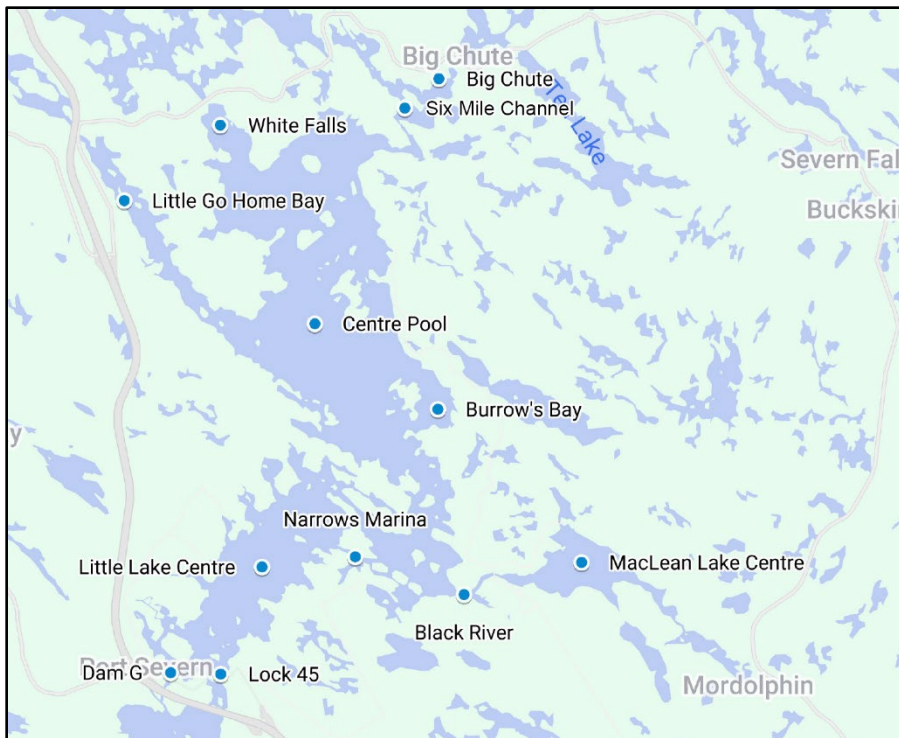
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World Health Organization (WHO). 2017. Guidelines for Drinking Water Quality: 1 – Recommendations. 2nd edition, Geneva.



Map 1.2 Gibson Lake



Map 1.3 Gloucester Pool



Map 1.4 Go Home Lake



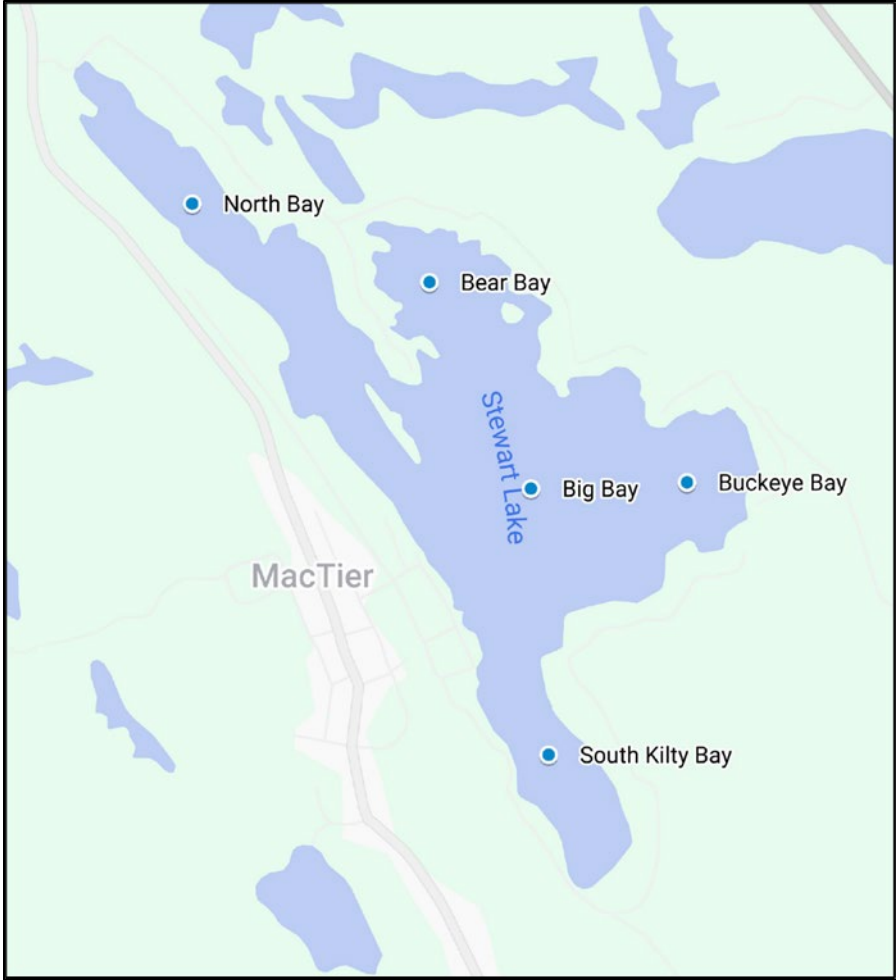
Map 1.5 Myers Lake



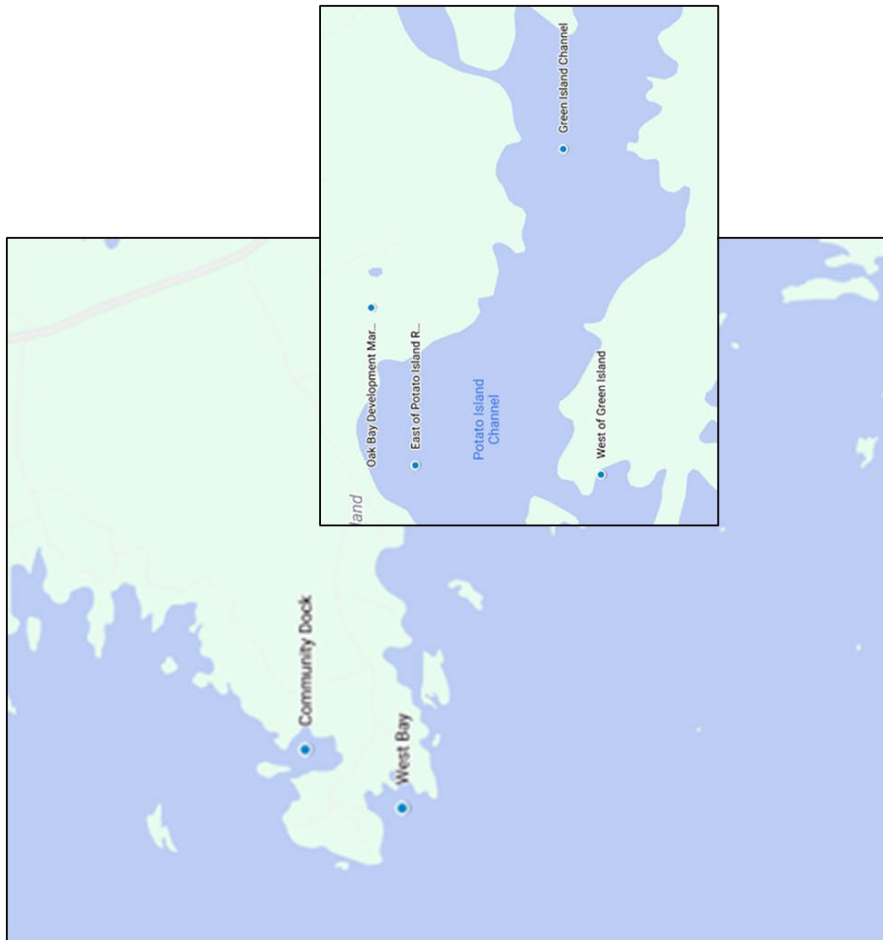
Map 1.6 Severn River



Map 1.7 Six Mile Lake



Map 1.8 Stewart Lake



Map 1.9 Oak Bay