

**MACTIER**

**WATER**

**2014**

**ANNUAL AND SUMMARY**

**REPORT**



**DRINKING WATER WORKS PERMIT: 143-207**  
**MUNICIPAL DRINKING WATER LICENCE: 143-107**

**M.O.E. WATERWORKS# 220004224**

## **INTRODUCTION**

The MacTier Beech Avenue Water Treatment Plant (W.T.P.) is owned and operated by the District Municipality of Muskoka. The facility started delivering water to the community of MacTier in March of 1995.

The plant operates under licence 143-107 and permit 143-207, issued October 2010, under the Municipal Drinking Water Licencing Program. The plant also operates under MOE Permit To Take Water #7510-7LHTS6 (expires November 30, 2018), which permits the operation of up to 1,428 cubic metres per day (m<sup>3</sup>/day). The MacTier Beech Avenue W.T.P has a rated capacity of 1,904 cubic meters per day. Stewart Lake is the raw water source for the treatment facility.

The MacTier W.T.P contains the following treatment processes, raw water inlet screens and lowlift pumps, which deliver raw water to a twin train package treatment plant. The package treatment plant consists of two process trains, each provided with chemically assisted coagulation, flocculation, sedimentation and filtration processes. The treated water then enters the clearwell. High lift pumps deliver the finished water from the clearwell to the distribution system.

The waterworks currently serves a population of approximately 640 persons.

## **Legislation Requirements**

### **Safe Drinking Water Act**

In the Part Two Report of the Walkerton Inquiry, Commissioner Dennis O'Connor recommended that the Ontario Government enact a Safe Drinking Water Act to deal with matters related to treatment and distribution of drinking water. The Safe Drinking Water Act received royal assent in December 2002.

The purpose of the Act is to gather in one place all legislation and regulations relating to the treatment and distribution of drinking water. The Act serves to protect human health through the control and regulation of drinking water systems and drinking water testing.

The foundation provisions of the Safe Drinking Water Act include:

- Purpose of the Act
- Definitions
- Minister's Powers and Duties
- Inspections
- Compliance and Enforcement
- Appeals and Offences

### **Ontario Regulations**

The Ontario Government has enacted several supporting regulations under the Safe Drinking Water Act (2000) SDWA. These regulations combine previous requirements under the Ontario Water Resources Act and the new requirements under the SDWA. Key components of the regulations include:

- System Categories
- Groundwater Under Direct Influence Of Surface Water (GUDI)
- Exemptions
- Approval of Systems
- Treatment
- Testing and Operational Checks (General Rules)
- Operational Checks
- Microbiological Testing
- Chemical Testing
- Adverse Conditions
- Corrective Action
- Engineer's and Summary Reports

### **Municipal Drinking Water Licences / Certificates of Approval**

The Municipal Drinking Water Licencing Program has replaced the Certificate of Approval program for municipal residential drinking water systems. The Ontario Government has implemented the Municipal Drinking Water Licencing Program (MDWLP) as recommended by Justice O'Connor in the Part II Report of the Walkerton Inquiry. Justice O'Connor recommended a new approvals framework for municipal drinking water systems, which would require owners to obtain a

licence to operate their systems as well as incorporate the concept of quality management into their operations.

A municipal drinking water licence is an approval that is issued by the MOE to owners under the Safe Drinking Water Act, 2002 for the operation of municipal residential drinking water systems. The District of Muskoka operated under various Certificates of Approval until October 2010 when the operating licences were issued.

Previous Certificates of Approval were required for the establishment, replacement or alteration of all municipal drinking water systems. The Ministry of Environment (MOE) issued Certificates of Approval to ensure that all undertakings comply with the legislation (i.e. Acts and Regulations) and the Ministry's Environmental Guidelines and Procedures developed to provide consistency of approach to various aspects of environmental protection throughout the province.

Municipal Drinking Water Licences and Permits similar to previous Certificates of Approval provide specific details about the drinking water system including:

Drinking Water System Description

Definitions and Information

General Information – Compliance, Other Legal Requirements, Adverse Affects, Inspections

Performance – Rated Capacity, Management of Residue

Monitoring and Recording – Flow Measuring Devices, Sampling

Operations and Maintenance

### **Comparison to Rated Capacity and Flow Rates**

The Beech Avenue water treatment plant has a rated capacity of 1,904 m<sup>3</sup>/day. In 2014, the average flow for the year was 279 m<sup>3</sup>/day. The maximum day flow for the year was 445 m<sup>3</sup>/day, however, the 3 year average for maximum day flow is 645 m<sup>3</sup>/day, which represents 34% of the plant design capacity. (No problems have been associated with this flow). Monthly flows are shown in the attached table.

The Permit to Take Water (7510-7LHTS6) permits 1,428.5 m<sup>3</sup>/day; therefore there were no exceedances of this permit.

### **Summary of Analytical Results**

A total of 626 microbiological regulatory tests were performed in 2014 and all had acceptable results. There were 157 free chlorine residual tests performed in the distribution system and all results were satisfactory.

A summary of other analytical results is also shown in this report.

## **Summary of Treatment Chemicals**

The following chemicals are used for the treatment of drinking water at the Beech Avenue Water Treatment Plant:

Sodium Hypochlorite: Disinfectant

Polyaluminum Chloride (SternPAC): Primary coagulant

Hydrated Lime: Alkalinity and pH adjustment

Carbon Dioxide: pH adjustment

Sodium Hydroxide: Final pH adjustment

Hydrofluorosilicic Acid: Fluoride to prevent dental decay.

Sodium Permanganate: Manganese precipitation

A table summarizing the chemical use and average dosages is included in this report.

## **Documentation of System Repairs and Upgrades**

No system upgrades or repairs were done in 2014.



**OPTIONAL ANNUAL REPORT TEMPLATE**

<b>Drinking-Water System Number:</b>	220004224
<b>Drinking-Water System Name:</b>	MacTier (Beech Avenue) Drinking Water System
<b>Drinking-Water System Owner:</b>	District Municipality of Muskoka
<b>Drinking-Water System Category:</b>	Large Municipal Residential
<b>Period being reported:</b>	January 01 to December 31, 2014

<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p><b>Does your Drinking-Water System serve more than 10,000 people? Yes [ X ] No [ ]</b></p> <p><b>Is your annual report available to the public at no charge on a web site on the Internet? Yes [ X ] No [ ]</b></p> <p><b>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</b></p> <div style="border: 1px solid black; padding: 5px;"> <p>District Municipality of Muskoka 70 Pine Street Bracebridge, Ontario P1L 1N3 (705) 645-6764 www.muskoka.on.ca</p> </div>	<p><b><u>Complete for all other Categories.</u></b></p> <p><b>Number of Designated Facilities served:</b></p> <div style="border: 1px solid black; padding: 5px; width: fit-content;">N.A.</div> <p><b>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]</b></p> <p><b>Number of Interested Authorities you report to:</b> <div style="border: 1px solid black; width: 100px; height: 20px; display: inline-block;"></div></p> <p><b>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]</b></p>
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**Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report**

**List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:**

Drinking Water System Name	Drinking Water System Number
N.A.	

**Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water? Yes [ ] No [ ]**



Indicate how you notified system users that your annual report is available, and is free of charge.

- Public access/notice via the web
- Public access/notice via Government Office
- Public access/notice via a newspaper
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method \_\_\_\_\_

**Describe your Drinking-Water System**

The water treatment plant started delivering water to the community of MacTier in March of 1995. The treatment process consists of chemically assisted coagulation-flocculation, sedimentation and filtration using multi-media filters with a combination of gravel, sand and anthracite coal. Disinfection in a post-treatment chlorine contact chamber is followed by final pH adjustment before the treated water is pumped to our customers. Our waterworks currently serves a population of approximately 640 persons. The rated water production capacity of the plant is 1,904 cubic meters per day. Our raw water source is Stewart Lake and the intake is located 1.5 meters above the lakebed at a depth of 11 meters, about 220 meters from shore.

**List all water treatment chemicals used over this reporting period**

Carbon Dioxide, SternPac, Hydrated Lime, Sodium Hypochlorite, Hydrofluorosilicic Acid, Sodium Hydroxide, and Sodium Permanganate

**Were any significant expenses incurred to?**

- Install required equipment
- Repair required equipment
- Replace required equipment

**Please provide a brief description and a breakdown of monetary expenses incurred**

**Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre**

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
May 05/14	Sodium	28.1	mg/l	Resampled	May 14 2014



**Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.**

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
<b>Raw</b>	52	0-4	0-33	0	
<b>Treated</b>	52	0-0	0-0	52	0-1
<b>Distribution</b>	157	0-0	0-0	52	0-14

**Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.**

	Number of Grab Samples	Range of Results (min #)-(max #)	Geometric Average	<i>NOTE: For continuous monitors use 8760 as the number of samples.</i>
<b>Turbidity</b>	8760	0.02-0.38 NTU	0.15 NTU	
<b>Chlorine</b>	8760	1.34-2.10 mg/L	1.79 mg/L	
<b>Fluoride</b> (If the DWS provides fluoridation)	8760	0.01-0.67 mg/L	0.45 mg/L	

**Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.**

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure

**Summary of Inorganic parameters tested during this reporting period or the most recent sample results**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
<b>Antimony</b>	May 05/14	0.05	ug/L	No
<b>Arsenic</b>	May 05/14	0.2<MDL	ug/L	No
<b>Barium</b>	May 05/14	13.0	ug/L	No
<b>Boron</b>	May 05/14	7.9	ug/L	No
<b>Cadmium</b>	May 05/14	0.003<MDL	ug/L	No
<b>Chromium</b>	May 05/14	0.69	ug/L	No
<b>*Lead</b>	May 05/14		ug/L	No
<b>Mercury</b>	May 05/14	0.01<MDL	ug/L	No
<b>Selenium</b>	May 05/14	1<MDL	ug/L	No
<b>Sodium</b>	May 05/14	28.1	mg/L	Yes
<b>Uranium</b>	May 05/14	0.05	ug/L	No
<b>Fluoride</b>	May 05/14	0.64	mg/L	No
<b>Nitrite</b>	Feb 10/14	0.003<MDL	mg/L	No
<b>Nitrate</b>	Feb 10/14	0.092	mg/L	No
<b>Nitrite</b>	May 05/14	0.003<MDL	mg/L	No



<b>Nitrate</b>	May 05/14	0.156	mg/L	No
<b>Nitrite</b>	Aug 05/14	0.003<MDL	mg/L	No
<b>Nitrate</b>	Aug 05/14	0.200	mg/L	No
<b>Nitrite</b>	Nov 03/14	0.003<MDL	mg/L	No
<b>Nitrate</b>	Nov 03/14	0.084	mg/L	No

\*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

### Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
<b>Plumbing</b>	0			
<b>Distribution</b>	4	0.01 - 0.10	ug/L	No

### Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
<b>Alachlor</b>	May 05/14	0.02<MDL	ug/L	No
<b>Aldicarb</b>	May 05/14	0.01<MDL	ug/L	No
<b>Aldrin + Dieldrin</b>	May 05/14	0.01<MDL	ug/L	No
<b>Atrazine + N-dealkylated metabolites</b>	May 05/14	0.01<MDL	ug/L	No
<b>Azinphos-methyl</b>	May 05/14	0.02<MDL	ug/L	No
<b>Bendiocarb</b>	May 05/14	0.01<MDL	ug/L	No
<b>Benzene</b>	May 05/14	0.32<MDL	ug/L	No
<b>Benzo(a)pyrene</b>	May 05/14	0.004<MDL	ug/L	No
<b>Bromoxynil</b>	May 05/14	0.33<MDL	ug/L	No
<b>Carbaryl</b>	May 05/14	0.01<MDL	ug/L	No
<b>Carbofuran</b>	May 05/14	0.01<MDL	ug/L	No
<b>Carbon Tetrachloride</b>	May 05/14	0.16<MDL	ug/L	No
<b>Chlordane (Total)</b>	May 05/14	0.01<MDL	ug/L	No
<b>Chlorpyrifos</b>	May 05/14	0.02<MDL	ug/L	No
<b>Cyanazine</b>	May 05/14	0.03<MDL	ug/L	No
<b>Diazinon</b>	May 05/14	0.02<MDL	ug/L	No
<b>Dicamba</b>	May 05/14	0.20<MDL	ug/L	No
<b>1,2-Dichlorobenzene</b>	May 05/14	0.41<MDL	ug/L	No
<b>1,4-Dichlorobenzene</b>	May 05/14	0.36<MDL	ug/L	No
<b>Dichlorodiphenyltrichloroethane (DDT) + metabolites</b>	May 05/14	0.01<MDL	ug/L	No
<b>1,2-Dichloroethane</b>	May 05/14	0.35<MDL	ug/L	No
<b>1,1-Dichloroethylene (vinylidene chloride)</b>	May 05/14	0.33<MDL	ug/L	No
<b>Dichloromethane</b>	May 05/14	0.35<MDL	ug/L	No
<b>2-4 Dichlorophenol</b>	May 05/14	0.15<MDL	ug/L	No



<b>2,4-Dichlorophenoxy acetic acid (2,4-D)</b>	May 05/14	0.19<MDL	ug/L	No
<b>Diclofop-methyl</b>	May 05/14	0.40<MDL	ug/L	No
<b>Dimethoate</b>	May 05/14	0.03<MDL	ug/L	No
<b>Dinoseb</b>	May 05/14	0.36<MDL	ug/L	No
<b>Diquat</b>	May 05/14	1<MDL	ug/L	No
<b>Diuron</b>	May 05/14	0.03<MDL	ug/L	No
<b>Glyphosate</b>	May 05/14	1<MDL	ug/L	No
<b>Heptachlor + Heptachlor Epoxide</b>	May 05/14	0.01<MDL	ug/L	No
<b>Lindane (Total)</b>	May 05/14	0.01<MDL	ug/L	No
<b>Malathion</b>	May 05/14	0.02<MDL	ug/L	No
<b>Methoxychlor</b>	May 05/14	0.01<MDL	ug/L	No
<b>Metolachlor</b>	May 05/14	0.01<MDL	ug/L	No
<b>Metribuzin</b>	May 05/14	0.02<MDL	ug/L	No
<b>Monochlorobenzene</b>	May 05/14	0.30<MDL	ug/L	No
<b>Paraquat</b>	May 05/14	1<MDL	ug/L	No
<b>Parathion</b>	May 05/14	0.02<MDL	ug/L	No
<b>Pentachlorophenol</b>	May 05/14	0.15<MDL	ug/L	No
<b>Phorate</b>	May 05/14	0.01<MDL	ug/L	No
<b>Picloram</b>	May 05/14	1<MDL	ug/L	No
<b>Polychlorinated Biphenyls(PCB)</b>	May 05/14	0.04<MDL	ug/L	No
<b>Prometryne</b>	May 05/14	0.03<MDL	ug/L	No
<b>Simazine</b>	May 05/14	0.01<MDL	ug/L	No
<b>THM</b> (NOTE: annual average from Distribution System)	Samples Taken: Feb 10/14 May 05/14 Aug 05/14 Nov 03/14	87	ug/L	No
<b>Temephos</b>	May 05/14	0.01<MDL	ug/L	No
<b>Terbufos</b>	May 05/14	0.01<MDL	ug/L	No
<b>Tetrachloroethylene</b>	May 05/14	0.35<MDL	ug/L	No
<b>2,3,4,6-Tetrachlorophenol</b>	May 05/14	0.14<MDL	ug/L	No
<b>Triallate</b>	May 05/14	0.01<MDL	ug/L	No
<b>Trichloroethylene</b>	May 05/14	0.44<MDL	ug/L	No
<b>2,4,6-Trichlorophenol</b>	May 05/14	0.25<MDL	ug/L	No
<b>2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)</b>	May 05/14	0.22<MDL	ug/L	No
<b>Trifluralin</b>	May 05/14	0.02<MDL	ug/L	No
<b>Vinyl Chloride</b>	May 05/14	0.17<MDL	ug/L	No

**List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.**

<b>Parameter</b>	<b>Result Value</b>	<b>Unit of Measure</b>	<b>Date of Sample</b>

## District of Muskoka - Beech Avenue WTP - MacTier

### 1.0 Water Flow Summary - 2014

Month	Total Monthly (m <sup>3</sup> )	Average Day Flow (m <sup>3</sup> /d)	Maximum Day Flow (m <sup>3</sup> /d)	Minimum Day Flow (m <sup>3</sup> /d)	Comments
January	11,156	360	630	141	Max day was the result of system maintenance
February	8,531	305	454	8	Max day was the result of system maintenance
March	10,180	328	509	181	Max day was the result of system maintenance
April	9,478	316	445	183	Represents Max. day customer consumption for the year
May	10,713	346	624	228	Max day was the result of system maintenance
June	9,094	303	577	44	Max day was the result of system maintenance
July	9,149	295	441	157	
August	6,820	220	319	97	
September	6,160	205	291	91	
October	7,089	229	457	152	Max day was the result of system maintenance
November	7,339	245	336	169	
December	6,192	200	261	110	

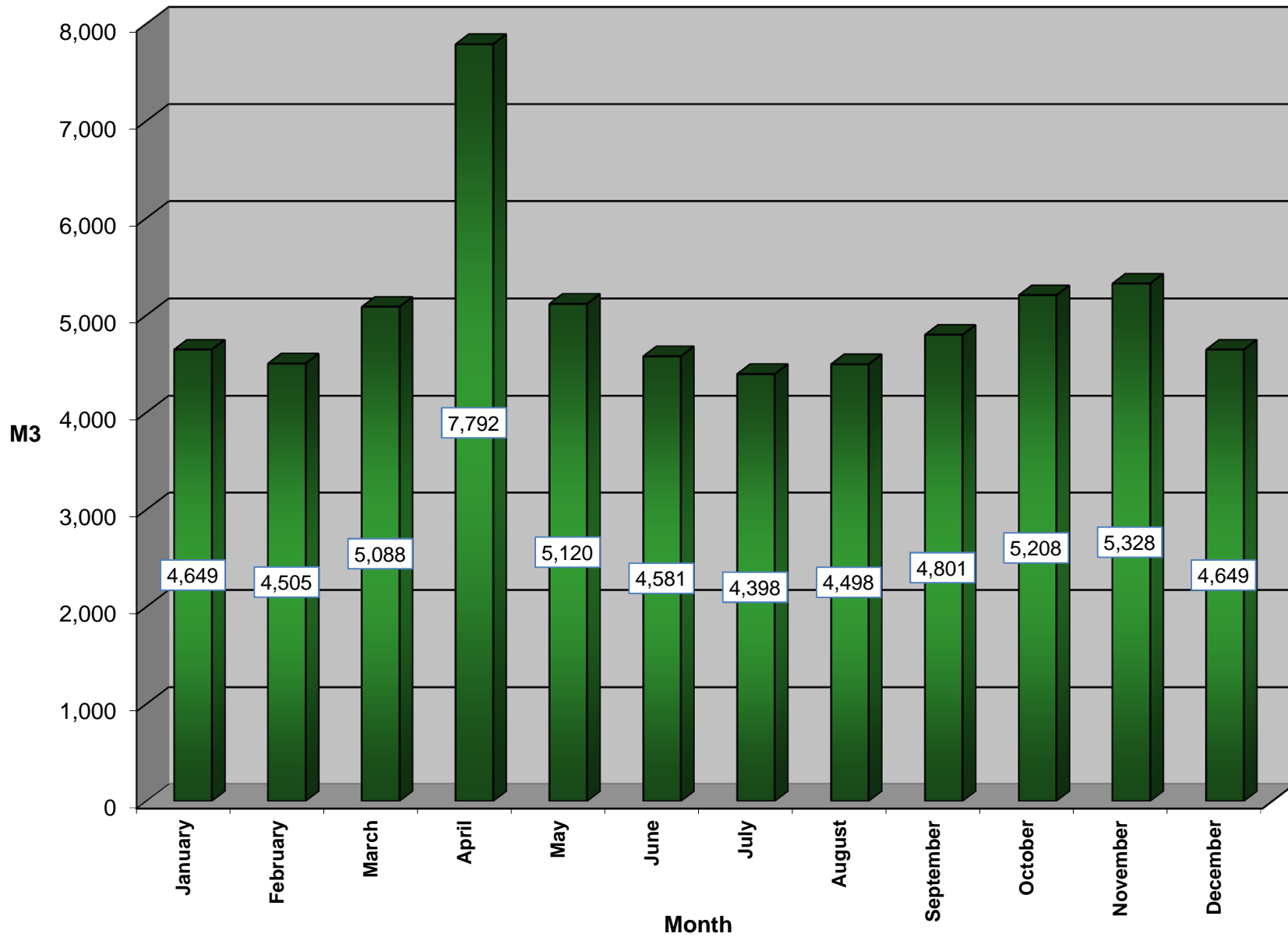
Total 101,901

Average Day 279

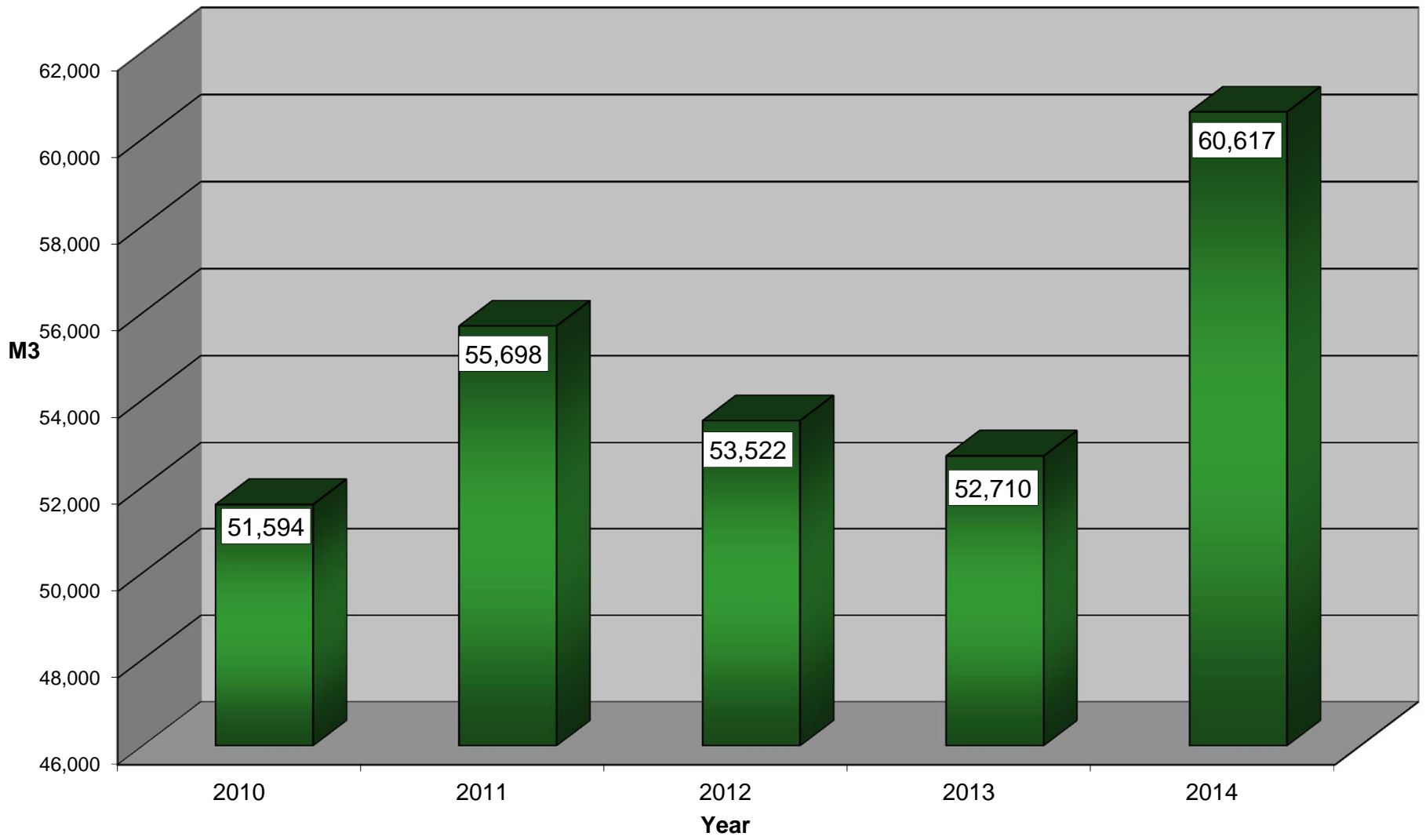
Maximum Day 445

Minimum Day 8

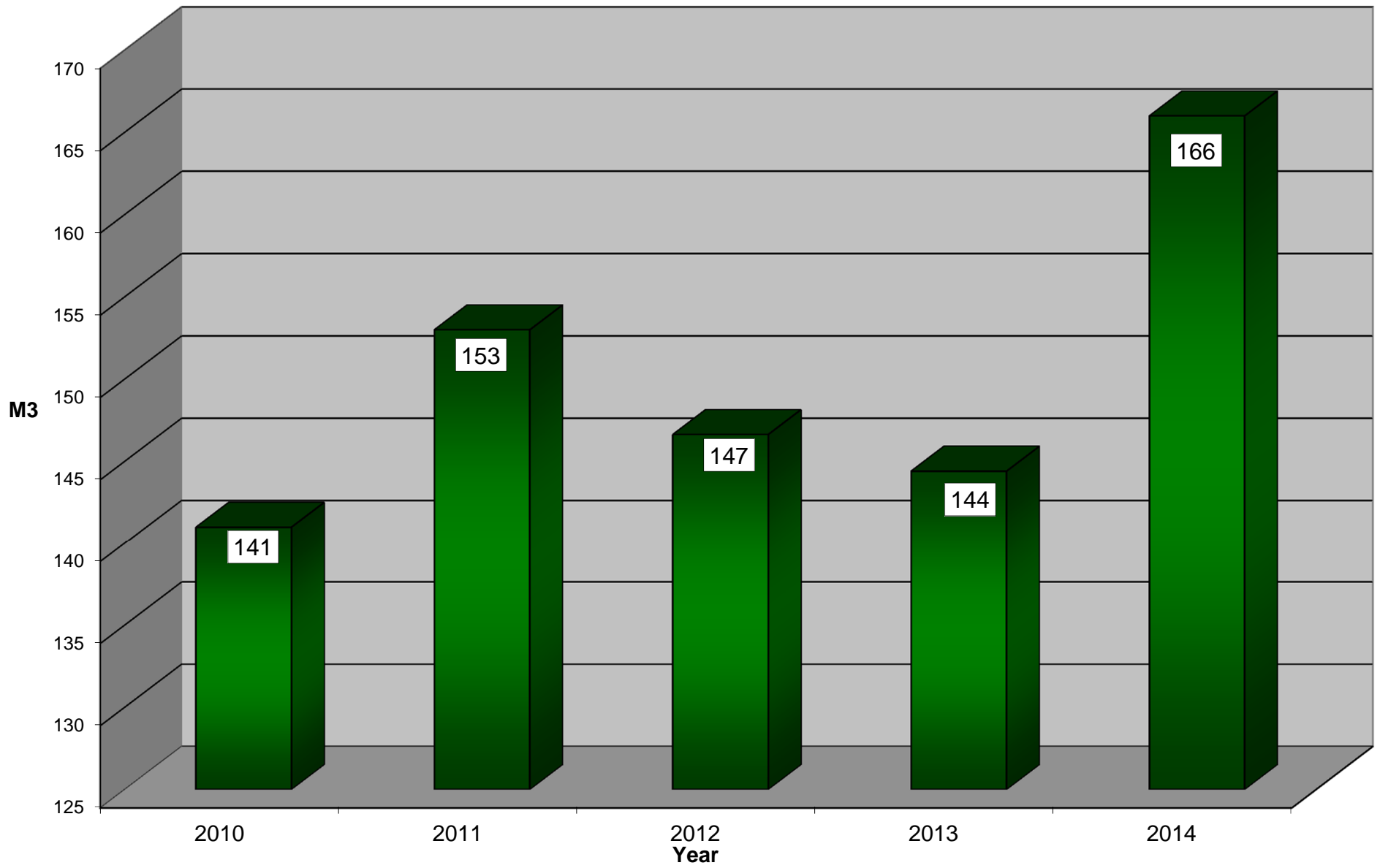
District Municipality of Muskoka  
Conger Marsh WPCP - Mactier  
Monthly Treated Discharges 2014



District Municipality of Muskoka  
Conger Marsh WPCP - Mactier  
Treated Discharges 2010-2014



District Municipality of Muskoka  
Conger Marsh WPCP - Mactier  
Average Day Treated Discharges 2010-2014



**The District of Muskoka - Beech Avenue WTP - MacTier**  
**Summary of Microbiological Raw Analysis - 2014**  
**Number of Samples Taken**

Month	Total Coliform Total for 2014	E-coli Total for 2014	HPC Total for 2014	Adverse Samples Total for 2014
January	4	4	0	0
February	4	4	0	0
March	5	5	0	0
April	4	4	0	0
May	4	4	0	0
June	4	4	0	0
July	5	5	0	0
August	4	4	0	0
September	5	5	0	0
October	4	4	0	0
November	4	4	0	0
December	5	5	0	0

**The District of Muskoka - Beech Avenue WTP - MacTier**  
**Summary of Microbiological Treated Water Analysis - 2014**  
**Number of Samples Taken**

Month	Total Coliform Total for 2014	E-coli Total for 2014	HPC Total for 2014	Adverse Samples Total for 2014
January	4	4	4	0
February	4	4	4	0
March	5	5	5	0
April	4	4	4	0
May	4	4	4	0
June	4	4	4	0
July	5	5	5	0
August	4	4	4	0
September	5	5	5	0
October	4	4	4	0
November	4	4	4	0
December	5	5	5	0

**The District of Muskoka - Beech Avenue WTP - MacTier  
Summary of Microbiological Distribution Analysis - 2014  
Number of Samples Taken**

Month	Total Coliform Total for 2014	E-coli Total for 2014	HPC Total for 2014	Adverse Samples Total for 2014
January	12	12	5	0
February	12	12	4	0
March	15	15	4	0
April	12	12	5	0
May	13	13	4	0
June	12	12	4	0
July	15	15	5	0
August	12	12	4	0
September	15	15	4	0
October	12	12	5	0
November	12	12	4	0
December	15	15	5	0

**2014 SCHEDULED SAMPLE LOCATIONS:**

<b><u>Sample #</u></b>	<b><u>Location</u></b>	<b><u>Municipal Address</u></b>
MW1	MACTIER WTP - RAW	18 BEECH AVE.
MW2	MACTIER WTP - TREATED	18 BEECH AVE.
MW3	WATER TOWER	ELIZABETH ST.
MW4	MACTIER HEALTH CLINIC	53 HAIG ST.
MW5	L.C.B.O	426 HIGH ST.
MW6	HOME HARDWARE	15 FRONT ST.
MW7	254 HIGH ST.	254 HIGH ST.
MW8	TOWNSHIP YARD	630 HIGH ST.



## District of Muskoka - Beech Avenue WTP - MacTier

### 2.0 Raw Water Monthly Analysis Summary - 2014

Month	Alkalinity	Hardness	pH	Turbidity	True Colour	Temperature	TDS	Langliers Saturation Index
<i>Parameter</i>	<i>mg/l</i>	<i>mg/l</i>	<i>pH</i>	<i>ntu</i>	<i>tcu</i>	<i>Celcius</i>	<i>mg/l</i>	
January	25	28	7.0	1.0	38	7.0	125	-2.0
February	28	29	6.9	1.1	38	7.8	125	-2.3
March	25	28	6.9	0.7	41	7.1	127	-2.3
April	26	28	6.9	0.7	39	7.9	130	-2.2
May	27	28	7.0	1.0	44	8.6	117	-2.2
June	22	25	7.1	0.7	42	9.7	120	-2.1
July	24	25	6.9	0.7	42	11.0	119	-2.3
August	26	26	6.8	0.7	40	11.4	120	-2.3
September	27	26	6.5	1.0	37	10.9	117	-2.6
October	26	27	6.5	1.0	39	10.9	116	-2.6
November	25	28	7.0	1.2	45	8.7	116	-2.3
December	26	28	7.1	1.0	47	6.2	117	-2.0
Average	26	27	6.9	0.9	41	8.9	121	-2.3

## District of Muskoka - Beech Avenue WTP - MacTier

### 4.0 Treated Water Monthly Analysis Summary - 2014

Month	Alkalinity	Hardness	pH	Turbidity			TRUE Colour	Iron	Manganese	Chlorine			TDS	Langliers Saturation Index
				Average	High	Low				Free	High	Low		
<i>Parameter</i>	<i>mg/l</i>	<i>mg/l</i>	<i>pH</i>	<i>ntu</i>	<i>ntu</i>	<i>ntu</i>	<i>tcu</i>	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>	
January	49	55	7.5	0.11	0.15	0.08	1	0.01	0.02	1.4	1.7	1.1	233	-1.1
February	61	58	7.5	0.12	0.29	0.07	1	0.02	0.02	1.3	1.6	1.2	253	-0.9
March	58	55	7.6	0.11	0.21	0.08	1	0.02	0.02	1.4	2.0	1.1	252	-0.9
April	47	52	7.5	0.11	0.14	0.09	1	0.02	0.02	1.5	1.7	1.0	230	-1.0
May	36	36	7.4	0.12	0.24	0.08	1	0.02	0.02	1.4	1.8	0.9	193	-1.4
June	39	40	7.6	0.10	0.13	0.08	1	0.02	0.02	1.4	1.9	0.9	195	-1.3
July	44	40	7.4	0.12	0.26	0.08	1	0.02	0.01	1.4	1.7	0.7	191	-1.0
August	47	43	7.5	0.10	0.19	0.07	1	0.02	0.01	1.7	2.0	1.2	198	-1.3
September	49	45	7.5	0.12	0.18	0.09	1	0.02	0.02	1.6	1.8	1.2	197	-1.1
October	49	51	7.4	0.14	0.23	0.11	1	0.02	0.03	1.6	2.0	1.2	196	-1.1
November	48	50	7.4	0.18	0.29	0.11	2	0.02	0.04	1.4	1.9	0.7	198	-1.1
December	48	49	7.5	0.16	0.27	0.12	1	0.02	0.04	1.8	2.0	1.5	199	-1.1
Average	48	48	7.5	0.12	0.22	0.09	1	0.02	0.02	1.5	1.8	1.1	211	-1.1

## District of Muskoka - Beech Avenue WTP - MacTier

### 6.0 Distribution Water Monthly Analysis Summary - 2014 MW3 at Elizebeth Street - Location of Greatest Retention Time

Month	Alkalinity	Hardness	pH	Turbidity	Colour	Free Chlorine	TDS	Langliers Saturation Index
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<i>Parameter</i>	<i>mg/l</i>	<i>mg/l</i>		<i>ntu</i>	<i>TCU</i>	<i>mg/l</i>	<i>uS/cm</i>	
January	49	48	7.5	N.A.	1	1.1	196	-1.1
February	52	49	7.4	N.A.	1	0.9	206	-1.2
March	53	46	7.6	N.A.	1	1.0	212	-1.0
April	50	47	7.5	N.A.	1	1.2	221	-1.1
May	57	52	7.6	N.A.	1	1.1	213	-0.8
June	58	55	7.8	N.A.	2	1.0	216	-0.5
July	59	50	7.8	N.A.	2	0.8	212	-0.6
August	62	50	7.8	N.A.	1	0.7	217	-0.5
September	61	52	7.6	N.A.	0	0.8	214	-0.7
October	49	53	7.7	N.A.	1	0.7	199	-0.7
November	54	55	7.6	N.A.	1	0.7	196	-0.8
December	53	59	7.5	N.A.	1	1.1	202	-1.0
Average	55	51	7.6	N/A	1.0	0.9	209	-0.8

**District of Muskoka - Beech Avenue WTP - MacTier**

**7.0 Distribution Water Quarterly Sampling Summary - 2014**

<b>Trihalomethanes</b>		1	2	3	4	DDW MW3	DDW MW3	DDW MW3	DDW MW3		
<i>Water Storage Tower</i>	<i>Units</i>	<i>MAC/IMAC</i>	<i>AO/OG</i>	<i>ODWS RDL</i>	<i>LRL MDL</i>	<i>Feb 10/14</i>	<i>May 05/14</i>	<i>Aug 05/14</i>	<i>Nov 03/14</i>	<i>Average</i>	<i>Max</i>

Trihalomethanes Total	µg/L	100	-	10	8	78	98	87	85	87	98
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<b>Lead</b>		1	2	3	4		MW10				
<i>Water Storage Tower</i>	<i>Units</i>	<i>MAC/IMAC</i>	<i>AO/OG</i>	<i>ODWS RDL</i>	<i>LRL MDL</i>		<i>May 05/14</i>			<i>Average</i>	<i>Max</i>

Lead	µg/L	10	300	150	20		0.06			0.06	0.06
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**District of Muskoka - Beech Avenue WTP - MacTier**

**9.0 Chemical Usage Summary - 2014**

Month	Powdered Activated Carbon			CO2			Hydrated Lime			Coagulant		
	Average Dosage mg/L	Total kg	Estimated Monthly Cost	Average Dosage mg/L	Total kg	Estimated Monthly Cost+ Rental	Average Dosage mg/L	Total kg	Estimated Monthly Cost	Average Dosage mg/L	Total Kg	Estimated Monthly Cost
January	0.0	0.0		16.6	196		13.5	154		21.6	254	
February	0.0	0.0		30.5	259		13.5	121		21.6	194	
March	0.0	0.0		27.2	281		13.5	141		21.6	225	
April	0.0	0.0		28.9	286		13.5	133		21.6	213	
May	0.0	0.0		29.2	319		13.5	149		21.6	238	
June	0.0	0.0		29.1	272		13.5	127		21.6	203	
July	0.0	0.0		29.3	281		13.5	130		22.6	217	
August	0.0	0.0		29.5	209		13.5	96		23.0	164	
September	0.0	0.0		21.3	137		13.5	87		23.0	148	
October	0.0	0.0		9.0	67		13.5	100		23.0	171	
November	0.0	0.0		19.3	147		13.5	103		23.0	176	
December	0.0	0.0		25.2	162		13.5	88		26.6	172	
Average Monthly	0.0	0.0		24.6	218		13.5	119		22.6	198	
Unit Cost												
Total Yearly					2,617			1,432			2,375	

Month	Sodium Hydroxide			Fluoride			Chlorine			Soda Ash		
	Average Dosage mg/L	Total Kg	Estimated Monthly Cost	Average Dosage mg/L	Total kg	Estimated Monthly Cost	Average Dosage mg/L	Total Kg	Estimated Monthly Cost	Average Dosage mg/L	Total Kg	Estimated Monthly Cost
January	12.7	142		0.69	7.1		4.03	43		0	0	
February	12.7	109		0.95	6.3		4.03	33		0	0	
March	12.7	130		0.52	4.7		4.03	39		0	0	
April	12.7	121		0.65	6.0		4.03	37		0	0	
May	12.7	136		0.68	7.0		4.03	41		0	0	
June	12.7	116		0.69	5.9		4.03	35		0	0	
July	12.7	116		0.63	5.7		4.03	36		0	0	
August	12.7	87		0.57	3.7		4.03	27		0	0	
September	12.7	78		0.64	3.8		4.03	24		0	0	
October	12.7	90		0.56	3.9		4.03	28		0	0	
November	12.7	93		0.52	3.7		4.03	28		0	0	
December	12.7	79		0.65	3.7		4.03	24		0	0	
Average Monthly	12.7	108		0.65	5.1		4.03	33		0	0	
Unit Cost												
Total Yearly		1,297			61.4			394				

Month	Sodium Permanganate			Polymer		
	Average Dosage mg/L	Total Kg	Estimated Monthly Cost	Average Dosage mg/L	Total Kg	Estimated Monthly Cost
January	0.02	0		0	0	
February	0.00	0		0	0	
March	0.00	0		0	0	
April	0.00	0		0	0	
May	0.00	0		0	0	
June	0.00	0		0	0	
July	0.00	0		0	0	
August	0.00	0		0	0	
September	0.05	0		0	0	
October	0.59	4		0	0	
November	0.30	2		0	0	
December	0.46	3		0	0	
Average Monthly	0.1	0.9		0	0	
Unit Cost						
Total Yearly						

## District of Muskoka - Beech Avenue WTP - MacTier

### 10.0 Adverse Water Quality Summary - 2014

Sample		Lab ID #	Location	Parameter	Result	Mac / Imac	Comments
Date	Time						

1	May 05 2015		CA15052	MW2	Sodium	28.1 mg/l	20 mg/l	
R1	May 14 2015		CA16958	MW2	Sodium	25.4 mg/l	20 mg/l	
R2								
R3								

Sample		Lab ID #	Location	Parameter	Result	Mac / Imac	Comments
Date	Time						

2								
R1								
R2								
R3								

Sample		Lab ID #	Location	Parameter	Result	Mac / Imac	Comments
Date	Time						

3								
R1								
R2								
R3								

## **2014 MACTIER WATER DISTRIBUTION SUMMARY**

### **New Services**

There were no new water services installed.

### **Broken Watermains**

There were no broken watermains to report.

### **Service Leaks**

There was 1 service leak reported that was the District of Muskoka's responsibility. Several leaks on private property were reported and subsequently repaired. This should have a positive impact on water loss figures in the future.

### **Frozen Services**

There was 1 frozen water service within the municipal road allowances. The service was excavated and insulated from the main to the curbstop.

### **New Watermains**

There were no new water mains installed.

### **Valve Replacement**

There were no new valves installed. All 68 valves were operated.

### **Fire Hydrants**

Routine hydrant maintenance was performed which includes, inspecting, operating, and greasing each individual hydrant, seasonal flushing, scoping, and snow removal numerous times through the winter months. There are 56 hydrants in the community of MacTier. Most of the hydrant signs have been replaced with new ones, the remainder will be done in 2015. A total of 33 fire hydrants were painted.

### **Meter Installations**

District staff continued to maintain the water meters in MacTier. A total of 19 meters were repaired, and 1 meter was replaced.

### **Air Vacuum Release Valves**

Air Vacuum release valves were drained, operated, and inspected and all were in good working condition

### **Locates**

There were 32 locate requests that were completed.