

**Town of Midland  
Operations Department  
Water Division**

**Large Municipal Residential Drinking Water System**

Annual Summary Report  
(Prepared in accordance with Section 11 and Schedule 22  
of Ontario Regulation 170/03)

For the Period of

January 1, 2015 to December 31, 2015



## Executive Summary

The purpose of this report is to provide information to several stakeholders and to satisfy the regulatory requirements of the Safe Drinking Water Act (SDWA) including the Drinking Water Quality Management Standard (DWQMS), and regulatory reporting required under O.Reg. 170/03 (Section 11 and Schedule 22) described in Appendix F and G. The Summary Report must be presented and accepted by Council by March 31<sup>st</sup> of each year.

This Regulation also requires the owner to produce an Annual Report by February 28<sup>th</sup> of each year, as set out in Section 11. This report must include the following:

- Description of the system
- Summary of any adverse water quality reports and corrective actions
- Summary of all required testing results
- Description of any major expenses incurred to install, repair or replace required equipment

Prior to amendments made to O.Reg. 170/03 in 2006, the Annual Report had to be submitted to the Ministry of the Environment; this is no longer a requirement. As a result, the Summary and Annual Reports have been combined by Town staff into one document, which is submitted to Council for acceptance.

The report is a compilation of information that helps to demonstrate the ongoing provision of a safe, consistent supply of high quality drinking water to customers located within the Town of Midland.

The Town of Midland is a municipally-owned and operated water utility. The Midland Drinking Water System is a Class 3 Water Distribution and Supply Subsystem and a Class 1 Water Treatment System.



The Midland Drinking Water System is required to comply with the Safe Drinking Water Act (SDWA) and Regulations as well as requirements contained in Permits to Take Water (PTTW), Municipal Drinking Water Licenses (MDWL), and Drinking Water Works Permits (DWWP). Having met the quality management system requirements of the SDWA, Midland Water Operations is an accredited Operating Authority with an up-to-date Operational Plan (OP). The OP is available upon request from the Town of Midland Water Operations office, located at 200 Bay St.

Town of Midland  
Large Municipal Residential Drinking Water System  
Annual Summary Report

---

The source of Midland's drinking water is a series of 10 operational groundwater wells with some groundwater under the direct influence of surface water (GUDI) sources (i.e. Highway #12 Treatment System, Vindin Treatment System). The Town of Midland has approximately 5,900 fully metered water service connections, 120 kilometers of underground watermains, and a population of approximately 17,000.

As the Operating Authority, the Town of Midland Water Operations is annually inspected by the Ontario Ministry of the Environment and Climate Change (MOECC) for compliance with regulatory requirements. The MOECC has not yet conducted their inspection at the time of this report.

From January 1 to December 31, 2015, Midland Water Operations reported two Adverse Water Quality Incidents (AWQIs) in the Midland Drinking Water System: one incident involved the test results of higher than allowable Sodium in raw water samples, the other involved water being sent to the distribution system without adequate secondary disinfection caused by errors in the SCADA computer programming. In conjunction with Simcoe Muskoka District Health Unit and the MOECC, all appropriate corrective actions and reporting were completed.

The system is operated to meet daily, seasonal, and other operational demands (fire demands) with various combinations of supplies in operation at any given time. From January 1 to December 31, 2015, a total of 2,011,242 cubic metres of water was treated and pumped to the system. The average daily water demand was 5,516 cubic metres. All water was treated with sodium hypochlorite (for chlorine disinfection) and ultraviolet disinfection (UV). All water was tested and met all regulatory standards.

The Town of Midland Water System is in a fit state of repair and followed best industry practices during the repair and maintenance of the system. Infrastructure review occurs regularly between Engineering and Water Operations to optimize priority projects and minimize common costs. The Town of Midland maintains a robust backflow prevention program overseeing 471 facilities with 999 backflow prevention devices installed. There were no reported backflow incidents. The Town of Midland has completed this Annual & Summary Report to satisfy the regulatory requirements of the Safe Drinking Water Act, O.Reg. 170/03 (Section 11 and Schedule 22).

For more information please contact Town of Midland Water Operations (705) 526-4268 or e-mail: [wwtc@midland.ca](mailto:wwtc@midland.ca).

## **Drinking Water System Overview**

The Town of Midland distribution system consists of approximately 120 km of water mains including 5,900 customer connections serving a population of approximately 17,000. There are approximately 29 sampling stations, 564 fire hydrants and 1,040 valves and other appurtenances within the distribution system. The distribution consists of four pressure zones (four main pressure zones, East, West, Lescaut, and Harbourview areas), four Booster Pumping Stations (Dominion, Everton, Montreal, and Penetanguishene) as well as five above ground storage facilities (Hanly Tower, Dominion Standpipe, Montreal Tank, Everton Tank, and Mountainview Tank) with a total finished water storage capacity of approximately 14,834 cubic metres. No storage exists within the Lescaut Pressure Zone which relies upon pumped storage supplied from the Hanly Tower.

Treated water is also supplied across the Wye River in two places to non-residential consumers in Tay Township - namely Martyrs' Shrine and Sainte-Marie among the Hurons, which in turn supplies the Wye Marsh Wildlife Centre.

## **Legislation**

Since the issuance of the Walkerton Reports I and II in 2002, many legislative and regulatory changes have occurred for those supplying drinking water in Ontario. The following are the primary pieces of legislation that have directly affected the operation of the Town of Midland water distribution and treatment system.

## **Safe Drinking Water Act**

As recommended by Commissioner O'Connor, the government passed the Safe Drinking Water Act in 2002, which expands on existing policy and practice and introduced new features to protect drinking water in Ontario. The Act's purpose is to protect human health through the control and regulation of drinking-water systems and drinking-water testing. The Act also provides legislative authority to implement the recommendations made in Commissioner O'Connor's Walkerton Part I and II Reports. As of August 2007, all 28 recommendations made in Part I, and all 93 in Part II have been implemented. The Act also has the benefit of gathering in one place all legislation and regulations relating to the treatment and distribution of drinking water.

Parts of the Act address:

- Accreditation of operating authorities
- Municipal drinking water systems
- Drinking water testing
- Inspections
- Compliance and Enforcement

### **Ontario Regulation 170/03: Drinking Water Systems Regulation**

The Drinking Water Systems Regulation (O. Reg. 170/03) regulates municipal and private water systems that provide water to year-round residential developments. This regulation stipulates treatment equipment usage, operational checks and sampling, chemical and microbiological testing requirements, corrective actions, and reporting requirements.

Amendments to O. Reg. 170/03 came into effect on June 5, 2006. The amendments are risk-based and are designed to safeguard the quality of Ontario's drinking water, while making the regulation more workable and affordable for residential drinking water systems and systems serving designated facilities. They add clarity and flexibility to the testing and operational regimes set out in O. Reg. 170/03 and in some cases has reduced the cost of regulatory compliance.

On July 26, 2007, further amendments were made requiring additional lead sampling for water distribution systems. The purpose of the new lead testing requirements is to determine whether communities have a problem with lead in drinking water at the tap. Random testing throughout the Town would provide the basis on which to initiate actions to reduce lead levels through control of lead corrosion and would provide evidence of any changes in lead levels over time.

### **Authorization Documents**

The Town of Midland owns and operates a "large municipal residential drinking water system" which has been provided the drinking water system number of 220001156 by the Ministry of the Environment.

The Ministry has issued the following authorization documents for the Midland Drinking Water System;

- Drinking Water System License #122-101
- Drinking Water System Permit #122-201
- Drinking Water System Operational Plan #122-401

### **Ontario Regulation 128/04: Certification of Drinking-Water Operators and Water**

The Water Operator Certification Program was initiated for drinking water operators in 1987 as a voluntary program. On May 14, 2004, O. Reg. 128/04 was issued, increasing the requirements for drinking water operator's certification. The regulation also establishes ongoing training requirements for these operators. Details note the different types of licenses, reissuance and transferability, overall and operator in charge responsibilities, record keeping, and operations/maintenance manuals.

Of special note, this regulation stipulates that all new water operators must complete an Entry-Level Course of Study within the first 16 months of obtaining their operator-in-training (OIT) certificate. As of August 1, 2005, these operators must complete a 40 hour at-home study manual and successfully pass a written test based on this manual. After this, they must attend a five day in-class training seminar and examination facilitated by the Walkerton Clean Water Centre. Once these requirements have been met, the new operator's license is valid for three years, allowing them time to meet the requirements needed for a Level One License.

### **Drinking Water Quality Management Standard (DWQMS)**

On November 28, 2005, The Ontario Ministry of the Environment posted the Drinking Water Quality Management Standard (DWQMS) on the Environmental Registry for comment until January 27, 2006. On October 30, 2006, the finalized standard was issued on the Environmental Bill of Rights Registry. The purpose of this Standard is to assist owners and operating authorities in the effective management and operation of their municipal residential drinking water systems. This Standard outlines requirements for a Quality Management System (QMS) to ensure high quality drinking water. In the development of a QMS, the Operating Authority must create an Operational Plan; this document will define the QMS and will be subject to external audits for accreditation. As referenced in the Standard, the QMS must be embraced by all those with active rolls in the water system, from front line staff to the highest level of management. Town Staff have developed and implemented a QMS specific to the Town of Midland. The developed Operational Plan was submitted to the Ministry of the Environment by the imposed deadline with external auditing and final accreditation by the Canadian General Standards Board (CGSB) for full-scope DWQMS certification. Re-certification occurred on July 15, 2014.

## **Ontario Regulation 435/07: Financial Plans**

In 2007, the Ministry of the Environment (MOE) developed the Financial Plans Regulation (O. Reg. 453/07) under the Safe Drinking Water Act (SDWA) that prescribes the requirements for Financial Plans. The Financial Plans Regulation requires all owners of municipal residential drinking water systems to prepare Financial Plans that detail the system's financial information projected forward for at least six years. The Financial Plans must include income statements (which set out revenues and expenses), as well as balance sheets (which include financial assets, non-financial assets, total liabilities, cash flow, etc.).

The Financial Plans must then be formally approved by the Owner of the municipal system through a resolution of the Municipal Council. The Financial Plan requires regular updates before every license renewal application (every 5 years). This report formed the foundation for the Financial Plan that was then submitted to the Ministry of the Environment prior to the July 2010 deadline. This is a legal requirement under O. Reg. 453/07 and is to be resubmitted to the Ministry as a part of the Operator License Renewal Program under the DWQMS.

## **Major Expenses During 2015**

Major expenses during 2015 are categorized as follows:

- Distribution Upgrades (Hypo Pumps and Flow Meters)
- Infrastructure (Manly Street Watermain Reconstruction between Hugel Avenue and Gloucester Street and Prospect Boulevard New Watermain Construction between MacDonald Road and Beamish Road)
- Well Rehabilitation (Pump #7B, #11 and #14)

## **Water Treatment Chemicals**

The only water treatment chemical used in the system during the reporting year was a 12% Sodium Hypochlorite solution. This is used as primary and secondary disinfection in the water treatment process.

## **Detailed Water System Descriptions**

### **Well 7A Raw Water**

Well #7A is located at the southern boundary of the Town of Midland along Highway #12 (Heritage Drive). This well, constructed in 1972 (Well Record #5707896), is drilled to a depth of 64.9 meters, and has a 300 mm diameter steel casing. The well is screened from 56.7 to 64.9 meters and is located within the pump house equipped with a vertical turbine pump rated at 57 L/s at a TDH of 103.7 m. Groundwater is directed to treatment equipment at the Highway 12 Treatment System pump house.

According to the 2002 GUDI Hydrogeological Report, Wells 7A and 7B are located within the 50 day horizontal travel time from a pond and drainage ditches which collect runoff from Highway #12. The report further states that given the "absence of aquitards, the location of the well field in a major recharge area, and the gradual increase of sodium and chloride, suggests potential susceptibility of the aquifer to contamination and provides enough evidence to suggest that wells 7A and 7B are potentially GUDI wells as per the MOE Terms of Reference".

### **Well 7B Raw Water**

Well #7B, located at the southern boundary of the Town of Midland along Highway #12 (Heritage Drive), was constructed in 1989 (Well Record #5709697), approximately 9 meters north of the pump house and 30 meters south of Highway #12. The well is drilled to a depth of 64.9 meters, has a 300 mm diameter steel casing and is screened from 56.7 to 64.9 meters. The well is equipped with a deep well submersible pump having an approximate capacity of 49 L/s at 105.5 metres TDH, and has a pitless adaptor directing groundwater to the Highway 12 Treatment System pump house.

According to the 2002 GUDI Hydrogeological Report, Wells 7A and 7B are located within the 50-day horizontal travel time from a pond and drainage ditches which collect run off from Highway #12. The report further states that given the "absence of aquitards, the location of the well field in a major recharge area, and the gradual increase of sodium and chloride, suggests potential susceptibility of the aquifer to contamination and provides enough evidence to suggest that wells 7A and 7B are potentially GUDI wells as per the MOE Terms of Reference."

### **Highway 12 Treatment System**

The Highway 12 Treatment System pump house, situated at the corner of Highway 12 and Beamish Road, is a direct pumping type system consisting of two (2) GUDI supply wells, 7A and 7B, and treatment works. Both pumps operate independently of each other in response to the water level in the Hanly Street elevated water tower. Water is discharged following treatment into the distribution system at system pressure.

Inlet piping from each well pump consists of isolation valves, air relief valves, flow measuring devices (installed on each header) and pressure sustaining valves and discharge to waste piping. Prior to treatment, the raw water Ultraviolet Light Transmittance (UVT) is measured by a continuous on-line meter; with measurements used in determining Ultraviolet (UV) dosage and trended on Midland's SCADA system.

The chlorine contact time necessary to complete the process of primary disinfection is provided by a dedicated section of the piping upstream of the first consumer connection. To ensure the continuous monitoring equipment installed for the purposes of measuring free available chlorine residual for primary disinfection purposes is supplied with a continuous sample adequately simulating contact time, the Owner has installed a 1.2 metre length of 100 mm diameter chlorine contact simulation piping. One Wallace and Tiernan free chlorine residual and pH analyzer is provided with continuous samples taken off this chlorine contact simulation pipe and measures free available chlorine residual concentration in mg/L. Treatment is comprised of:

- two (2) UV irradiation units for primary disinfection purposes, each rated at 9,185 m<sup>3</sup>/day at 90% UVT with design dose of 40 mJ/cm<sup>2</sup> with electrically actuated control valves to allow switchover between units, automatic cleaning systems, cooling systems and control system functionality;
- a chemical disinfection system utilizing sodium hypochlorite solution for both Primary and Secondary Disinfection purposes, and consisting of one 550 L sodium hypochlorite solution tank and two chemical metering pumps (one duty, one standby) with individual nameplates indicating a capacity of 14.82 L/hr, each equipped with alarms and automatic switch over on duty pump failure;
- one continuous, on-line turbidimeter measuring Turbidity in NTU's is supplied with continuous samples from the same location as identified for the chlorine analyzer. The turbidimeter is equipped with signal outputs connected to the SCADA for continuous monitoring and reporting purposes. The turbidimeter is installed for operational monitoring purposes only;
- one flow measuring device, equipped with 4-20 outputs is installed on each of the well headers and used to measure and trend water conveyed into treatment units and the distribution system;
- a Residue Management System consisting of one sump and two sump pumps collects process wastewater and discharges to a drainage ditch adjacent to the pump house; and
- one standby diesel generator with a nameplate indicating a rating of 330 kW is installed within a separate room in the pump house and designed to power key components of the facility during power interruptions.

### **Well 9 Raw**

Well #9, located in the west end of Town approximately 20 meters south-east of the Dominion treatment pump house, was constructed in 1975 (Well Record #5710939). The well is equipped with a deep well submersible pump having an approximate capacity of 23 L/s vs 38 m TDH and pitless adaptor. The well is drilled to a depth of 93.9 metres and is 178 mm in diameter. The well casing is steel and is screened from 87.5 to 93.9 meters. Raw water is directed to the Dominion treatment system pump house.

According to the 2002 GUDI Hydrogeological Report, the aquifer supplying Well #9 is susceptible to contamination, due to its partially unconfined, sandy conditions and the presence of a thick unsaturated zone. Well 9 is not considered to be GUDI.

### **Dominion Treatment System**

The Dominion pump house is a single level building, located at the south-east corner of Dominion Street and Penetanguishene Road and houses the treatment and control facilities, inlet piping, valves, flow meter with bypass, discharge piping and discharge to waste, electrical panel with motor starter, electrical heater, ventilation, and associated appurtenances from the pump house to the 150 mm watermain. The 150 mm diameter water main has no service connections from pump house to Penetanguishene Road. Well 9 conveys water to and through the treatment works into the distribution system operated based on pressures and water levels in the West Pressure Zone, Montreal Tank, Dominion Street Reservoir and the Mountainview Reservoir. Treatment and monitoring consists of:

- an Ultraviolet (UV) disinfection system, consisting of one ultraviolet reactor system, is installed for primary disinfection purposes; capable of treating 23 L/s at 95% UVT with a design dose of 40 mJ/cm<sup>2</sup>;
- a Chemical System utilizing sodium hypochlorite addition for secondary disinfection purposes, consisting of two chemical metering pumps with nameplates indicating rated capacities of 3.6 L/hr and equipped with automatic switchover capabilities and alarms, and one (1) 200 L sodium hypochlorite storage tank and discharge feed connections;
- one continuous on-line chlorine residual analyzer measuring free available chlorine residual concentration in mg/L supplied with a treated water sample prior to the conveyance of the treated water to the distribution system is used to evaluate the secondary disinfection system. The analyzer is equipped with signal outputs connected to the SCADA system for continuous monitoring/control and reporting purposes;
- one continuous, on-line turbidimeter measuring in NTU's, supplied with continuous samples from the same location as identified for the chlorine analyzer. The analyzer is equipped with signal outputs connected to the SCADA for continuous monitoring and reporting purposes is used for operational monitoring purposes only; and

- flow measuring devices equipped with 4-20mA outputs linked with the SCADA system for continuous monitoring and control purposes.

### **Well 15 Raw Water**

Well #15 is located within a removable structure directly adjacent and attached to the Hanly treatment system pump house approximately 160 meters east of Lakeview Cemetery. The well was constructed in 1985 (Well Record #5717683) to a depth of 46.6 meters with a 200 mm diameter steel casing. The well is screened from 40.3 to 46.6 meters and is equipped with a submersible well water pump having an approximate capacity of 15.2 L/s at 42 m TDH.

The municipal groundwater source is located in a primarily residential area. A cemetery is located approximately 100 metres southwest of the well. According to the Hydrogeological reports, approximately half of the cemetery is located within the 2-year Well Head Protection Area (WHPA), with the remainder located within the 25-year WHPA. The 2002 MacViro GUDI Hydrogeological report stated that the cemetery is likely "the most significant risk to the well field" and further states that contaminants released from the cemetery could be drawn to the well field due to the continuous and long-term pumping of the well. Well 15 is not considered to be Groundwater Under the Direct Influence (GUDI) of surface water.

### **Hanly Treatment System**

The Hanly pump house is located at the southwest corner of Hanly Street and Russell Street. It houses treatment and control facilities, inlet piping and flow meter, electrical panel with motor starter, electrical heater, ventilation, and associated appurtenances.

Well 15 conveys water to and through the treatment works into the distribution system via a 150 mm water main based on pressures and water levels in Sector 5 and the Hanly Tower. Pressures in Sector 5 are maintained by VFD driven booster pumps. The 150 mm diameter water main reportedly has no service connections from the pump house to Hanly Street, and provides some chlorine contact time prior to the first user. Treatment and monitoring consists of:

- an Ultraviolet (UV) disinfection system, consisting of one ultraviolet reactor installed for primary disinfection purposes; having a reactor capable of treating 15.2 L/s at 95% UVT with a design dose of 40 mJ/cm<sup>2</sup>;
- a chemical system utilizing sodium hypochlorite addition for secondary disinfection purposes, consisting of two chemical metering pumps with nameplates indicating rated capacities of 3.6 L/hr equipped with automatic switchover capabilities and alarms and one (1) 200 L sodium hypochlorite storage tank and discharge feed connections;
- one continuous on-line chlorine residual analyzer measuring free available chlorine residual concentration in mg/L is temperature compensated supplied with a treated water sample prior to the conveyance of the treated water to the

distribution system is used to evaluate the secondary disinfection system. The analyzer is equipped with signal outputs connected to the SCADA system for continuous monitoring/control and reporting purposes;

- one continuous, on-line turbidimeter measuring in NTU's, supplied with continuous samples from the same location as identified for the chlorine analyzer. The analyzer is equipped with signal outputs connected to the SCADA for continuous monitoring and reporting purposes, and is used for operational monitoring purposes only; and
- Flow measuring devices equipped with 4-20mA outputs linked with the SCADA system for continuous monitoring and control purposes.

### **Well 6 Raw**

Well #6 is located within the Vindin well field approximately 430 meters south-west of the Vindin pump house and approximately 15 meters east of the nearest surface water body. Well #6, constructed in 1971 (Well Record number unknown), is equipped with a submersible well water pump having an approximate capacity of 19 L/s, pitless adaptor and control building equipped with raw water flow meter and shut off valve. The well is drilled to a depth of 35.8 meters and has a 600 mm diameter steel casing. The well is screened from 26.7 to 35.8 meters and is equipped with a submersible well pump rated at 19 L/s at a TDH of 30 m.

The Well pump house is located adjacent to the building housing the natural gas generator (refer to Flume Station pump house notes). The well is constructed in an aquifer exhibiting artesian conditions. The well casing is incorporated into a concrete pedestal extending approximately 15 cm above the pump house floor and was equipped with a screened vent extending to approximately 60 cm above the floor.

According to the 2002 GUDI Hydrogeological Report prepared by MacViro Consultants on behalf of the Owner, the Vindin Flume well field (Wells # 6, 11, 12, 14, 16, and 17) is considered to be GUDI due to the results of isotope analysis, the similarity of groundwater and surface water chemical signatures, the reversal of gradients during pumping and the 50-day travel time assessment. The same report further concluded that the wells provide effective insitu filtration.

### **Well 11 Raw**

Well #11 is located within the Vindin well field approximately 710 meters west of the Vindin pumphouse and approximately 20 meters south-east of the nearest surface water body.

Well #11, constructed in 1971 (Well Record #5715187), is equipped with a submersible well water pump having an approximate capacity of 22.7 L/s. An adjacent below grade control chamber houses a check valve, raw water flow meter, isolation valve and is equipped with a sump pump and drain. The well is constructed in an aquifer exhibiting artesian conditions.

According to the 2002 GUDI Hydrogeological Report prepared by MacViro Consultants on behalf of the Owner, the Vindin Flume well field (Wells # 6, 11, 12, 14, 16, and 17) is considered to be GUDI due to the results of isotope analysis, the similarity of groundwater and surface water chemical signatures, the reversal of gradients during pumping and the 50-day travel time assessment. The same report further concluded that the wells provide effective insitu filtration.

### **Well 12 Raw**

Well #12 is located within the Vindin well field approximately 635 meters south-west of the Vindin pumphouse and approximately 70 meters south of the nearest surface water body.

Well #12, constructed in 1979 (Well Record #5716076), is equipped with a submersible well water pump having an approximate capacity of 7.6 L/s, pitless adaptor, and an adjacent below grade control building equipped with a check valve, raw water flow meter and isolation valve. The well is drilled to a depth of 30.8 meters and has a 200 mm diameter steel casing. The well is screened from 23.8 to 30.8 meters. The well casing extended approximately 65 cm above grade. The well is constructed in an aquifer exhibiting artesian conditions.

According to the 2002 GUDI Hydrogeological Report prepared by MacViro Consultants on behalf of the Owner, the Vindin Flume well field (Wells # 6, 11, 12, 14, 16, and 17) is considered to be GUDI due to the results of isotope analysis, the similarity of groundwater and surface water chemical signatures, the reversal of gradients during pumping and the 50-day travel time assessment. The same report further concluded that the wells provide effective insitu filtration.

### **Well 14 Raw**

Well #14 is located within the Vindin well field approximately 540 meters south-west of the Vindin pumphouse and approximately 70 meters south-west of the nearest surface water body.

Well #14, constructed in 1979 (Well Record #5716078), is equipped with a submersible well water pump having an approximate capacity of 11.4 L/s. An adjacent below grade control chamber houses a check valve, raw water flow meter and isolation valve. The below grade control chamber is equipped with a sump pump and drain. The well is drilled to a depth of 35.5 meters and has a 200 mm diameter steel casing. The well is

screened from 29.1 to 35.5 meters. The well is constructed in an aquifer exhibiting artesian conditions. The well casing extends approximately 60 cm above grade and is fitted with a well cap.

According to the 2002 GUDI Hydrogeological Report prepared by MacViro Consultants on behalf of the Owner, the Vindin Flume well field (Wells # 6, 11, 12, 14, 16, and 17) is considered to be GUDI due to the results of isotope analysis, the similarity of groundwater and surface water chemical signatures, the reversal of gradients during pumping and the 50-day travel time assessment. The same report further concluded that the wells provide effective insitu filtration.

### **Well 16 Raw**

Well #16 is located within the Vindin well field approximately 310 meters west of the Vindin pumphouse and approximately 10 meters west of the nearest surface water body.

Well #16, constructed in 1987 (Well Record #5722487), is equipped with a submersible well water pump having an approximate capacity of 15.2 L/s. An adjacent below grade control chamber houses a check valve, raw water flow meter and isolation valve and is equipped with a sump pump and drain. The well is drilled to a depth of 35.1 meters and has a 200 mm diameter steel casing. The well is screened from 29.0 to 35.1 meters. The casing extends approximately 45 cm above grade.

According to the 2002 GUDI Hydrogeological Report prepared by MacViro Consultants on behalf of the Owner, the Vindin Flume well field (Wells # 6, 11, 12, 14, 16, and 17) is considered to be GUDI due to the results of isotope analysis, the similarity of groundwater and surface water chemical signatures, the reversal of gradients during pumping and the 50-day travel time assessment. The same report further concluded that the wells provide effective insitu filtration.

### **Well 17 Raw**

Well #17 is located within the Vindin well field approximately 200 meters south-west of the Vindin pump house and approximately 10 meters south of the nearest surface water body.

Well #17, constructed in 1987 (Well Record #5722489), is equipped with a submersible well water pump having an approximate capacity of 14.2 L/s, pitless adaptor and a below grade control chamber equipped with a check valve, raw water flow meter, and isolation valve. In 2005 the below grade chamber (well pit), in which the well was originally installed, was filled and the above noted appurtenances relocated to a similar below grade chamber adjacent to the well. At that same time, regrading was also performed in the vicinity of the well to ensure positive drainage away from the well casing, which now extends approximately 0.4 metres above adjacent grade. The Well

is reportedly drilled to a depth of 25.6 metres consisting of 200 mm diameter steel casing. The well is screened from 20.6 to 25.6 metres.

According to the 2002 GUDI Hydrogeological Report prepared by MacViro Consultants on behalf of the Owner, the Vindin Flume well field (Wells # 6, 11, 12, 14, 16, and 17) is considered to be GUDI due to the results of isotope analysis, the similarity of groundwater and surface water chemical signatures, the reversal of gradients during pumping and the 50-day travel time assessment. The same report further concluded that the wells provide effective insitu filtration.

### **Vindin Treatment System**

The Vindin pumphouse, also referred to as the Vindin Flume, is situated near the north-west corner of Vindin Street and Harbourview Drive. The Flume treatment facility receives water via a 200 metre combined raw water header from six ground water sources, Wells #6, #11, #12, #14, #16 and #17 which have been determined to be groundwater under the influence of surface water (GUDI) with effective insitu filtration.

Each well operates independently in response to the water level in the raw water high lift wet well at the pumphouse.

Three high lift pumps draw raw water from the wet well at a discharge pressure of approximately 113 psi and convey that water through the treatment units and into the distribution system. The Flume supplies water to the East Pressure Zone with excess water used to fill the reservoirs in this zone of the distribution system. Two of the pumps have an individual capacity of 37.9L/s and can be controlled to operate as either lead or lag pumps. The third larger pump has a capacity of 63.1 L/s and operates as either lead or lag. Normal operation is the 63.1 L/s pump as lead, and the two 37.9 L/s pumps as lag. The start/stop operation of the high lift pumps at the Vindin Flume is controlled by the water level in the Dominion standpipe.

Prior to treatment, the raw water Ultraviolet Light Transmittance (UVT) is measured by a continuous on line meter; with measurements used in determining UV dosage and trended on Midland's SCADA system. Treatment is comprised of:

- two UV irradiation units for primary disinfection purposes, each rated at 7,785 m<sup>3</sup>/day at 90% UVT with design dose of 40 mJ/cm<sup>2</sup> with electrically actuated control valves to allow switchover between units, automatic cleaning systems, cooling systems and control system functionality;
- a chemical disinfection system utilizing sodium hypochlorite solution for both primary and secondary disinfection purposes, and consisting of one 550 L sodium hypochlorite solution tank and two chemical metering pumps (one duty, one standby) with individual nameplates indicating a capacity of 2.25 gph (8.5 L/hr) at 116 psi, and each equipped with alarms and automatic switch over on duty pump failure;

- a 400 mm diameter chlorine contact pipe, approximately 215 m long, is installed within abandoned parts of the former Flume reservoir, providing approximately 26 cubic metres of effective chlorine contact volume;
- two continuous on-line chlorine residual analyzers that are temperature compensated have been installed and measure free available chlorine residual concentration in mg/L. The “Pre-contact” analyzer is supplied with a water sample prior to the conveyance of the chlorinated water into the dedicated chlorine contact pipe and issued for operational purposes to ensure operation of the chlorination system. The “Post-contact” analyzer is supplied with a treated water sample prior to the conveyance of the treated water into the distribution system and is used for legislative monitoring required for primary disinfection purposes. Each of the analyzers is equipped with signal outputs connected to the SCADA system for continuous monitoring/control and reporting purposes;
- one standby diesel generator with a rating of 330 kW is installed within an adjacent room in the Vindin pumphouse and another natural gas generator rated at 45 KW is located in a stand-alone building adjacent to Well #6;
- one continuous, on-line turbidimeter, measuring turbidity in NTU's, is supplied with continuous samples from the same location as identified for the "pre-contact" chlorine analyzer. The turbidimeter is equipped with signal outputs connected to SCADA for continuous monitoring and reporting purposes. The turbidimeter is installed for operational purposes only;
- one flow measuring device, equipped with 4-20 outputs, is installed on the high lift discharge header used to measure and trend water conveyed into the distribution system;
- a residue management system, consisting of one sump and two sump pumps, collects process wastewater and discharges to a drainage ditch adjacent to the pumphouse; and
- one standby diesel generator with a nameplate indicating a rating of 330 kW is installed within a separate room in the pump house and designed to power key components of the facility during power interruptions.

### **Hanly Tower**

The Hanly water tower, located at 365 Hanly Street, was constructed in 1947 and is described as a multi-column elevated steel tank with a capacity of 950 cubic meters of storage supplying the East Pressure Zone.

### **Mountainview Storage Tank**

The Mountainview storage tank, located at 55 Wilson Road, was constructed in 2010 and is a cylindrical glass-fused-to-steel standpipe with 4,430 cubic meters storage capacity supplying the West Pressure Zone. The tank is equipped with a mixing system, overflow piping, level measuring devices and a flow meter.

### **Dominion Standpipe**

The Dominion standpipe, located at 755 Dominion Avenue, was constructed in 1901 and is a steel standpipe with 713 cubic meters of storage capacity supplying the West Pressure Zone.

### **Montreal Storage Tank**

The Montreal storage tank, located at 837 Montreal Street, was constructed in 1989 and is a large diameter cylindrical glass-fused steel standpipe with 2,881 cubic meters of storage capacity supplying the West Pressure Zone.

### **Everton Storage Tank**

The Everton storage tank, located at 1374 Everton Road (formerly 300 Frontenac Street), was constructed in 2009 and is a cylindrical glass-fused-to-steel standpipe with a geodesic dome with 5,863 cubic meters storage capacity supplying the Harbourview Pressure Zone. Installed equipment includes a mixing system comprised of a header within the standpipe with tide flex nozzles mounted on 45 degree elbows and water check valves on the outlet.

## **Distribution**

The Town of Midland distribution system consists of approximately 120 km of water mains including 5,900 customer connections serving a population of approximately 17,000 persons. There are approximately 29 sampling stations, 564 fire hydrants and 1,040 valves and other appurtenances within the distribution system. The distribution consists of four pressure zones (four main pressure zones, East, West, Lescaut, and Harbourview areas), four Booster Pumping Stations (Dominion, Everton, Montreal, and Penetanguishene) as well as five above ground storage facilities (Hanly Tower, Dominion Standpipe, Montreal Tank, Everton Tank and Mountainview Tank) with a totally finished water storage capacity of approximately 14,834 cubic metres. No storage exists within the Lescaut Pressure Zone, which relies upon pumped storage supplied from the Hanly Tower.

Treated water is also supplied across the Wye River in two places to non-residential consumers in Tay Township - namely Martyrs' Shrine and Sainte-Marie among the Hurons, which in turn supplies the Wye Marsh Wildlife Centre.

## **Non-Compliances with Legislation**

Schedule 22 requires that all non-compliance with applicable legislation be discussed in the Summary Report. The Ministry of the Environment and Climate Change has not yet completed the inspection.

### Adverse Water Quality Incidents

The following table lists the requirements of the Act, Regulations, System Approval(s), Adverse Water Quality Incidents and any Order that the system failed to meet at any time during this reporting period and the measures taken to correct each failure.

Drinking Water Legislation	Requirement(s) the System Failed to Meet	Duration	Corrective Action(s)	Status
AWQI #122368	Chemical limits for Sodium exceeded in Raw Water Samples	Jan 22, 2015-Present	Form for <i>Notice of Adverse Test Results and Other Problems and Notice of Issue Resolution at Drinking Water Systems</i> completed and water was Resampled	Closed
AWQI #125263	Vindin Treatment System Secondary Disinfection Problem	July 27, 2015	Form for <i>Notice of Adverse Test Results and Other Problems and Notice of Issue Resolution at Drinking Water Systems</i> completed and water was Resampled	Closed

### Water Usage

#### Water Consumption

The below table is a summary of 2015 area municipality wastewater and water billing. For more detailed information, please contact the Town of Midland Water Operations at 705-526-4268, ext. 4207.

\* % loss includes water used for flushing to maintain water quality, firefighting, new watermain commissioning/testing, routine maintenance activities, watermain breaks, meter reading inaccuracies, and system leakage.

Description	Amount
Total water produced by the Town of Midland	2,011,242
Total water billed to consumers of the Town of Midland	1,616,554
m <sup>3</sup> Unbilled	394,688
% Loss	19.6%

## **Attached Appendix Summaries**

### **Annual amount of Sodium Hypochlorite used**

The following table (*Appendix A*) lists the amount of Sodium Hypochlorite used for production. It is listed by month, at each treatment facility.

### **Assessment of System Flows and Rates of Water Taking**

(*Appendix B*) lists the quantities and flows of the water supplied during the period covered by this report, including monthly average and maximum daily flows, daily instantaneous peak flow rates and a comparison to the maximum daily volumes and flow rates specified in the system approval. This is a comparison to the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water license.

### **Microbiological Sampling**

(*Appendix C*) lists in detail the amount of microbiological samples taken. Raw and Treated samples are listed. For more information concerning the schedule in which we follow for determining sample location and type, refer to the Water Sampling Plan available at the Water Operations Office.

**Schedule 23 Sampling** (*Appendix D*) lists the most recent results of the Schedule 23 In-Organic Chemical sampling required under Ontario Regulation 170. For more information concerning the schedule we follow for determining sample location and type, refer to the Water Sampling Plan available at the Water Operations Office.

**Schedule 24 Sampling** (*Appendix D also*) lists the most recent results of the Schedule 24 Organic Chemical sampling required under Ontario Regulation 170. For more information concerning the schedule we follow for determining sample location and type, refer to the Water Sampling Plan available at the Water Operations Office.

**Sodium Resample Results** (*Appendix E*) lists the results of sodium resample results.

**Section 11 – Annual Reports** (*Appendix F*) is an excerpt from Ontario Regulation 170. It lists the requirements for successfully completing the Annual Report.

**Schedule 22 – Summary Reports** (*Appendix G*) is an excerpt from Ontario Regulation 170. It outlines additional requirements for successfully completing the Summary Report.

**APPENDIX A**

**2015 Sodium Hypochlorite Usage**

All numerical figures are in litres

<b>MONTH</b>	<b>Vindin</b>	<b>Dominion</b>	<b>Hanly</b>	<b>Hwy #12</b>	<b>TOTAL</b>
<b>JAN</b>	415	167	202	841	1,625
<b>FEB</b>	403	148	160	828	1,539
<b>MAR</b>	421	200	183	989	1,793
<b>APR</b>	529	153	157	1,006	1,845
<b>MAY</b>	619	180	206	1,181	2,186
<b>JUN</b>	657	173	198	855	1,883
<b>JUL</b>	627	193	235	958	2,013
<b>AUG</b>	605	214	302	855	1,976
<b>SEP</b>	542	120.5	236	815	1,713.5
<b>OCT</b>	444	133.5	213.5	798	1,589
<b>NOV</b>	515	153	249	501	1,418
<b>DEC</b>	526	166	239	531.5	1,462.5

<b>TOTALS</b>	<b>6,303</b>	<b>2,001</b>	<b>2,580.5</b>	<b>10,158.5</b>	<b>21,043</b>
---------------	--------------	--------------	----------------	-----------------	---------------

Town of Midland  
 Large Municipal Residential Drinking Water System  
 Annual Summary Report

---

**APPENDIX B 1.0**  
**2015 Midland Drinking Water Production**

All numerical figures are in cubic meters \*Cubic meter=1,000 Litres

**2015 SAFE DRINKING WATER PRODUCTON SUMMARY**

All numerical figures are in cubic meters (m<sup>3</sup>)

MONTH	FLUME	WELL # 9	WELL # 15	WELL # 7A	WELL # 7B	TOTAL	Average	MINIMUM	MAXIMUM
JAN	49,982	18,035	23,144	63,282	14	154,458	4,983	4,176	6,034
FEB	49,823	17,372	18,949	63,714	1,417	151,275	5,403	4,121	9,429
MAR	52,340	23,569	16,024	69,516	4,169	165,619	5,343	4,448	6,074
APR	61,859	17,255	18,938	67,855	18	165,924	5,531	4,469	8,071
MAY	73,673	20,747	23,512	79,988	892	198,812	6,413	5,560	7,680
JUN	74,919	20,388	24,220	58,279	6,862	184,668	6,156	4,879	7,195
JUL	76,127	23,471	33,062	68,120	156	200,937	6,482	4,682	8,351
AUG	64,876	22,553	35,264	53,199	7,726	183,618	5,923	3,861	7,320
SEP	61,827	10,934	34,982	51,389	4,442	163,574	5,452	4,089	6,629
OCT	49,205	14,287	33,427	53,384	4,084	154,387	4,980	3,465	5,951
NOV	58,318	17,256	37,029	32,842	498	145,944	4,865	4,213	5,577
DEC	57,069	16,978	28,829	39,022	129	142,027	4,663	3,536	5,889
<b>TOTALS</b>	<b>730,018</b>	<b>222,846</b>	<b>327,382</b>	<b>700,590</b>	<b>30,407</b>	<b>2,011,242</b>	<b>5,516</b>	<b>3,465</b>	<b>9,429</b>

**APPENDIX B 2.0**

**2015 Midland Drinking Water Production**

**Raw water allowable vs actual limits**

All numerical figures are in cubic meters \*Cubic meter=1,000 Litres

<b>2015</b>	<b>l/s</b>	<b>m3/day</b>	<b>Allowable m3/year</b>	<b>Actual m3/year</b>
<b>Well #11</b>	22.70	1,961.30	715,874.50	181,237.76
<b>Well #12</b>	7.60	656.60	239,659.00	95,186.9
<b>Well #14</b>	11.40	985.0	359,525.00	127,541.93
<b>Well #06</b>	19.00	1,641.60	599,184.00	124,584.08
<b>Well #16</b>	15.20	1,313.30	479,354.50	135,281.52
<b>Well #17</b>	14.20	1,226.90	447,818.50	170,506.14
<b>Well #09</b>	23.00	1,987.20	725,328.00	222,846.13
<b>Well #15</b>	15.20	1,313.30	479,354.50	329,899.28
<b>Well #7A</b>	57.0	4,924.80	1,797,552.00	700,589.89
<b>Well #7B</b>	49.00	4,233.60	1,545,264.00	30,406.64
<b>Total</b>	<b>234.3</b>	<b>20243.6</b>	<b>7,388,914.00</b>	<b>2,242,365.2</b>

**2015 Treated water allowable vs actual limits**

All numerical figures are in cubic meters \*Cubic meter=1,000 Litres

<b>2015</b>	<b>l/s</b>	<b>m3/day</b>	<b>Allowable m3/year</b>	<b>Actual m3/year</b>
<b>Vindin TS</b>	90.10	7,784.60	2,841,379.00	730,018
<b>Dominion TS</b>	23.00	1,987.20	725,328.00	222,846
<b>Hanly TS</b>	15.20	1,313.30	479,354.50	327,382
<b>Highway 12</b>	106.00	9,158.40	3,342,816.00	730,977
<b>Total</b>	<b>234.30</b>	<b>20,243.50</b>	<b>7,388,877.50</b>	<b>2,011,223</b>

**APPENDIX C**

**2015 Microbiological Sample Totals**

<b>Well or Plant LOCATION</b>		<b>Sampling Station LOCATION</b>	
Well # 11	52	S1-SS-LE	23
Well # 12	52	S1-SS-GG	13
Well # 14	52	S2-SS-BS	15
Well # 6	52	S2-22-HV	21
Well # 16	52	S3-DS03	52
Well # 17	52	S3-SS-FH	5
Flume POE	52	S3-SS-BS	2
Well # 9	52	S3-SS-HC	6
Well #9 POE	52	S3-SS-GS	7
Well # 15	52	S4-DS01	14
Well#15 POE	52	S4-DS02	23
Well # 7A	52	S4-SS-CD	11
Well # 7B	52	S4-SS-MB	2
Well # 7 POE	52	S4-SS-MD	7
<b>TOTAL</b>	<b>728</b>	S4-SS-WD	2
		S5-SS-STH	5
		S5-SS-LR	32
		S6-DS03	8
		S6-SS-AS	14
		S6-SS-HD	3
		S6-SS-KS	1
		S6-SS-WY	13
		S6-SS-GM	11
		S6-SS-TR	2
		S6-SS-SF	10
		S6-SS-QH	2
		S6-SS-NS	1
		<b>TOTAL</b>	<b>307</b>

Town of Midland  
 Large Municipal Residential Drinking Water System  
 Annual Summary Report

---

**APPENDIX D**

**2015 Inorganic Chemical Samples Schedule 23 and Organic Schedule 24**

Parameter	Units	M.D.L.	Client I.D.		Well #7	Flume Point
			Reference Method	Date/Site Analyzed	Point of Entry	of Entry
					B15-00456-1	B15-00456-2
					07-Jan-15	07-Jan-15
Antimony	mg/L	0.0001	EPA 200.8	09-Jan-15/O	< 0.0001	< 0.0001
Arsenic	mg/L	0.0001	EPA 200.8	09-Jan-15/O	0.0005	0.0005
Barium	mg/L	0.001	SM 3120	09-Jan-15/O	0.111	0.129
Boron	mg/L	0.005	SM 3120	09-Jan-15/O	0.009	0.010
Cadmium	mg/L	0.00002	EPA 200.8	09-Jan-15/O	< 0.00002	< 0.00002
Chromium	mg/L	0.002	SM 3120	09-Jan-15/O	< 0.002	0.008
Mercury	mg/L	0.00002	SM 3112 B	09-Jan-15/O	< 0.00002	< 0.00002
Selenium	mg/L	0.001	EPA 200.8	09-Jan-15/O	< 0.001	< 0.001
Uranium	mg/L	0.00005	EPA 200.8	09-Jan-15/O	0.00060	0.00130
Benzene	µg/L	0.5	EPA 8260	08-Jan-15/O	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	0.2	EPA 8260	08-Jan-15/O	< 0.2	< 0.2
Dichlorobenzene, 1,2-	µg/L	0.1	EPA 8260	08-Jan-15/O	< 0.1	< 0.1
Dichlorobenzene, 1,4-	µg/L	0.2	EPA 8260	08-Jan-15/O	< 0.2	< 0.2
Dichloroethane, 1,2-	µg/L	0.1	EPA 8260	08-Jan-15/O	< 0.1	< 0.1
Dichloroethene, 1,1-	µg/L	0.1	EPA 8260	08-Jan-15/O	< 0.1	< 0.1
Dichloromethane (Methylene Chloride)	µg/L	0.3	EPA 8260	08-Jan-15/O	< 0.3	< 0.3
Monochlorobenzene (Chlorobenzene)	µg/L	0.2	EPA 8260	08-Jan-15/O	< 0.2	< 0.2
Tetrachloroethylene	µg/L	0.2	EPA 8260	08-Jan-15/O	< 0.2	< 0.2
Trichloroethylene	µg/L	0.1	EPA 8260	08-Jan-15/O	< 0.1	< 0.1
Vinyl Chloride	µg/L	0.2	EPA 8260	08-Jan-15/O	< 0.2	< 0.2
Alachlor	µg/L	0.3	EPA 8270	12-Jan-15/K	< 0.3	< 0.3
Aldicarb	µg/L	3	EPA 8270	12-Jan-15/K	< 3	< 3
Aldrin + Dieldrin	µg/L	0.02	EPA 8080	13-Jan-15/K	< 0.02	< 0.02
Atrazine + Metabolites	µg/L	0.5	Calc.	12-Jan-15/K	< 0.5	< 0.5
Azinphos-methyl	µg/L	1	EPA 8270	12-Jan-15/K	< 1	< 1
Bendiocarb	µg/L	3	EPA 8270	12-Jan-15/K	< 3	< 3

Town of Midland  
 Large Municipal Residential Drinking Water System  
 Annual Summary Report

**APPENDIX D (cont'd)**

**2015 Inorganic Chemical Samples Schedule 23 and Organic Schedule 24**

			Client I.D.		Well #7 Point of Entry	Flume Point of Entry
			Sample I.D.		B15-00456-1	B15-00456-2
			Date Collected		07-Jan-15	07-Jan-15
Parameter	Units	M.D.L.	Reference Method	Date/Site Analyzed		
Benzo(a)pyrene	µg/L	0.005	EPA 8270	12-Jan-15/K	< 0.005	< 0.005
Bromoxynil	µg/L	0.3	EPA 8270	12-Jan-15/K	< 0.3	< 0.3
Carbaryl	µg/L	3	EPA 8270	12-Jan-15/K	< 3	< 3
Carbofuran	µg/L	1	EPA 8270	12-Jan-15/K	< 1	< 1
Chlordane (Total)	µg/L	0.04	EPA 8080	13-Jan-15/K	< 0.04	< 0.04
Chlorpyrifos	µg/L	0.5	EPA 8270	12-Jan-15/K	< 0.5	< 0.5
Cyanazine	µg/L	0.5	EPA 8270	12-Jan-15/K	< 0.5	< 0.5
DDT + Metabolites	µg/L	0.01	EPA 8080	13-Jan-15/K	< 0.01	< 0.01
Diazinon	µg/L	1	EPA 8270	12-Jan-15/K	< 1	< 1
Dicamba	µg/L	5	EPA 8270	12-Jan-15/K	< 5	< 5
Dichlorophenol, 2,4-	µg/L	0.1	EPA 8270	12-Jan-15/K	< 0.1	< 0.1
Dichlorophenoxy acetic acid, 2,4- (2,4-D)	µg/L	5	EPA 8270	12-Jan-15/K	< 5	< 5
Diclofop-methyl	µg/L	0.5	EPA 8270	12-Jan-15/K	< 0.5	< 0.5
Dimethoate	µg/L	1	EPA 8270	12-Jan-15/K	< 1	< 1
Dinoseb	µg/L	0.5	EPA 8270	12-Jan-15/K	< 0.5	< 0.5
Diquat	µg/L	5	EPA 549.1	14-Jan-15/K	< 5	< 5
Diuron	µg/L	5	EPA 8270	12-Jan-15/K	< 5	< 5
Glyphosate	µg/L	25	EPA 547	14-Jan-15/K	< 25	< 25
Heptachlor + Heptachlor Epoxide	µg/L	0.1	EPA 8080	13-Jan-15/K	< 0.1	< 0.1
Lindane (Hexachlorocyclohexane, Gamma)	µg/L	0.1	EPA 8080	13-Jan-15/K	< 0.1	< 0.1
Malathion	µg/L	5	EPA 8270	12-Jan-15/K	< 5	< 5
Methoxychlor	µg/L	0.1	EPA 8080	13-Jan-15/K	< 0.1	< 0.1
Metolachlor	µg/L	3	EPA 8270	12-Jan-15/K	< 3	< 3
Metribuzin	µg/L	3	EPA 8270	12-Jan-15/K	< 3	< 3

			Client I.D.		Well #7 Point of Entry	Flume Point of Entry
			Sample I.D.		B15-00456-1	B15-00456-2
			Date Collected		07-Jan-15	07-Jan-15
Parameter	Units	M.D.L.	Reference Method	Date/Site Analyzed		
Paraquat	µg/L	1	EPA 549.1	14-Jan-15/K	< 1	< 1
Parathion	µg/L	3	EPA 8270	12-Jan-15/K	< 3	< 3
Pentachlorophenol	µg/L	0.1	EPA 8270	12-Jan-15/K	< 0.1	< 0.1
Phorate	µg/L	0.3	EPA 8270	12-Jan-15/K	< 0.3	< 0.3
Picloram	µg/L	5	EPA 8270	12-Jan-15/K	< 5	< 5
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	EPA 8080	13-Jan-15/K	< 0.05	< 0.05
Prometryne	µg/L	0.1	EPA 8270	12-Jan-15/K	< 0.1	< 0.1
Simazine	µg/L	0.5	EPA 8270	12-Jan-15/K	< 0.5	< 0.5
Temephos	µg/L	10	EPA 8270	12-Jan-15/K	< 10	< 10
Terbufos	µg/L	0.3	EPA 8270	12-Jan-15/K	< 0.3	< 0.3
Tetrachlorophenol, 2,3,4,6-	µg/L	0.1	EPA 8270	12-Jan-15/K	< 0.1	< 0.1
Triallate	µg/L	10	EPA 8270	12-Jan-15/K	< 10	< 10
Trichlorophenol 2,4,6-	µg/L	0.1	EPA 8270	12-Jan-15/K	< 0.1	< 0.1
Trichlorophenoxy acetic acid, 2,4,5-	µg/L	10	EPA 8270	12-Jan-15/K	< 10	< 10
Trifluralin	µg/L	0.5	EPA 8270	12-Jan-15/K	< 0.5	< 0.5

**APPENDIX E**

**2015 Sodium Resample Results**

			Parameter	Sodium
			Units	mg/L
			M.D.L.	0.2
			Reference Method	SM 3120
			Date Analyzed/Site	28-Jan-15/O
Client I.D.	Sample I.D.	Date Collected		
Flume P.O.E #1 Vindin Street - Resample	B15-01821-1	26-Jan-15	28.1	
Well #7 P.O.E #2 Hwy 12 - Resample	B15-01821-2	26-Jan-15	28.6	
Well #9 P.O.E. #3 Dominion - Resample	B15-01821-3	26-Jan-15	53.2	
Well #15 P.O.E. #4 Hanly - Resample	B15-01821-4	26-Jan-15	23.8	

## APPENDIX F

### Annual Reports O.Reg 170

#### Section 11 Annual reports

11. (1) The owner of a drinking water system shall ensure that an annual report is prepared in accordance with this section. O. Reg. 170/03, s. 11 (1); O. Reg. 247/06, s. 10 (1).

(2) The owner of a drinking water system, other than a large municipal residential system or a small municipal residential system, shall ensure that, when the annual report is prepared, a copy of the report is given to,

- (a) each designated facility served by the system; and
- (b) the interested authority for each designated facility served by the system. O. Reg. 170/03, s. 11 (2); O. Reg. 247/06, s. 10 (2).

(2.1) If a drinking water system is connected to and receives all of its drinking water from another drinking water system, the owner of the system from which the water is obtained shall ensure that, when the annual report for the system is prepared, a copy of the report is given to the owner of the system that obtains the water. O. Reg. 269/03, s. 6 (1); O. Reg. 247/06, s. 10 (3).

(3) In the case of the following drinking water systems, the annual report must cover the period from January 1 to December 31 in a year and must be prepared not later than February 28 of the following year:

- 1. Large municipal residential systems.
- 2. Small municipal residential systems.
- 3. Large municipal non-residential systems.
- 4. Small municipal non-residential systems.
- 5. Non-municipal year-round residential systems. O. Reg. 170/03, s. 11 (3); O. Reg. 247/06, s. 10 (4).

(4) In the case of non-municipal seasonal residential systems and large non-municipal non-residential systems, the annual report must cover the period from November 1 in a year to October 31 of the following year and must be prepared not later than December 31 of the latter year. O. Reg. 170/03, s. 11 (4); O. Reg. 247/06, s. 10 (5).

(5) In the case of small non-municipal non-residential systems, the annual report must cover the period from April 1 in a year to March 31 of the following year and must be prepared not later than May 31 of the latter year. O. Reg. 170/03, s. 11 (5); O. Reg. 247/06, s. 10 (6).

(6) The annual report must,

Town of Midland  
Large Municipal Residential Drinking Water System  
Annual Summary Report

---

- (a) contain a brief description of the drinking water system, including a list of water treatment chemicals used by the system during the period covered by the report;
- (b) summarize any reports made to the Ministry under subsection 18 (1) of the Act or section 16-4 of Schedule 16 during the period covered by the report;
- (c) summarize the results of tests required under this Regulation, or under an approval, municipal drinking water licence or order, including an OWRA order, during the period covered by the report and, if tests required under this Regulation in respect of a parameter were not required during that period, summarize the most recent results of tests of that parameter;
- (d) describe any corrective actions taken under Schedule 17 or 18 during the period covered by the report;
- (e) describe any major expenses incurred during the period covered by the report to install, repair or replace required equipment; and
- (f) in the case of a large municipal residential system or a small municipal residential system, include a statement of where a report prepared under Schedule 22 will be available for inspection under subsection 12 (4). O. Reg. 170/03, s. 11 (6); O. Reg. 418/09, s. 8.

(7) The owner of a drinking water system shall ensure that a copy of an annual report for the system is given, without charge, to every person who requests a copy. O. Reg. 269/03, s. 6 (2).

(8) If a drinking water system is connected to and receives all of its drinking water from another drinking water system, the owner of the system that obtains the water shall ensure that a copy of an annual report for the system from which the water is obtained is given, without charge, to every person who requests a copy. O. Reg. 269/03, s. 6 (2).

(9) Subsections (7) and (8) do not apply to an annual report that is more than two years old. O. Reg. 269/03, s. 6 (2).

(9.1) Every time that an annual report is prepared for a drinking water system, the owner of the system shall ensure that effective steps are taken to advise users of water from the system that copies of the report are available, without charge, and of how a copy may be obtained. O. Reg. 269/03, s. 6 (2).

(10) If a large municipal residential system serves more than 10,000 people, the owner of the system shall ensure that a copy of every report prepared under this section is available to the public at no charge on a website on the Internet. O. Reg. 170/03, s. 11 (10).

(11) The obligation to ensure that a report be given to the interested authority for a designated facility under subsection (2) does not apply to the following designated facilities:

1. A private school.
2. A children's camp.

Town of Midland  
Large Municipal Residential Drinking Water System  
Annual Summary Report

---

3. A residence for seniors or retired persons, or any other similar residence, where attainment of a mature age is a factor in being accepted for occupancy. O. Reg. 170/03, s. 11 (11).

[\(12\)](#)-(17) Revoked: O. Reg. 253/05, s. 8 (1).

[\(18\)](#) If section 12 of Ontario Regulation 459/00 and section 15 of Ontario Regulation 505/01 did not apply to the owner of a system to which subsection (5) applies, no report is required to be prepared under subsection (5) until May 31, 2006 and, despite that subsection, the report required to be prepared not later than May 31, 2006 shall cover the period from June 1, 2005 to March 31, 2006. O. Reg. 247/06, s. 10 (7).

[\(19\)](#) Revoked: O. Reg. 253/05, s. 8 (2).

**APPENDIX G**  
**Schedule 22 Summary Reports for Municipalities**

SCHEDULE 22

SUMMARY REPORTS FOR MUNICIPALITIES

Municipal: Large Residential

Small Residential

**Application**

**22-1.** This Schedule applies to the following drinking water systems:

1. Large municipal residential systems.
2. Small municipal residential systems.

**Report**

**22-2.** (1) The owner of a drinking water system shall ensure that, not later than March 31 of each year after 2003, a report is prepared in accordance with subsections (2) and (3) for the preceding calendar year and is given to,

- (a) in the case of a drinking water system owned by a municipality, the members of the municipal council;
- (b) in the case of a drinking water system owned by a municipal service board established under section 195 of the *Municipal Act, 2001*, the members of the municipal service board; or
- (c) in the case of a drinking water system owned by a corporation, the board of directors of the corporation.

(2) The report must,

- (a) list the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and
- (b) for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure.

(3) The report must also include the following information for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system:

1. A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement pursuant to subsection 5 (4), to the flow rates specified in the written agreement.

(4) If a report is prepared under subsection (1) for a system that supplies water to a municipality under the terms of a contract, the owner of the system shall give a copy of the report to the municipality by March 31.

(5) Revoked: O. Reg. 253/05, s. 18.

### Index of Acronyms

Long Form	Acronym
Adverse Water Quality Incidents	AWQIs
Canadian General Standards Board	CGSB
Drinking Water Quality Management Standard	DWQMS
Drinking Water Works Permits	DWWP
Groundwater Under Direct Influence of Surface Water	GUDI
Ministry of the Environment	MOE
Ministry of the Environment and Climate Change	MOECC
Municipal Drinking Water Licenses	MDWL
Nephelometric Turbidity Unit	NTU's
Operating Authority	OA
Operational Plan	OP
Operator-in-Training	OIT
Permits to Take Water	PTTW
Quality Management System	QMS
Safe Drinking Water Act	SDWA
Total Dynamic Head	TDH
Ultraviolet	UV
Ultraviolet Light Transmittance	UVT
Variable Frequency Drive	VFD
Well Head Protection Area	WHPA