



Blyth Drinking Water System – 2022 Compliance Summary

This document is a compliance summary for the Blyth water supply for the year 2022 as per Reg. 170/03 Schedule 22. A full summary of the water system's test results, flows and significant activities was submitted on February 21, 2023.

System Description

The Blyth Drinking Water System (DWS # **220001496**), is characterized as a “secure ground water” system and is classified as a large municipal residential system. The system consists of three wells (1, 2 and 5) with a rated capacity of 2877 m³/day with the inclusion of Well 5 (1728 m³/d), put in operation December 21, 2016. Treatment consists of chlorination (sodium hypochlorite) and iron sequestration (sodium silicate) treatment. The Well 1 and 2 system is located at 201 Thuell St. Well #5 is located in the north east corner of 377 Gypsy Lane. The distribution system serves the community of Blyth with a population of approximately 1000 residents, 450 customer services, with 12.7 km of various size and material water main.

The system is owned by the Corporation of the Township of North Huron and operated by Veolia Water Canada, the Operating Authority.

The Wells 1 and 2 water supply system consists of two drilled wells fitted with pumps capable of pumping the volume specified in the MOE Permit to Take Water. The raw water consistently has substantial naturally occurring hardness and relatively high iron content that requires sequestering to prevent discoloration in the distribution system which is typical of all drilled wells in the area. The raw water also has fluoride concentrations that hover at or just above the maximum allowable concentration in O.Reg 169/03 which is typical of the drilled wells in the area. Chlorine, (a critical process) and an iron sequestering agent are added to the raw water prior to entry into a baffled contact tank that satisfies the chlorine contact time required with adequate chlorine residual to disinfect.

From the contact tank/reservoir the water flows to the high lift building that houses two electrically driven high lift pumps, as well as a diesel engine driven fire pump, that are capable of maintaining adequate system pressure. The water level in the reservoir is maintained by a level controller that starts and stops the well pumps. Also housed in the building is a manually operated standby emergency generator that allows operation of the equipment during extended power interruptions. The building contains cushion tanks that absorb hydraulic shocks and maintain pressure during brief power interruptions. The treated drinking water is monitored for chlorine residual and turbidity by on-line equipment connected to an auto dialer. The monitoring system will alert the on-call operator to respond if the set points are breached. The chlorine and turbidity analysis data levels are stored on a data logger.



The distribution system has no elevated storage and relies on the pumps and cushion tanks to maintain pressure. Critical processes to ensure safe water are adequate chlorination and maintenance of system pressure. The monitors activate an alarm through the auto dialer if the set points are breached.

The raw water has abnormally high chlorine demand, coupled with sequestering agent and high background sodium levels that result in elevated sodium in the treated water just above the maximum allowable concentrations in O.Reg 169/03.

Well # 5 was put into service in December 21, 2016, as a second isolated source. It is a 175 mm drilled well; 83.5 m deep. Well # 5 is equipped with a submersible vertical turbine pump, well level sensor to measure static level and provide well level monitoring. At this stage of development of the system (phase 1 of 3), Well 5 has been designed to operate on a time-of-day basis to run twice per day during peak demand times and controlled with a variable speed drive to maintain the desired pressure set point in the distribution system as well as to provide additional volume of water during periods of high-water demand such as fire protection.

The well house is equipped with back-up diesel generator, complete with auto transfer, sodium hypochlorite (2) and sodium silicate (2) pumps, a chlorine contact loop, on-line monitoring, alarm generation and auto-dialer.

The well house and its equipment have a daily rated capacity to deliver 1728 m³ per day to the Blyth community.

The water from Well 5 is pumped through a main header where sodium hypochlorite and sodium silicate are added and directed to a chlorine contact loop to provide adequate chlorine concentration/contact time at maximum flow and before the first consumer.

The water quality is monitored and data-logged by a programmable logic controller with breaches of set-points going to an alarm dialer.

Disinfection is achieved on the Blyth well supply through the use of 12% sodium hypochlorite. In the well houses this chemical is added prior to the water entering the chlorine contact reservoir at a suitable dose rate to achieve both primary and secondary disinfection objectives.

The attached distribution system is constructed with a combination of ductile iron, cast iron, PVC and high-density polyethylene piping with polyethylene, copper and galvanized steel services. There are no known lead services.

There is no elevated storage to maintain pressure and the system pressure is maintained using pressure tanks, 3 high lift pumps (2 electric and a diesel) and 1 variable speed submersible (Well 5).

The system has approximately 45 fire hydrants that with the additional 20L/s flow from Well 5 will provide much improved sustained fire flows.

The chlorine dosage range varies with the chlorine demand of the raw water. The free chlorine residual is monitored at the point of entry to the distribution system, by an on-line chlorine analyzer, with a target residual of > 1.00 mg/l and < 1.30 mg/l.





The Blyth well supply has 1 PTTW (Permit to Take Water) # 6057-A3SJAU with an expiry date of November 30, 2025, which allows 3504.960 cubic meters per day to be pumped from the combined wells.

The Blyth Drinking Water System (treatment Subsystem) has rated capacity as specified in the Municipal Drinking Water License (MDWL) 090-101, Issue 3 and Drinking Water Works Permit (DWWP) 090-201, Issue 4. The rated capacity is 2877 cubic meters per day. Authorization to operate Well 5 is in a Form C addendum to the DWWP. Well 5

The pre-chlorine entering the contact facilities and treated water (point of entry to distribution) is monitored by on-line chlorine analyzers.

Typical system pressure ranges from 40 psi at the higher elevations to 85 psi at Wells 1 and 2 which is the lowest elevation of the system. Well 5 system pressure ranges between 53psi to 65psi under normal operating conditions

Flows

The Blyth well supply has 1 PTTW (Permit to Take Water) # 6057-A3SJAU with an expiry date of November 30, 2025, which allows 3504 cubic meters per day to be pumped from the combined wells.

The Blyth Drinking Water System (treatment Subsystem) has maximum flows as specified in the Municipal Drinking Water License (MDWL) 090-101, Issue 3 and Drinking Water Works Permit (DWWP) 090-201, Issue 4. The Rated Capacity per day is 3504 cubic meters from the combined wells. Authorization to operate Well 5 is in a Form C addendum to the DWWP. Well 5

The maximum daily flow in 2022 was 839 cubic meters or 23.9% of capacity.
The 2022 average daily flow was 443 cubic meters or 12.6% of the capacity

Permit to Take Water 6057-A3SJAU Compliance Report				
3.2 -Maximum Amount of Taking Permitted				
	Max/Day on Permit		Peak Flow	% of Limit
Well #1 (in m3)	653	m3	313	47.9 %
Well #2 (in m3)	1123	m3	278	24.8 %
Well #5 (in M3)	1728	m3	461	26.7 %
3.2 - Average Annual Amount of Taking Permitted				
	m3/year		m3/year	
Well #1 (in m3)	238345		47610	20.0 %
Well #2 (in m3)	409968		48071	11.7 %
Well #5 (in M3)	630720		66017	10.5 %
Capacity Report				
Total Peak Flow and average daily flow of all wells combined				
	Maximum		Actual	% of Cap
Capacity (m3/d)	3504		839	23.9 %
Average Daily flow (m3/Day)	3504		443	12.6 %





Precautionary Boil Water Notices

There were no Precautionary Boil Water Notices Issued in 2022.

Boil Water Advisory

There were no Boil Water Advisories issued by the Huron County Health Unit for the Blyth Drinking Water system in 2022.

Annual Ontario Ministry of the Environment Conservation and Parks Inspection

The most recent Ministry of Environment inspection was completed by Shayne Finlay on July 28, 2022.

There were no non-compliances noted and the inspection rating was 100%

Adverse Water Quality Indicators

There was 1 AWQI 158571 for the Blyth Drinking Water system in 2022. This AWQI was issued as a result of 1 cfu/100ml Total coliform sample result in May from the Blyth Drinking water system, the Maximum allowable Concentration for total coliforms is 0cfu/100mL. Resamples were collected at the source of the adverse as well as an upstream and downstream sample, the resample results came back clear.

Lead

Schedule 15.1 of Ontario Regulation 170/03 requires that samples be taken during two seasons: once between December 15 and April 15 and once between June 15 and October 15. The Maximum Allowable Concentration for Lead is 10 ug/L. In 2022 Samples were collected on March 15th and Sept 20 2022, all results were within the acceptable limits

Exceedances

There were no exceedances to report in 2022.

Infrastructure Assessment

Regular contact is maintained with the Township of North Huron Representatives. The Jobs-Plus maintenance program is continually updated with preventative and corrective maintenance activities. A complete summary can be forwarded to the client upon their request. Through regular communication between the operating authority and the client, capital items are discussed. A list of capital suggestions and projects was forwarded to North Huron' representatives on October 28, 2022 for the Operating year 2022. The Township also has a asset management program and Financial Plan which ensures long term capital planning for the Water system





DWQMS

The annual Management Review was conducted by the operating authority on October 18, 2022 as per the DWQMS requirement in Element 20, The Management Review Report and Action Items were forwarded to the Owner on October 28, 2022. A Follow up meeting was held to discuss any questions or concerns on Nov 14, 2022 with the system Owner. These regular discussions between the client and the operating authority for this water system are continued throughout the year by emails, phone calls, and meetings as per the requirements of Element 15 of the DWQMS.

The Internal Audit was completed on June 7-14, 2022 and the 36 Month Risk Re-Assessment Review was completed October 17, 2022.

Report Completed by: Veolia Water
For More information please contact:
Scott Gowan, Project Manager
Veolia Water Canada, Inc.
130 Wallace St, PO Box 220, Walkerton
Ontario N0G 2V0
Tel 519-881-1474
scott.gowan@veolia.com
<https://www.veoliawatertechnologies.com/en>

