



VAL RITA DRINKING WATER SYSTEM 2020 ANNUAL COMPLIANCE AND SUMMARY REPORT

Prepared by the Ontario Clean Water Agency
on behalf of the Township of Val Rita – Harty

TABLE OF CONTENTS

INTRODUCTION	1
SECTION 11 ANNUAL REPORT	2
SYSTEM INFORMATION	2
REPORT AVAILABILITY.....	2
DESCRIPTION OF THE DRINKING WATER SYSTEM	2
WATER TREATMENT CHEMICALS USED	3
MAJOR EXPENSES INCURRED TO INSTALL, REPAIR OR REPLACE EQUIPMENT.....	3
REPORTING ADVERSE TEST RESULTS AND OTHER PROBLEMS.....	4
SCHEDULE 7 - OPERATIONAL TESTING.....	4
SCHEDULE 10 - MICROBIOLOGICAL TESTING	4
SCHEDULE 13 - NITRATE AND NITRITE AT THE WATER TREATMENT PLANT.....	4
SCHEDULE 13 - TOTAL TRIHALOMETHANES IN THE DISTRIBUTION SYSTEM	5
SCHEDULE 13 – HALOACETIC ACIDS (HAA) IN THE DISTRIBUTION SYSTEM	5
SCHEDULE 13 – SODIUM AT WATER TREATMENT PLANT.....	5
SCHEDULE 13 – FLUORIDE TESTED AT WATER TREATMENT PLANT.....	5
SCHEDULE 15.1 – LEAD IN THE DISTRIBUTION	5
SCHEDULE 23 - INORGANIC PARAMETERS SAMPLED AT THE WATER TREATMENT PLANT.....	6
SCHEDULE 24 - ORGANIC PARAMETERS SAMPLED AT THE WATER TREATMENT PLANT	6
ADDITIONAL TESTING AND SAMPLING – RESIDUE MANAGEMENT.....	8
SCHEDULE 22 - SUMMARY REPORTS FOR MUNICIPALITIES.....	9
PERMITS AND LICENCES.....	9
REQUIREMENTS THE SYSTEM FAILED TO MEET	9
SUMMARY OF REQUIREMENTS THE SYSTEM FAILED TO MEET	9
SUMMARY OF FLOW RATES	10
SUMMARY OF DAILY RAW WATER USAGE.....	10
SUMMARY OF DAILY VOLUME OF TREATED WATER INTO THE DISTRIBUTION SYSTEM.....	10
SUMMARY OF FLOW COMPARISON.....	11
COMPARISON OF RAW FLOWS TO SYSTEM’S PERMIT TO TAKE WATER	11
COMPARISON OF TREATED FLOWS TO SYSTEM’S MUNICIPAL DRINKING WATER LICENCE	11

INTRODUCTION

Municipalities throughout Ontario are required to comply with Ontario Regulation 170/03 made under the *Safe Drinking Water Act, 2002*. The Act was passed following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking-water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

O. Reg. 170/03 requires the owner to produce an Annual Report, under Section 11. This report must include the following:

1. Description of system and chemical(s) used
2. Description of any major expenses incurred to install, repair or replace equipment
3. Summary of all required testing
4. Summary of any adverse water quality reports and corrective actions

This Annual Report must be completed by February 28 of each year.

The regulation also requires a Summary Report which must be presented and accepted by Council by March 31 of each year for the preceding calendar year reporting period.

The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any Provincial Officer Order the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The *Safe Drinking Water Act, 2002* and the drinking water regulations can be viewed at the following website: <http://www.e-laws.gov.on.ca>.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

1. A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows.
2. A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The two reports have been combined and presented to council as the Annual Compliance and Summary Report.

SECTION 11 ANNUAL REPORT

SYSTEM INFORMATION

Drinking-Water System Name:	VAL RITA DRINKING WATER SYSTEM
Drinking-Water System No.:	220006348
Drinking-Water System Owner:	The Corporation of the Township of Val Rita - Harty
Drinking-Water System Category:	Large Municipal, Residential System
Population:	372
Reporting Period:	January 1 to December 31, 2020

REPORT AVAILABILITY

Hard Copy Available at:	Val Rita - Harty Municipal Office, 2 Ave De L'Eglise, Val Rita, ON P0L 2G0
Electronic Copy Available:	N/A
Public Notification via:	Public access/notice

DESCRIPTION OF THE DRINKING WATER SYSTEM

Well #1, known as the Murray well is a 125 mm diameter, 25 m deep drilled groundwater production well that lies adjacent to the main plant. The well is equipped with a pitless adapter, a 1.5 kW submersible well pump rated at 300 L/min., a magnetic flow meter, and a raw water sampling line and tap. Water is directed to the water treatment plant through a 75 mm diameter discharge line.

New Well #2 is located at 8 Avenue des Aulnes; 6 meters from Well #1. It was installed on November 10, 2009 and put into service on April 16, 2010. It is a 150 mm diameter 64 m deep drilled groundwater production well equipped with a pitless adapter and a 1.5 kW submersible well pump rated at 300 L/min, a magnetic flow meter, and a raw water sampling line and tap. Water is directed to the main plant through a 75 mm diameter discharge line.

The raw water sources are controlled by an automated 'lead/lag' duty system. The well pumping cycle changes after each filling of the reservoir; Well #1 would lead, then New Well #2 would lead. Raw water from the wells enters the treatment plant through two separate raw water headers. Water from the wells can be directed to the package treatment unit or to a flushing line which would allow the operator to flush each well individually to the waste water collection tank.

Raw water is pre-chlorinated using sodium hypochlorite which is paced to flow based on raw water flow. The pre-chlorination system consists of 300 litre storage tank and two metering pumps, both rated at 1.4 L/hour with automatic switchover.

The alum coagulant feed system is paced to flow based on raw water flow. The system consists of one 454 litre day tank and two metering pumps, both rated at 8.4 L/hour with

automatic switchover. The filter aid system is also paced to flow based on raw water flow. The system consists one 454 litre polymer storage day tank and two metering pumps, both rated at 8.4 L/hour with automatic switchover. All three of these chemicals are added to the raw water prior to entering the treatment unit.

The water then enters a “Graver Monoplant” package treatment plant for iron removal. A centre cone draft tube mixing clarifier with a 681 m³/d capacity is used, a flocculation zone, a settling zone with floc barriers and clarified water collector flume, and a flow splitter box. Sodium hypochlorite is added to the water as it enters the filters. This chlorination system consists of one 300L tank and a peristaltic chemical pump. A two compartment filter with 300 mm deep dual-media consisting of 150 mm torpedo sand and 150 mm anthracite, processes and filters the treated water. A backwash storage compartment, consisting of two holding tanks with a combined capacity of 91 m³, pumps water through a common header to a sanitary sewer by means of a centrifugal supernatant pump.

The chlorine contact clearwell consists of three cells and has an overall capacity of 423 m³. It is connected to a 181 m³ high lift pump well where five vertical turbine high lift pumps are in place; two are rated at 5 L/s with 2 kW motors, two are rated at 5 L/s with 4 kW motors and one rated at 38 L/s with 22 kW motor used for fire protection. The water is pumped through a 150 mm discharge line, a magnetic flow meter and two 1000 litre hydro-pneumatic pressure tanks to the distribution.

A 100 kW diesel generator with fuel tank is available at the facility to maintain all aspects of the operations during power failures.

The Val Rita Drinking Water System is classified as a Large Municipal Residential Drinking Water System and serves an estimated population of 372 residents through 145 service connections. The distribution system consists of 6 inch PVC piping which was installed in 1991, 26 fire hydrants and 2 dead end locations. There is no off-site water storage facility associated with the system.

WATER TREATMENT CHEMICALS USED

- Sodium Hypochlorite - Disinfection by Chlorination
- Aluminum Sulphate - Coagulation/Flocculation
- Polymer - Aids in Coagulation/Flocculation

All treatment chemicals are NSF/ANSI approved.

MAJOR EXPENSES INCURRED TO INSTALL, REPAIR OR REPLACE EQUIPMENT

- Permit to Take Water (PTTW) renewal, MDWL Renewal
- Highlift #2 repairs
- raw water valve failure
- Chemical pumps and analyzers - Kits
- Annual generator maintenance; inspections of lifting devices and confined space equipment

REPORTING ADVERSE TEST RESULTS AND OTHER PROBLEMS

Details on the notices required 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 or Sample Date	Details (Parameter, Limit, Result, Corrective Action, Date, etc)
-------------------------	--

None	None
------	------

SCHEDULE 7 - OPERATIONAL TESTING

Parameter	Number of Samples	Range of Results (min to max)	Unit of Measure	Standard
Turbidity – Well 1	35	0.19 – 3.78	NTU	-
Turbidity – Well 2	38	0.15 – 10.9	NTU	-
Free Chlorine Analyzer (WTP)	8760	0.10 – 3.33	mg/L	-
Distribution Free Chlorine Residuals	370	0.42 – 2.30	mg/L	≥0.05

Note: For continuous monitors use 8760 as the number of samples.

SCHEDULE 10 - MICROBIOLOGICAL TESTING

Sample Type	Number of Samples	<i>E.coli</i> Results (min to max)	Total Coliform Results (min to max)	Number of HPC Samples	Range of HPC Results (min to max)
Raw – Well 1	52	0 – <2	0 – 6	-	-
Raw – Well 2	52	0 – <2	0 – 32	-	-
Treated	52	0 – 0	0 – 0	52	<10 – >2,000
Distribution	104	0 – 0	0 – 0	52	<10 – 50
MAC	-	0	0	-	-

Maximum Acceptable Concentration (MAC) applies only to treated or distribution samples

SCHEDULE 13 - NITRATE AND NITRITE AT THE WATER TREATMENT PLANT

Date of Sample	Nitrate Result Value (mg/L)	Nitrite Result Value (mg/L)	Exceedance
January 8, 2020	<0.05	<0.05	No
April 6, 2020	<0.05	<0.05	No
July 7, 2020	<0.05	<0.05	No
October 20, 2020	<0.05	<0.05	No
MAC	10	1	-

MAC - Maximum Acceptable Concentration

SCHEDULE 13 - TOTAL TRIHALOMETHANES IN THE DISTRIBUTION SYSTEM

Date of Sample	Result (ug/L)	Running Four Quarter Average	Exceedance
January 8, 2020	59.7	61.9	No
April 6, 2020	30.5	54.4	No
July 7, 2020	60.0	52.1	No
October 20, 2020	35.2	46.4	No

Maximum Acceptable Concentration (MAC) for Trihalomethanes = 100 ug/L Four Quarter Running Average

SCHEDULE 13 – HALOACETIC ACIDS (HAA) IN THE DISTRIBUTION SYSTEM

Date of Sample	Result (ug/L)	Running Four Quarter Average	Exceedance
January 8, 2020	44	39	No
April 6, 2020	24	38	No
July 7, 2020	21	27	No
October 20, 2020	30	30	No

Maximum Acceptable Concentration (MAC) for HAA = 80 ug/L Four Quarter Running Average

SCHEDULE 13 – SODIUM AT WATER TREATMENT PLANT

Date of Sample	Result (mg/L)	Maximum Acceptable Concentration	Exceedance
October 26, 2016	31.9	20	YES (AWQI 131704)
November 2, 2016	34.4	20	N/A – Re-sample

Note: sample required every 60 months

SCHEDULE 13 – FLUORIDE TESTED AT WATER TREATMENT PLANT

Date of Sample	Result (mg/L)	Maximum Acceptable Concentration	Exceedance
October 26, 2016	0.448	1.5	No

Note: sample required every 60 months

SCHEDULE 15.1 – LEAD IN THE DISTRIBUTION

The Val Rita water supply system qualified for the 'Exemption from Plumbing Sampling' as described in section 15.1-5 (9) and 15.1-5 (10) of Ontario Regulation 170/03

As such, the system was required to test for total alkalinity and pH in one distribution sample collected during the periods of December 15 to April 15 and June 15 to October 15. This testing is required in every 12-month period with lead testing in every third 12-month period.

Sampling Dates	Number of Samples	Range of Results (min to max)		
		Lead (ug/L)	pH	Alkalinity (mg/L)
Winter Period				
April 8, 2020	1	0.9	-	-
April 8, 2020	1	-	7.26	413
Summer Period				
September 22, 2020	1	<0.1	-	-
September 22, 2020	1	-	7.04	397

SCHEDULE 23 - INORGANIC PARAMETERS SAMPLED AT THE WATER TREATMENT PLANT

Sample Date: October 20, 2020

Parameter	Result	MAC	MAC Exceedance	1/2 MAC Exceedance
Antimony	0.5	6.0	No	No
Arsenic	<1	10.0	No	No
Barium	237	1000.0	No	No
Boron	24	5000.0	No	No
Cadmium	<0.1	5.0	No	No
Chromium	2	50.0	No	No
Mercury	<0.1	1.0	No	No
Selenium	0.8	50.0	No	No
Uranium	<1	20.0	No	No

MAC – Maximum Acceptable Concentration

No inorganic parameter(s) exceeded half the standard found in Schedule 2 of the ODWS during the reporting period

SCHEDULE 24 - ORGANIC PARAMETERS SAMPLED AT THE WATER TREATMENT PLANT

Sample Date: October 20, 2020

Parameter	Result	MAC	MAC Exceedance	1/2 MAC Exceedance
1,1-Dichloroethylene	<0.3	14	No	No
1,2-Dichlorobenzene	<0.3	200	No	No
1,2-Dichloroethane	<0.3	5	No	No
1,4-Dichlorobenzene	<0.3	5	No	No
2,3,4,6-Tetrachlorophenol	<0.3	100	No	No
2,4,6-Trichlorophenol	<0.2	5	No	No
2,4-D (2,4-Dichlorophenoxy acetic acid)	<0.342	100	No	No
2,4-Dichlorophenol	<0.2	900	No	No
Alachlor	<0.224	5	No	No
Atrazine + N-dealkylated metabolites	<0.5	5	No	No
Azinphos-methyl	<0.168	20	No	No

Parameter	Result	MAC	MAC Exceedance	1/2 MAC Exceedance
Benzene	<0.1	1	No	No
Benzo(a)pyrene	<0.01	0.01	No	No*
Bromoxynil	<0.0913	5	No	No
Carbaryl	<1	90	No	No
Carbofuran	<2	90	No	No
Carbon Tetrachloride	<0.2	2	No	No
Chlorobenzene (Monochlorobenzene)	<0.5	80	No	No
Chlorpyrifos	<0.168	90	No	No
Diazinon	<0.168	20	No	No
Dicamba	<0.0799	120	No	No
Dichloromethane (Methylene Chloride)	<1	50	No	No
Diclofop-methyl	<0.114	9	No	No
Dimethoate	<0.168	20	No	No
Diquat	<0.2	70	No	No
Diuron	<7	150	No	No
Glyphosate	<20	280	No	No
Malathion	<0.168	190	No	No
MCPA (2-methyl-4-chlorophenoxyacetic acid)	<5.7	100	No	No
Metolachlor	<0.112	50	No	No
Metribuzin	<0.112	80	No	No
Paraquat	<0.1	10	No	No
Pentachlorophenol	<0.3	60	No	No
Phorate	<0.112	2	No	No
Picloram	<0.0799	190	No	No
Prometryne	<0.0559	1	No	No
Simazine	<0.168	10	No	No
Terbufos	<0.112	1	No	No
Tetrachloroethylene	<0.3	10	No	No
Total PCBs	<0.06	3	No	No
Triallate	<0.112	230	No	No
Trichloroethylene	<0.2	5	No	No
Trifluralin	<0.112	45	No	No
Vinyl Chloride	<0.1	1	No	No

Note*: Benzo(a)pyrene – Schedule 13-5 of O. Reg. 170/03 requires increased frequency of sampling if an analytical result obtained for any of the parameters listed in Schedule 24 exceeds one half of the MAC. The Ministry has set the reporting detection limit (RDL) for Benzo[a]pyrene at 50 per cent or more of the MAC, due to the limitations of the current analytical methods to achieve lower detection limits. The RDL for benzo[a]pyrene is 0.01 ug/L. For this parameter, a licenced laboratory must be able to achieve a method detection limit (MDL) at least equal to the RDL. A positive result above their MDL would trigger increased frequency of sampling, but a result equal to their MDL would not

MAC – Maximum Acceptable Concentration

No organic parameter(s) exceeded half the standard found in Schedule 2 of the ODWS during the reporting period

ADDITIONAL TESTING AND SAMPLING

MUNICIPAL DRINKING WATER LICENCE 298-101

Parameter	Weekly Sample Monitoring Location	Number of Samples	Range of Results (min to max)
Iron (mg/L)	Raw water - Well 1 when it was the duty well	35	1.58 – 3.30
	Raw water - Well 2 when it was the duty well	37	2.82 – 3.29
	Point of Entrance to distribution system	70	0.12 – 0.43
	A point in the distribution system	52	0.00 – 1.01
Manganese (mg/L)	Raw water - Well 1 when it was the duty well	35	0.256 – 0.484
	Raw water - Well 2 when it was the duty well	37	0.160 – 0.684
	Point of Entrance to distribution system	70	0.000 – 0.472
	A point in the distribution system	53	0.000 – 1.73

SCHEDULE 22 - SUMMARY REPORTS FOR MUNICIPALITIES

This report is a summary of water quality information for the Val Rita Water Treatment System. It is published in accordance with Schedule 22 of Ontario’s Drinking Water Systems Regulation 170/03 for the reporting period of January 1 to December 31, 2020 and must be submitted to members of council.

The report must include:

- Any requirements the system failed to meet during the reporting period
- A summary of quantities and flow rates and a comparison to the imposed limits

PERMITS AND LICENCES

Municipal Drinking Water Licence (MDWL)	298-101 Issued April 6, 2016
Drinking Water Works Permit (DWWP)	298-201 Issued December 16, 2016
Permit to Take Water (PTTW)	1203-83GNXV Expires March 12, 2020 P-300-9076688999 Expires March 27, 3030

REQUIREMENTS THE SYSTEM FAILED TO MEET

Compliance with the Safe Drinking Water Act involves conforming to the system’s approval and any order issued at any time during the period covered by this report. The duration of the failure and details of the actions that were taken to correct the failure must be described.

The following table lists, to OCWA’s knowledge, the requirements of the Act, its Regulations, the system’s Approvals and any Provincial Officer Order issued during the 2020 reporting period.

SUMMARY OF REQUIREMENTS THE SYSTEM FAILED TO MEET

Legislation	Requirement(s) the System Failed to Meet, Corrective Actions and Status
PTTW	PTTW P-300-9076688999 specifies a maximum flow rate of 300 L/min (5 L/s). Suspect readings indicate that this rate was exceeded on June 23 as follows: Well 1 – readings indicate that from 16:16 to 16:23 the flow rate ranged from 5.027 to 9.998 L/s and readings before and after are zeros. This is likely an erroneous reading but the cause is unknown. Well 2 – readings indicate that from 16:34 to 16:38 the flow rate ranged from 4.998 to 4.995 L/s. While these flow rates are not exceedances it is worth noting that they atypically high. Again, the cause is unknown.

SUMMARY OF FLOW RATES

For the purpose of enabling the owner of the system to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report. Under schedule 22-2(3) of Ontario Regulation 170/03, the Summary Report must include the following:

1. A summary of the quantities and flow rates of water supplied, including the monthly average and the maximum daily flows
2. A comparison of both the average and maximum flow rate summary to the rated capacity approved in the systems approval, drinking water works permit or municipal drinking water licence

The following tables and graphs indicate the quantities and flow rates of water taken and produced during the reporting period, including monthly average flows, maximum daily flows and the total monthly volumes. A comparison of the water data is made to the rated capacity and flow rates specified in the system's Municipal Drinking Water Licence.

SUMMARY OF DAILY RAW WATER USAGE

	Maximum (L/min)		Maximum (m ³ /d)		Average (m ³ /d)		Total Usage (m ³)	
	Well 1	Well 2	Well 1	Well 2	Well 1	Well 2	Well 1	Well 2
January	229	246	191	204	90	78	2,784	2,404
February	235	232	155	175	70	67	2,040	1,951
March	235	225	158	192	67	90	1,953	2,623
April	240	222	251	238	106	106	3,171	3,193
May	249	240	209	279	92	113	2,856	3,501
June	600	300	191	198	76	80	2,288	2,392
July	230	218	171	187	75	77	2,326	2,386
August	243	254	153	306	67	80	2,066	2,493
September	223	223	195	230	65	78	1,941	2,343
October	225	216	200	188	69	80	2,151	2,485
November	224	217	156	151	59	67	1,848	2,001
December	219	217	170	186	74	74	2,282	2,303

SUMMARY OF DAILY VOLUME OF TREATED WATER INTO THE DISTRIBUTION SYSTEM

	Total Usage (m ³)	Maximum (m ³ /d)	Average (m ³ /d)	% Rated Capacity
January	4,295	170	139	32.1
February	3,289	133	113	26.3

	Total Usage (m ³)	Maximum (m ³ /d)	Average (m ³ /d)	% Rated Capacity
March	4,167	174	134	31.1
April	5,276	255	176	40.7
May	5,271	205	170	39.4
June	3,815	167	127	29.4
July	3,815	158	123	28.5
August	3,434	128	111	25.6
September	3,340	315	111	25.8
October	3,694	235	119	27.6
November	3,084	123	103	23.8
December	3,645	144	118	27.2

Note: % Rated capacity compares the monthly averages to the system's rated capacity

SUMMARY OF FLOW COMPARISON

COMPARISON OF RAW FLOWS TO SYSTEM'S PERMIT TO TAKE WATER (PTTW)

PTTW – maximum for either well		432 m ³ /day	300 L/min
Average Daily Flow for 2020	Well 1	76 m ³ /day	50 L/min
	Well 2	83 m ³ /day	48 L/min
Maximum Daily Flow for 2020	Well 1	251 m ³ /day	600 L/min
	Well 2	306 m ³ /day	300 L/min
Total Raw Water	Well 1	27,706 m ³ /a	-
	Well 2	30,075 m ³ /a	-
Total Raw Water Used in 2020		57,781 m ³ /a	-

COMPARISON OF TREATED FLOWS TO SYSTEM'S MUNICIPAL DRINKING WATER LICENCE (MDWL)

Rated Capacity of the Plant (MDWL)	432 m ³ /day	
Average Daily Flow for 2020	129 m ³ /day	29.8 % of the rated capacity
Maximum Daily Flow for 2020	315 m ³ /day	40.7 % of the rated capacity
Total Treated Water Produced in 2020	47,125 m ³	

Based on the information above, the plant is able to meet the demands of the consumers.