



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

2015 Annual Compliance/Summary Report

for the

Val Rita Well Supply System

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

ANNUAL REPORT

Revised March 9, 2016 to correct bacteriological results maximum Total Coliform counts for both Well 1 and Well 2 (page 5)

Drinking-Water System Name: VAL RITA WELL SUPPLY 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
Period being reported: January 1, 2015 to December 31, 2015

Complete if your Category is Large Municipal Residential or Small Municipal Residential

Does your Drinking-Water System serve more than 10,000 people?

Yes [] No **x**

Is your annual report available to the public at no charge on a web site on the Internet?

Yes [] No **x**

The report required under O. Reg. 170/03 Schedule 22 will be available for inspection at:

Val Rita - Harty Municipal Office
 2 De L'Eglise Ave
 Val Rita, ON P0L 2G0

Drinking-Water Systems, which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
Val Rita Well Supply	220006348

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes **[X]** No []

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

[X] Public access/notice via Government Office

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 liter 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 28 cubic meter storage tank, one 454 liter day tank and two metering pumps, both rated at 8.4 L/hour with automatic switchover. The polymer filter aid system is also paced to flow based on raw water flow. The system consists of two 300 L solution tanks, one for mixing and one for storage 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 along with a sludge recirculation system, 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 liter hydro-pneumatic pressure tanks to the distribution.

A 75 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 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.

A list of all water treatment chemicals used over this reporting period

- Sodium Hypochlorite – Disinfection
- Alum (Aluminum Sulphate) - Coagulation/Flocculation
- Polymer (Magnafloc LT 20) – Coagulant Aid

All treatment chemicals are NSF/ANSI approved.

Operational Highlights During the Reporting Period

Capital work completed:

- Replace hand held chlorine analyzer – approximately \$650
- HMI and UPS replacement – approximately \$6,350
- Replace the intrusion alarm keypad – approximately \$150
- Inspection of lifting devices - \$800
- Chemical drum pump - \$1,500
- PLC logic programming - \$250
- Hydraulic drum jack - \$110
- Load test genset - \$1,500
- Replace highlift pump - \$25,000
- Chlorination after process - \$3,700

Operational Highlights Include:

- MOECC water inspectors Jill Mahoney and Jean-Francois Durocher, conducted an on-site inspection of the Val Rita Drinking Water System on October 10th. The inspection rating was 96.97% due to a non-compliance with the documentation of a change from pneumatic to electric valves (refer to Table 1 of the following Schedule 22 Report)
- As part of maintain accreditation for the Val Rita Drinking Water System, the first annual surveillance audit was conducted by SAI Global on May 26, 2015. The auditor requested a copy of the operational plan, sampling schedule, site specific contingency plans, emergency contact list, essential supplies and services list, internal audit findings, management review agenda, management review minutes and proof that the minutes were provided to the owner of the system. The final SAI Global audit report indicates that *“the overall effectiveness of the Township of Val Rita – Harty Quality Management System is considered effective”*.

- No major breakdowns occurred as all routine maintenance procedures were accomplished through OCWA’s computerized Workplace Management System (WMS)
- Overall, the plant has been operating well

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

Date	Details (Parameter, Limit, Result, Corrective Action, Date, etc)
SEPTEMBER 29, 2015 (AWQI 1266598)	<p>Loss of Service - Pressure</p> <p>September 29 – at approximately 05:00 the Public Works Foreman called OCWA to indicate that there was no distribution pressure. OCWA’s on-call operator immediately went on site to investigate. Upon arrival, it was discovered that the UPS (Uninterruptable Power Supply) for the PLC had failed. The operator plugged the PLC and chlorine analyzer directly into the power outlet to restart the PLC and the highlift pumps. The loss of pressure occurred from approximately 01:30 to 05:30 so a BWA was issued by the Township of Val Rita – Harty. The PHU was notified and recommended chlorine residual and bacteriological samples be taken</p> <p>September 29 and 30 – samples were collected to lift the BWA</p> <p>October 2 – the BWA was lifted and the incident was resolved when the lab reports were received.</p> <p>October 7 – MOE SAC, PHU and Township of Val Rita - Harty were notified</p>

Microbiological testing done under section 8(2) during this reporting period

	Range of Results (min to max)			Number of Samples	
	Total Coliform	<i>E. coli</i>	HPC	TC/EC	HPC
Raw – Well 1	0 – 1	0 – <1	-	52	-
Raw – Well 2	0 – 1	0 – <1	-	52	-
Treated	0 – <1	0 – <1	<10 – 90	52	52
Distribution	0 – 0	0 – 0	<10 – 30	108	48

Maximum Acceptable Concentration (MAC) for *E. coli* = 0 Counts/100 mL
 MAC for Total Coliforms = 0 Counts/100 mL

Operational testing done under Schedule 7, 8 or 9 during the period covered by this Annual Report

Continuous Flow Analyzers in Treatment Process

	Number of Samples	Range of Results (min to max)	Unit of Measure
Chlorine (free)	8760	0.59 – 2.27	mg/L

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

* High value due to improperly mixed post trim chlorination (injection point was too close to analyzer sample point)

Summary of Raw Water Turbidity Data

	Number of Samples	Range of Results (min to max)	Unit of Measure
Turbidity - Well 1	54	0.10 – 18	NTU
Turbidity - Well 2	58	0.11 – 9.8	NTU

Summary of Chlorine Residual data in the Distribution System

	Number of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine	369	0.58 – 2.18	mg/L	≥0.05

Note: Four (4) chlorine residual samples are collected one day and three (3) on a second day of each week. The sample sets must be collected at least 48-hours apart and samples collected on the same day must be from different locations.

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

MUNICIPAL DRINKING WATER LICENCE 298-101 (ISSUED ON JUNE 2, 2011)

Parameter	Weekly Sample Monitoring Location	Number of Samples	Range of Results (min to max)
Iron (mg/L)	Raw water from Duty Well 1	38	2.73 – 3.27
	Raw water from Duty Well 2	38	0.59 – 3.10
	Point of Entrance to distribution system	68	0.00 – 0.56
	A point in the distribution system	52	0.01 - 0.11
Manganese (mg/L)	Raw water from Duty Well 1	38	0.27 – 0.79
	Raw water from Duty Well 2	38	0.17 – 0.80
	Point of Entrance to distribution system	68	0.00 – 0.75
	A point in the distribution system	52	0.00 - 0.45

Summary of Nitrates & Nitrites tested during this reporting period.

Date of Sample	Nitrate Result Value (mg/L)	Nitrite Result Value (mg/L)	Exceedance
January 5, 2015	<0.1	<0.05	No
April 15, 2015	<0.1	<0.05	No
July 13, 2015	<0.1	<0.05	No
October 5, 2015	<0.1	<0.05	No
Maximum Acceptable Concentration (MAC) for Nitrate = 10 mg/L		MAC for Nitrite = 1.0 mg/L	

Summary of Total Trihalomethanes tested in the Distribution System during this reporting period

Date of Sample	Result Value (ug/L)	Running Average	Exceedance
January 5, 2015	48.8	48.1	No
April 15, 2015	49.0	46.1	No
July 13, 2015	47.1	47.2	No
October 5, 2015	52.8	49.4	No
Maximum Acceptable Concentration (MAC) for Trihalomethanes = 100 ug/L Running Average			
Note: the highest result for the quarter is used in the calculation of the four quarter running average (bolded values)			

Summary of lead testing under Schedule 15.1 during this reporting period

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

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. The exemption applies to a drinking water system if, in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration of 10 ug/L for lead. As such, the system was required to test for total alkalinity and pH in two distribution samples 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

Distribution Sample Date	Number of Samples	Range of Results (min to max)		
		Lead (ug/L)	pH	Alkalinity (mg/L)
April 13, 2015	1	-	7.30	376
October 7, 2015	1	-	7.59	357

Maximum Acceptable Concentration for lead is 10 ug/L

Summary of Most Recent Schedule 23 Inorganic parameters sampled at the Water Treatment Plant

Sample Date: October 15, 2014

Parameter	Result Value (ug/L)	Maximum Acceptable Concentration	Exceedance
Antimony	<0.5	6	No
Arsenic	<1	25	No
Barium	304	1000	No

Parameter	Result Value (ug/L)	Maximum Acceptable Concentration	Exceedance
Boron	27.6	5000	No
Cadmium	<0.1	5	No
Chromium	4.6	50	No
Mercury	<0.1	0.001	No
Selenium	<1	10	No
Uranium	<1	20	No

Note: sample required every 36 months

Summary of Most Recent Schedule 24 Organic parameters sampled at the Water Treatment Plant

Sample Date: October 15, 2014

Parameter	Result Value (ug/L)	Maximum Acceptable Concentration	Exceedance
1,1-Dichloroethylene (vinylidene chloride)	<0.2	14	No
1,2-Dichlorobenzene	<0.2	200	No
1,2-Dichloroethane	<0.2	5	No
1,4-Dichlorobenzene	<0.2	5	No
2,3,4,6-Tetrachlorophenol	<0.6	100	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	<0.06	280	No
2,4,6-Trichlorophenol	<0.6	5	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	<0.2	100	No
2-4 Dichlorophenol	<0.6	900	No
Alachlor	<0.5	5	No
Aldicarb	<0.6	9	No
Aldrin + Dieldrin	<0.004	0.7	No
Atrazine + N-dealkylated metabolites	<0.9	5	No
Azinphos-methyl	<0.3	20	No
Bendiocarb	<1	40	No
Benzene	<0.2	5	No
Benzo(a)pyrene	<0.009	0.01	No
Bromoxynil	<0.6	5	No
Carbaryl	<1	90	No
Carbofuran	<1	90	No
Carbon Tetrachloride	<0.2	5	No
Chlordane (Total)	<0.004	7	No
Chlorobenzene	<0.2	80	No
Chlorpyrifos	<0.3	90	No
Cyanazine	<0.3	10	No
DDT (Dichlorodiphenyl trichloroethane) + metabolites	<0.005	30	No
Diazinon	<0.3	20	No
Dicamba	<0.2	120	No
Dichloromethane	<1	50	No
Diclofop-methyl	<0.2	9	No
Dimethoate	<0.3	20	No

Parameter	Result Value (ug/L)	Maximum Acceptable Concentration	Exceedance
Dinoseb	<0.06	10	No
Diquat	<7	70	No
Diuron	<6	150	No
Glyphosate	<20	280	No
Heptachlor + Heptachlor Epoxide	<0.004	3	No
Lindane (Total)	<0.0004	4	No
Malathion	<0.3	190	No
Methoxychlor	<0.001	900	No
Metolachlor	<0.2	50	No
Metribuzin	<0.2	80	No
Paraquat	<1	10	No
Parathion	<0.2	50	No
Pentachlorophenol	<0.6	60	No
Phorate	<0.3	2	No
Picloram	<0.06	190	No
Prometryne	<0.2	1	No
Simazine	<0.3	10	No
Temephos	<20	280	No
Terbufos	<0.2	1	No
Tetrachloroethylene	<0.2	30	No
Total Polychlorinated Biphenyls (PCB)	<0.04	3	No
Triallate	<0.2	230	No
Trichloroethylene	<0.2	50	No
Trifluralin	<0.2	45	No
Vinyl Chloride	<0.2	2	No

Note: sample required every 36 months

Summary of Most Recent Sodium data tested at Water Treatment Plant

Date of Sample	Number of Samples	Result Value (ug/L)	MAC	Exceedance
October 17, 2011	1	39,200	20,000	Yes - AWQI 104054
November 1, 2011	1	9,570	20,000	N/A - Re-sample

MAC – maximum acceptable concentration

Note: sample required every 60 months

Summary of Most Recent Fluoride data tested at Water Treatment Plant

Date of Sample	Number of Samples	Result Value (mg/L)	Maximum Acceptable Concentration	Exceedance
October 12, 2011	1	<0.1	1.5	No

Note: sample required every 60 months

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

Parameter	Result Value	Unit of Measure	Date of Sample
No inorganic or organic parameter(s) exceeded half the standard found in Schedule 2 of the ODWS during the reporting period.			

Note: Applies only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential



VAL RITA WELL SUPPLY SYSTEM
SCHEDULE 22 - SUMMARY REPORTS FOR MUNICIPALITIES

FOR THE PERIOD OF JANUARY 2015 TO DECEMBER 2015

Prepared by:
Prepared for:

The Ontario Clean Water Agency
The Corporation of the Township of Val Rita - Harty

This report is a summary of water quality information for the **Val Rita Well Supply 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, 2015 to December 31, 2015 and must be submitted to members of council.

The report must list the requirements of the Safe Drinking Water Act (2002) and the drinking water regulations which can be viewed at the following website:
<http://www.e-laws.gov.on.ca>.

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 my knowledge, the requirements of the Act, its Regulations, the system’s Approvals and any Provincial Officer Order issued during the 2015 reporting period.

Table 1: Requirements the System Failed to Meet

Drinking water Legislation	Requirement(s) the System Failed to Meet and Duration	Corrective Actions and Status
Section 2.4 and Section 4 of the DWWP	<p>The owner had not ensured that all equipment was installed in accordance with Schedule A and Schedule C of the DWWP</p> <p>During the physical inspection of the Val Rita DWS the following minor modification was noted in the DWWP: Electric valves on the package water treatment unit to replace a 0.6 kW air compressor and pneumatic valves.</p> <p>This is a violation of Section 2.4 and Section 4 of the DWWP which requires any minor modification be recorded in a Form 2 and that if the minor modification results in a description change in schedule A that a Directors Notification Form be completed and submitted.</p> <p>It appears that the owner/operating authority does not have a procedure for evaluating undertakings to determine if a Form 2 is required to be completed.</p>	<p>It is required that a Form 2 and Director’s Notification Form be completed for the installation of electric valves that replaced the compressor and pneumatic valves on the package plant.</p> <p>It is recommended that the owner create a tracking number/system for all Form 2’s and a list of all minor modification or replacements describing if the project is exempt from approval, covered under a Form 2 or covered under a Schedule C application</p>

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 Certificate of Approval.

Table 2: Well 1 Usage

	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>
<i>Average Volume (m³/d)</i>	59	60	59	57	60	77	102	60	65	62	46	43
<i>Maximum Volume (m³/d)</i>	159	157	166	166	157	181	245	187	217	176	127	138
<i>Total Volume (m³)</i>	1,816	1,670	1,816	1,714	1,803	2,305	3,158	1,852	1,944	1,934	1,372	1,340
<i>Peak Flow Rate (L/min)</i>	195	192	187	188	187	185	179	176	172	197	204	199

Permit to Take Water 1203-83GNXV: Well 1 300 L/min or 432 m³/day

The annual average volume of water taken for Well 1 was 62 m³ per day. The maximum volume of water taken was 245 m³ per day and the total volume of water withdrawn for Well 1 was 22,724 m³. The peak flow rate for 2015 was 204 L/minute.

Table 3: Well 2 Usage

	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>
<i>Average Volume (m³/d)</i>	63	55	59	62	64	67	78	60	47	47	47	59
<i>Maximum Volume (m³/d)</i>	198	153	160	146	149	180	236	237	106	137	148	265
<i>Total Volume (m³)</i>	1,967	1,530	1,817	1,858	1,992	2,021	2,417	1,859	1,399	1,407	1,416	1,838
<i>Peak Flow Rate (L/min)</i>	186	183	180	182	183	183	175	173	170	190	194	191

Permit to Take Water 1203-83GNXV: Well 2 (New) 300 L/min or 432 m³/day

The annual average volume of water taken for Well 2 was 59 m³ per day. The maximum volume of water taken was 265 m³ per day and the total volume of water withdrawn for Well 2 was 21,521 m³. The peak flow rate for 2015 was 194 L/minute.

Table 4: Daily Volume of Water Entering the Distribution System

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Volume (m ³ /d)	112	107	109	109	127	150	202	155	163	162	120	103
Maximum Volume (m ³ /d)	138	126	137	126	153	195	263	207	248	210	147	155
% of Rated Capacity	32	29	32	29	35	45	61	48	57	49	34	36
Total Volume (m ³)	2,147	1,773	2,038	1,984	2,599	3,211	4,923	3,454	3,582	3,175	2,315	3,198

Municipal Drinking Water Licence 298-101: maximum volume entering distribution system 432 m³/day (Issued June 2, 2011)

The annual average volume of water entering the distribution system was 135 m³ per day.

Municipal Drinking Water Licence 298-101 states that the maximum daily volume of treated water entering the distribution system shall not exceed 432 m³ per day. The drinking water system may be operated at a rate above the rated capacity where necessary for fighting a large fire or maintenance of the drinking water system. The maximum volume of water entering the distribution system was 263 m³ per day which is 61% of the rated capacity. The total volume of water entering the distribution system was 34,398 m³.

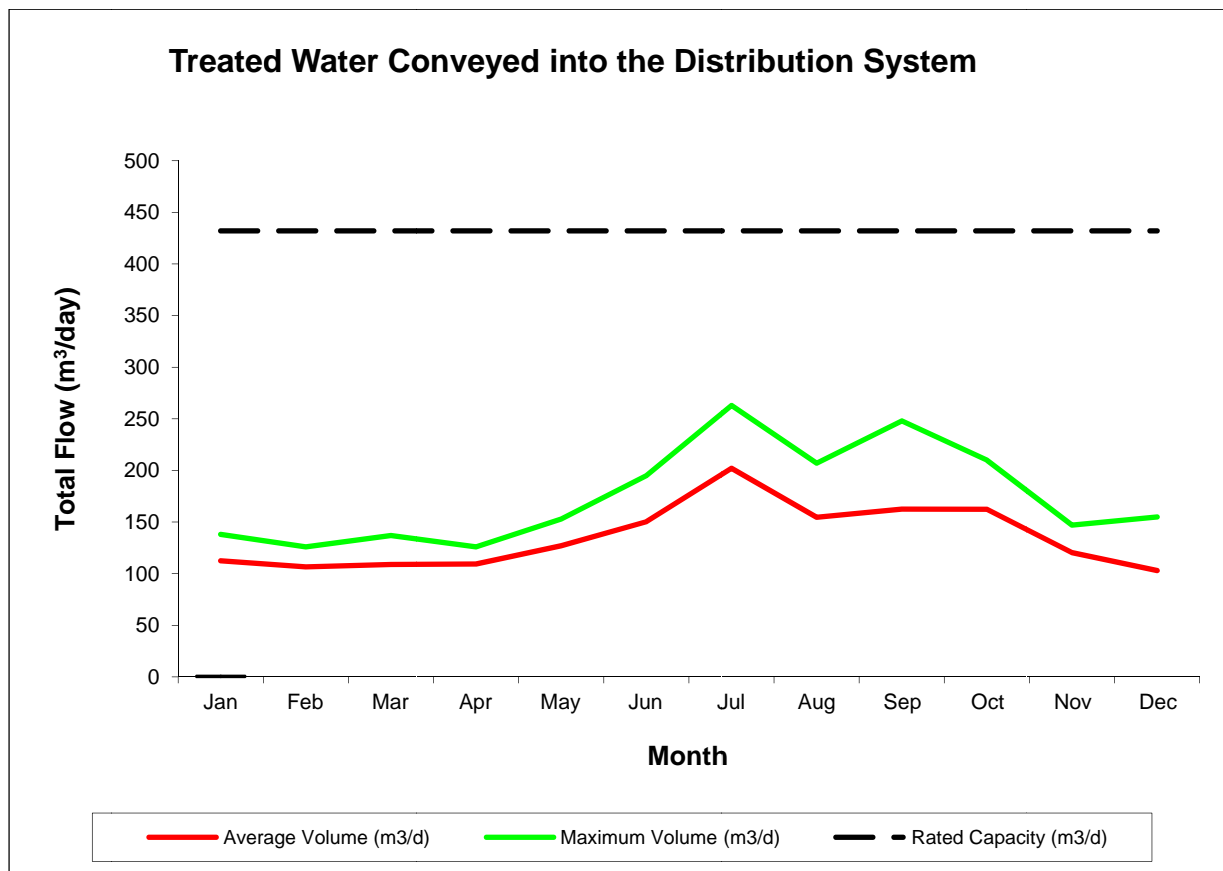


Figure 1: Average and Maximum Volumes of Treated Water Conveyed Into the Distribution System Compared to the Rated Capacity in Municipal Drinking Water Licence 298-101 (Issued on June 2, 2011)

Comparison of Flow Summary to System's Approval

Municipal Drinking Water Licence 298-101 specifies a maximum flow rate into the distribution system of 432 m³ per day. The highest flow rate into the treatment system was 263 m³ per day, which is 61% of the rated capacity.

Rated Capacity of the Plant (MDWL)	432 m ³ /day	
Average Daily Flow for 2015	135 m ³ /day	31 % of the rated capacity
Maximum Daily Flow for 2015	263 m ³ /day	61 % of the rated capacity
Total Treated Water Produced in 2015	34,398 m ³	

In summary, the normal demands of the community on the system are met while remaining well below the rated capacity.