

Killaloe Drinking Water System

2014 Annual Water Report

Reporting period of January 1, 2014 – December 31, 2014



Prepared For: The Township of Killaloe, Hagarty and Richards

Prepared By:



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

This report has been prepared to satisfy the annual reporting requirements of the
Provincial Regulations and Guidelines

Contents

Report Availability	4
Compliance Report Card	4
Quality Control Measures	5
System Process Description	6
Raw Source.....	6
Treatment.....	6
Treatment Chemicals used during the reporting year:	7
Summary of Non-Compliance	8
Adverse Water Quality Incidents	8
Non-Compliance.....	8
Non-Compliance Identified in a Ministry Inspection:	8
Flows	9
Raw Water Flows.....	9
Total Monthly Flows (m3/d).....	9
Monthly Rated Flows.....	9
Treated Water Flows.....	10
Annual Total Flow Comparison.....	10
Regulatory Sample Results Summary	11
Microbiological Testing.....	11
Operational Testing.....	11
On-Line.....	11
In-House.....	11
Laboratory	11
Additional Legislated Samples	12
Inorganic Parameters	13
Lead Sampling:.....	13
Organic Parameters.....	14

Maintenance Summary.....15
Maintenance Highlights 16

QEMS.....16

Water Taking and Transfer Data16

Small System Summary.....16
Sampling Results 17
Non-Compliance/Adverse Results 17
Maintenance Highlights 17

Appendix

WTRS Data and Submission Confirmation..... A

Municipal License Reports B

Raw Water Data C

Report Availability

This system does not serve more than 10,000 residence and the annual reports will be available to residents at the Township of Killaloe, Hagarty and Richards Municipal Office. Notification will be at the Municipal Office and copies provided free of charge if requested. The Township of Killaloe, Hagarty and Richards is located at, 1 John Street in the Village of Killaloe.

There are no systems additional drinking water systems that receive water from this facility.

Compliance Report Card

Drinking Water System Number:	220006026
System Owner:	Township of Killaloe, Hagarty and Richards
Operating Authority:	Ontario Clean Water Agency
Drinking Water System Category:	Large Municipal Residential
Reporting Period:	January 1, 2014 – December 31, 2014

Compliance Event	# of Events	Details
Ministry of Environment Inspections	1	<ul style="list-style-type: none"> Report received from June 18, 2014 Inspection on August 18, 2014
Ministry of Labour Inspections	0	
QEMS External Audit	1	No Non-Conformances identified
AWQI's	0	
Non-Compliance	0	
Community Complaints	0	
Spills	0	

Quality Control Measures

The Township of Killaloe, Hagarty and Richards facilities are part of OCWA's operational Ottawa Valley Hub. The facilities are supported by hub, regional and corporate resources. Operational Services are delivered by OCWA staff who live and work in the community.

OCWA operates facilities in compliance with applicable regulations. The facility has comprehensive manuals detailing operations, maintenance, instrumentation, and emergency procedures. All procedures are treated as active documents, with annual reviews.

OCWA has additional "Value Added" and operational support services that the Township of Killaloe, Hagarty & Richards benefits from including:

- Access to a network of operational compliance and support experts at the regional and corporate level, as well as affiliated programs that include the following:
 - Quality & Environmental Management System, Occupational Health & Safety System and an internal compliance audit system.
 - Process Data Collection (PDC) facility operating information repository, which consolidates field data, online instrumentation, and electronic receipt of lab test results for reporting, tracking and analysis.
 - Work Management System (WMS) that tracks and reports maintenance activities, and creates predictive and preventative reports.
 - Outpost 5 wide-area SCADA system allows for process optimization and data logging, process trending, remote alarming and optimization of staff time.
- Client reporting which includes operational data, equipment inventory, financial statements, maintenance work orders, and capital status reports
- Site-Specific Contingency Plans and Standard Operating Procedures
- Use of accredited laboratories
- Access to a network of operational compliance and support experts at the hub, region and corporate level
- Additional support in response to unusual circumstances, and extra support in an emergency.
- Use of sampling schedules for external laboratory sampling

System Process Description

Raw Source

Raw water source for the Killaloe Drinking Water System is a Well located at the Treatment Plant.



Treatment

Killaloe Water Treatment Plant is a single well, groundwater system equipped with greensand contactors that provide iron and manganese removal.



Pre-disinfection is provided using sodium hypochlorite and ultraviolet light. Secondary disinfection is being provided using stabilized hydrogen peroxide. The peroxide is injected prior to the clearwells and a residual is maintained through the distribution system.



Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Potassium Permanganate	Contactant	Cariox
Sodium Hypochlorite	Disinfection	Brenntag
Hydrogen Peroxide (Huwa San)	Disinfection	San Eco Tech

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Legislation	Details	Corrective Action Taken
There were no Adverse Water Quality Incidents reported for this facility in 2014						

Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non compliances reported for this facility in 2013.				

Non-Compliance Identified in a Ministry Inspection:

There was one (1) inspection reports received during this reporting period.

- Report received from June 24, 2014 inspection on August 18, 2014.
 - No action required
 - Inspection Rating 100%

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
No Actions Required in either inspection report received during this reporting period.				

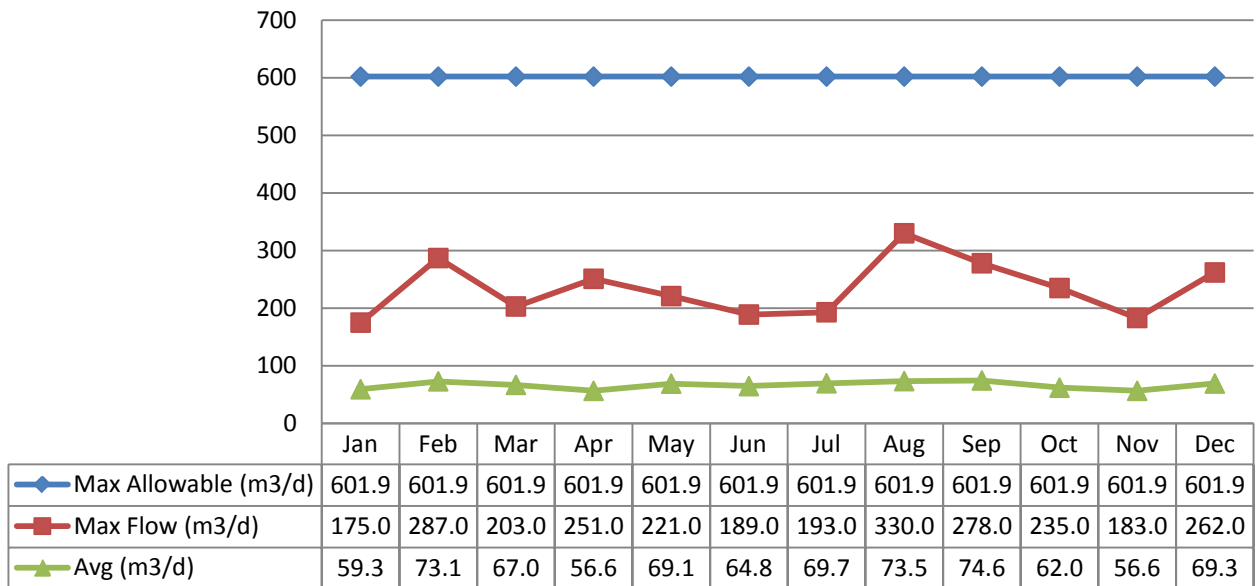
Flows

The Killaloe Drinking Water System is operating on average under half the rated capacity.

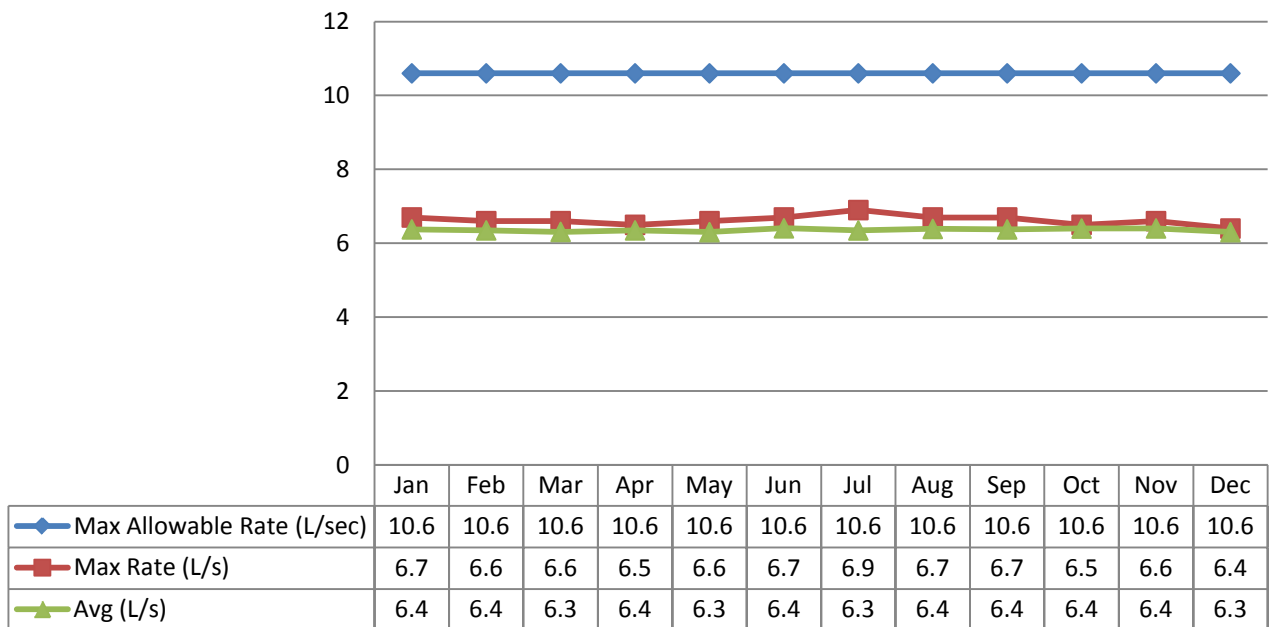
Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water.

Total Monthly Flows (m3/d)

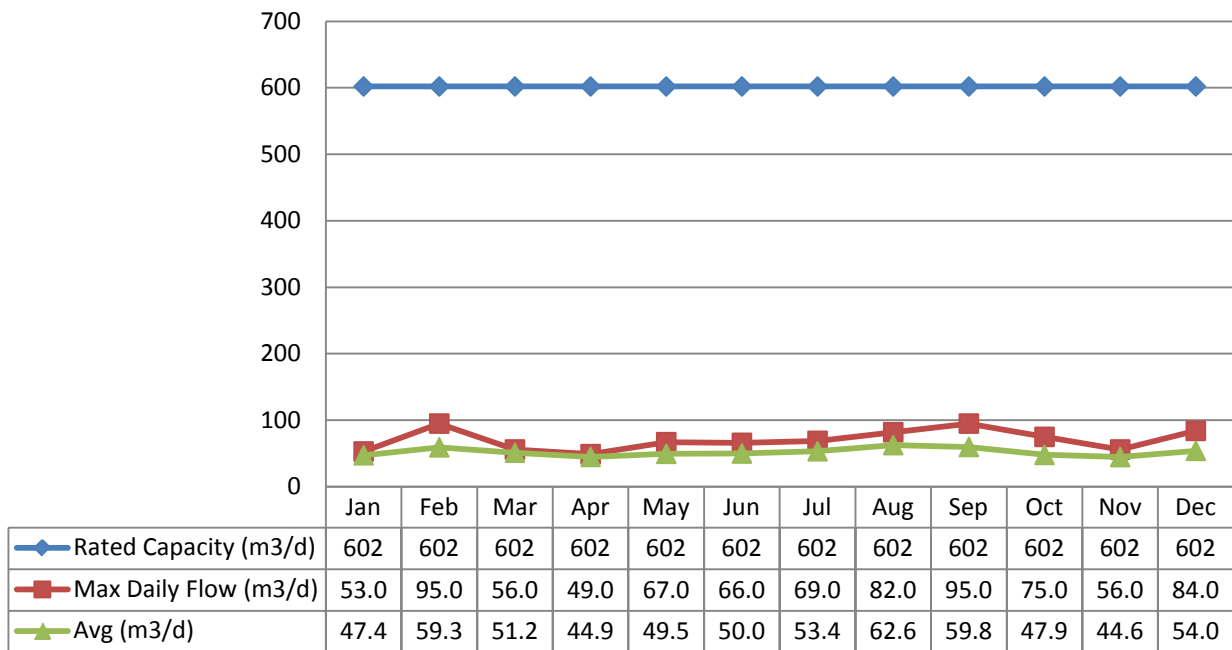


Monthly Rated Flows

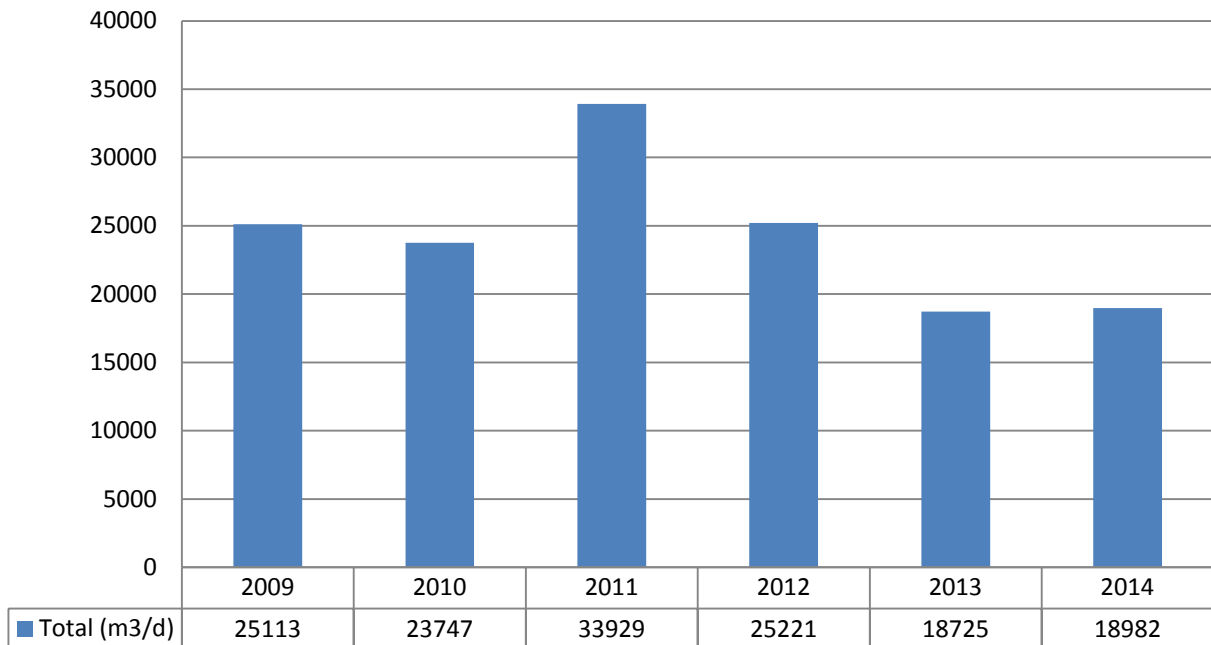


Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.



Annual Total Flow Comparison



Regulatory Sample Results Summary

Microbiological Testing

	No. of Samples Collected	E.Coli Results		Total Coliform Results		HPC Results		
		Min	Max	Min	Max	# of Samples	Min	Max
Raw Water	52	0	0	0	0	0		
Treated Water	52	0	0	0	0	52	0	2
Distribution Water	108	0	0	0	0	108	0	7

Operational Testing

On-Line

Parameter	Range of Results (min # - max #)
Primary Free Chlorine	0 – 1.0 mg/L
Pre Clearwell Peroxide	1 - 20 ppm
Post Clearwell Peroxide	0 - 20 ppm
Distribution Peroxide	2.2-9.3 ppm
Distribution Free Chlorine	Chlorine is not used for secondary disinfection
Fluoride	Fluoride is not added at this facility

NOTE: spikes recorded by on-line instrumentation were a result of air bubbles and various maintenance/calibration activities. All spikes are reviewed for compliance with O.Reg 170/03 and the Municipal Drinking Water License

In-House

Parameter	# of grab samples taken	Range of Results (min # - max #)
Post Clearwell Peroxide Residual	249	6.1 – 8 ppm
Treated Turbidity	249	0.09 – 1.0 NTU
Treated Colour	103	0 – 3 TCU
Treated pH	103	7.95 – 8.18
Treated Iron	103	0.000 - 0.034 mg/L
Treated Manganese	103	0.027 - 0.262 mg/L
Distribution pH	51	7.82 – 8.2
Distribution Free Chlorine	Chlorine is not used for secondary disinfection	
Distribution Peroxide Residual	215	2.3 – 7.1 ppm

Laboratory

Parameter	# of Samples	Range of Results (min # - max #)
Fluoride	Fluoride is not used at this facility	
Raw Alkalinity	12	241 - 267 mg/L
Raw Colour	12	4 - 7 TCU
Raw Conductivity	12	633 - 709 uS/cm
Raw pH	12	7.87 – 8.260
Treated Alkalinity	12	246 - 262 mg/L
Treated Colour	12	3 - 8 TCU
Treated Conductivity	12	669 - 712 uS/cm
Treated pH	12	7.89 – 8.31

Parameter	# of Samples	Range of Results (min # - max #)
Distribution Alkalinity	12	246 - 260 mg/L
Distribution Colour	12	3 - 5 TCU
Distribution Conductivity	12	674 – 709 uS/cm
Distribution pH	12	7.86 – 8.36
Production Well Benzene	1	<0.32 ug/L
Production Well Ethylbenzene	1	<0.33 ug/L
Production Well m/p-xylene	1	<0.43 ug/L
Production Well o-xylene	1	<0.17 ug/L
Production Well Xylene: Total	1	<0.43 mg/L
Production Well Toluene	1	<0.36 ug/L
Test Well Benzene	1	<0.32 ug/L
Test Well Ethylbenzene	1	<0.33 ug/L
Test Well m/p-xylene	1	<0.43 ug/L
Test Well o-xylene	1	<0.17 ug/L
Test Well Xylene: Total	1	<0.43 mg/L
Test Well Toluene	1	<0.36 ug/L

Additional Legislated Samples

Legal Document	Date of Issuance	Parameter	Date Sampled	Result	Unit of measure
Municipal License #259-101	18-Dec-2013	Backwash Effluent Suspended Solids	Annual Avg	2.214	mg/L
Municipal License #259-101	18-Dec-2013	Backwash Effluent pH	Annual Avg	8.104	no units
Municipal License #259-101	18-Dec-2013	Distribution Copper	07-Jan-2014	53.1	ug/L
			01-Apr-2014	49.2	ug/L
			08-Jul-2014	81.0	ug/L
			07-Oct-2014	122	ug/L
Municipal License #259-101	18-Dec-2013	Distribution Lead	07-Jan-2014	0.3	ug/L
			15-Jul-2014	0.3	ug/L
Municipal License #259-101	18-Dec-2013	Distribution THM	07-Jan-2014	22	ug/L
			01-Apr-2014	25	ug/L
			08-Jul-2014	23	ug/L
			07-Oct-2014	25	ug/L

- Hydrogen peroxide residuals see Operational Testing
- HPC Testing Results see Microbiological testing
- pH testing results see Operational Testing

Inorganic Parameters

These parameters are tested annually as a requirement under 170/03. Sodium and Fluoride are required to be tested every 5 years. Nitrates are tested quarterly as required under 170/03. In the event any of the parameters (except Sodium and Fluoride) exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

- MAC = Maximum Allowable Concentration as per O.Reg 169/03
- BDL = Below the laboratory detection level

TREATED WATER	Sample Date (mm/dd/yyyy)	Sample Result	MAC	MAC Exceedance	½ MAC Exceedance
Antimony: Sb (ug/L) - TW	14/01/2014	< 0.02	6.0	No	No
Arsenic: As (ug/L) - TW	14/01/2014	0.4	25.0	No	No
Barium: Ba (ug/L) - TW	14/01/2014	156	1000.0	No	No
Boron: B (ug/L) - TW	14/01/2014	113	5000.0	No	No
Cadmium: Cd (ug/L) - TW	14/01/2014	0.016	5.0	No	No
Chromium: Cr (ug/L) - TW	14/01/2014	3.5	50.0	No	No
Mercury: Hg (ug/L) - TW	14/01/2014	< 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	14/01/2014	< 1.0	10.0	No	No
Uranium: U (ug/L) - TW	14/01/2014	2.07	10.0	No	No
Fluoride (mg/L) - TW	03/01/2013	0.27	1.5	No	No
Nitrite (mg/L) - TW	14/01/2014	0.004	1.0	No	No
Nitrite (mg/L) - TW	01/04/2014	0.004	1.0	No	No
Nitrite (mg/L) - TW	08/07/2014	0.003	1.0	No	No
Nitrite (mg/L) - TW	07/10/2014	0.003	1.0	No	No
Nitrate (mg/L) - TW	14/01/2014	0.007	10.0	No	No
Nitrate (mg/L) - TW	01/04/2014	0.009	10.0	No	No
Nitrate (mg/L) - TW	08/07/2014	0.008	10.0	No	No
Nitrate (mg/L) - TW	07/10/2014	0.007	10.0	No	No
Sodium: Na (mg/L) - TW	09/01/2013	30.4	20*	Yes	Yes

*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified mg/L when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

Lead Sampling:

This facility is sampling under the exemption requirements of O.Reg 170/03 sampling program. Samples under this requirement are required to be sampled in 2015.

The Municipal License requires lead sampling to be sampled every 6 months. The sample results are included in this report under the "Additional Legislated Samples".

Organic Parameters

These parameters are tested annually as a requirement under 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

- MAC = Maximum Allowable Concentration as per O.Reg 169/03
- BDL = Below the laboratory detection level

TREATED WATER	Sample Date (mm/dd/yyyy)	Sample Result	MAC	MAC Exceedance	½ MAC Exceedance
Alachlor (ug/L) - TW	14/01/2014	< 0.02	5	No	No
Aldicarb (ug/L) - TW	14/01/2014	< 0.01	9	No	No
Aldrin+Dieldrin (ug/L) - TW	14/01/2014	< 0.01	0.70	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	14/01/2014	< 0.01	5	No	No
Azinphos-methyl (ug/L) - TW	14/01/2014	< 0.02	20	No	No
Bendiocarb (ug/L) - TW	14/01/2014	< 0.01	40	No	No
Benzene (ug/L) - TW	14/01/2014	< 0.32	5	No	No
Benzo(a)pyrene (ug/L) - TW	14/01/2014	< 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	14/01/2014	< 0.33	5	No	No
Carbaryl (ug/L) - TW	14/01/2014	< 0.01	90	No	No
Carbofuran (ug/L) - TW	14/01/2014	< 0.01	90	No	No
Carbon Tetrachloride (ug/L) - TW	14/01/2014	< 0.16	5	No	No
Chlordane: Total (ug/L) - TW	14/01/2014	< 0.01	7	No	No
Chlorpyrifos (ug/L) - TW	14/01/2014	< 0.02	90	No	No
Cyanazine (ug/L) - TW	14/01/2014	< 0.03	10	No	No
Diazinon (ug/L) - TW	14/01/2014	< 0.02	20	No	No
Dicamba (ug/L) - TW	14/01/2014	< 0.2	120	No	No
1,2-Dichlorobenzene (ug/L) - TW	14/01/2014	< 0.41	200	No	No
1,4-Dichlorobenzene (ug/L) - TW	14/01/2014	< 0.36	5	No	No
DDT + metabolites (ug/L) - TW	14/01/2014	< 0.01	30	No	No
1,2-Dichloroethane (ug/L) - TW	14/01/2014	< 0.35	5	No	No
1,1-Dichloroethylene (ug/L) - TW	14/01/2014	< 0.33	14	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	14/01/2014	< 0.35	50	No	No
2,4-Dichlorophenol (ug/L) - TW	14/01/2014	< 0.15	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	14/01/2014	< 0.19	100	No	No
Diclofop-methyl (ug/L) - TW	14/01/2014	< 0.4	9	No	No
Dimethoate (ug/L) - TW	14/01/2014	< 0.03	20	No	No
Dinoseb (ug/L) - TW	14/01/2014	< 0.36	10	No	No
Diquat (ug/L) - TW	14/01/2014	< 1.0	70	No	No
Diuron (ug/L) - TW	14/01/2014	< 0.03	150	No	No
Glyphosate (ug/L) - TW	14/01/2014	< 1.0	280	No	No
Heptachlor+hepachlor epoxide (ug/L) - TW	14/01/2014	< 0.01	3	No	No
Lindane (ug/L) - TW	14/01/2014	< 0.01	4	No	No

TREATED WATER	Sample Date (mm/dd/yyyy)	Sample Result	MAC	MAC Exceedance	½ MAC Exceedance
Malathion (ug/L) - TW	14/01/2014	< 0.02	190	No	No
Methoxychlor (ug/L) - TW	14/01/2014	< 0.01	900	No	No
Metolachlor (ug/L) - TW	14/01/2014	< 0.01	50	No	No
Metribuzin (ug/L) - TW	14/01/2014	< 0.02	80	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	14/01/2014	< 0.3	80	No	No
Paraquat (ug/L) - TW	14/01/2014	< 1.0	10	No	No
Parathion (ug/L) - TW	14/01/2014	< 0.02	50	No	No
PCB (ug/L) - TW	14/01/2014	< 0.04	3	No	No
Pentachlorophenol (ug/L) - TW	14/01/2014	< 0.15	60	No	No
Phorate (ug/L) - TW	14/01/2014	< 0.01	2	No	No
Picloram (ug/L) - TW	14/01/2014	< 1.0	190	No	No
Prometryne (ug/L) - TW	14/01/2014	< 0.03	1	No	No
Simazine (ug/L) - TW	14/01/2014	< 0.01	10	No	No
Temephos (ug/L) - TW	14/01/2014	< 0.01	280	No	No
Terbufos (ug/L) - TW	14/01/2014	< 0.01	1	No	No
Tetrachloroethylene (ug/L) - TW	14/01/2014	< 0.35	30	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	14/01/2014	< 0.14	100	No	No
Triallate (ug/L) - TW	14/01/2014	< 0.01	230	No	No
Trichloroethylene (ug/L) - TW	14/01/2014	< 0.44	50	No	No
2,4,6-Trichlorophenol (ug/L) - TW	14/01/2014	< 0.25	5	No	No
2,4,5-T (ug/L) - TW	14/01/2014	< 0.22	280	No	No
Trifluralin (ug/L) - TW	14/01/2014	< 0.02	45	No	No
Vinyl Chloride (ug/L) - TW	14/01/2014	< 0.17	2	No	No
DISTRIBUTION WATER					
Trihalomethane: Total (ug/L) Annual Average - DW	01/01/2014	23.4	100	No	No

Maintenance Summary

OCWA uses a risk-based preventative maintenance framework that ensures assets are maintained to manufacturer's and/or industry standards. Maintenance is completed using various tools and operational supports. The Ottawa Valley Hub has specialized certified staff such as Millwrights, Electricians and Instrumentation Specialists to name a few.

OCWA uses a Workplace Maintenance System (WMS). WMS is a maintenance tracking system that can generate work orders as well as give summaries of completed and scheduled work. During the year, the operating authority at the facility generates scheduled work orders on a weekly, monthly and annual basis. The service work is recorded in the work order history. This ensures routine and preventive maintenance is carried out. Emergency and capital repair maintenance is completed and added to the system.

Capital projects are listed and provided to the Township of Killaloe, Hagarty and Richards in the form of a “Capital Forecast”. This list is developed by facility staff and provides recommendations for facility components requiring upgrading or improvement.

Preventative Maintenance Work Orders Completed	217
Operational Maintenance Work Orders Completed	30
Weekly Maintenance Work Orders Completed	408
Corrective Maintenance Work Orders Completed	5

- OCWA responded to 4 water quality complaints.

Maintenance Highlights

WO#	Details
3062862	SAI Global audit
3078583	High lift pump check valve repair
3078639	Permit To Take Water
3124869	Pneumatic Solenoid control valve replacements
3130629	UV system calibrations
3174140	Hydrogen Peroxide system analyzer repairs
3214048	Distribution system Drawings scanned

QEMS

The Ontario Clean Water Agency has received Full scope accreditation. There was an external surveillance audit completed February 12, 2014. There were no non-conformances identified. The Internal Audit and Management Review were completed. Minutes from the Management Review were provided to the Town on October 6, 2014.

Water Taking and Transfer Data

The municipality received a new permit to take water on August 8, 2014. The new permit expires August 1, 2024.

January to July 2014 data was submitted electronically on January 19, 2014 under permit #6713-62X4ER. August to December 2014 data was submitted electronically on January 19, 2014 under permit #2835-9LMRUZ.

The WTRS data and submission confirmation are attached in Appendix B.

Small System Summary

The Ontario Clean Water Agency sampled at four (4) small Ministry of Health regulated systems owned by The Township of Killaloe, Hagarty and Richards. Below is a summary of the sample results.

Sampling Results

Location	Number of Samples	E.coli Results (min) - (max)	Total Coliform Results (min) – (max)
Killaloe Rink	9	0 – 0	0 – 7
Killaloe Medical Center	26	0 – 0	0 – 0
Killaloe Municipal Office	3*	0 – 0	0 – 0
Round Lake Arena	4	0 – 0	0 – 0

*The Killaloe Municipal Office connected to the Killaloe Distribution System on October 15, 2014 and is no longer classified as a small system.

Non-Compliance/Adverse Results

Facility	Date	Legislation	Parameter	AWQI #	Problem	Corrective Action
Killaloe Rink	05-Jun-2014	319/09	Total Coliform	36084	7 cfu/100 mL	Resample and test. resample came back with 3 cfu/100ml. Operators chlorinated the well and resampled June 10 and June 11, results had a 0 result.

Maintenance Highlights

- Operations staff clean UV system and replace sediment filters as required at the Killaloe Medical Center

Appendix A

WTRS Data and Submission Confirmation

Appendix B

Municipal License Reports

These reports were submitted to satisfy the additional reporting requirements of the peroxide project.

Appendix C

Raw Water Data