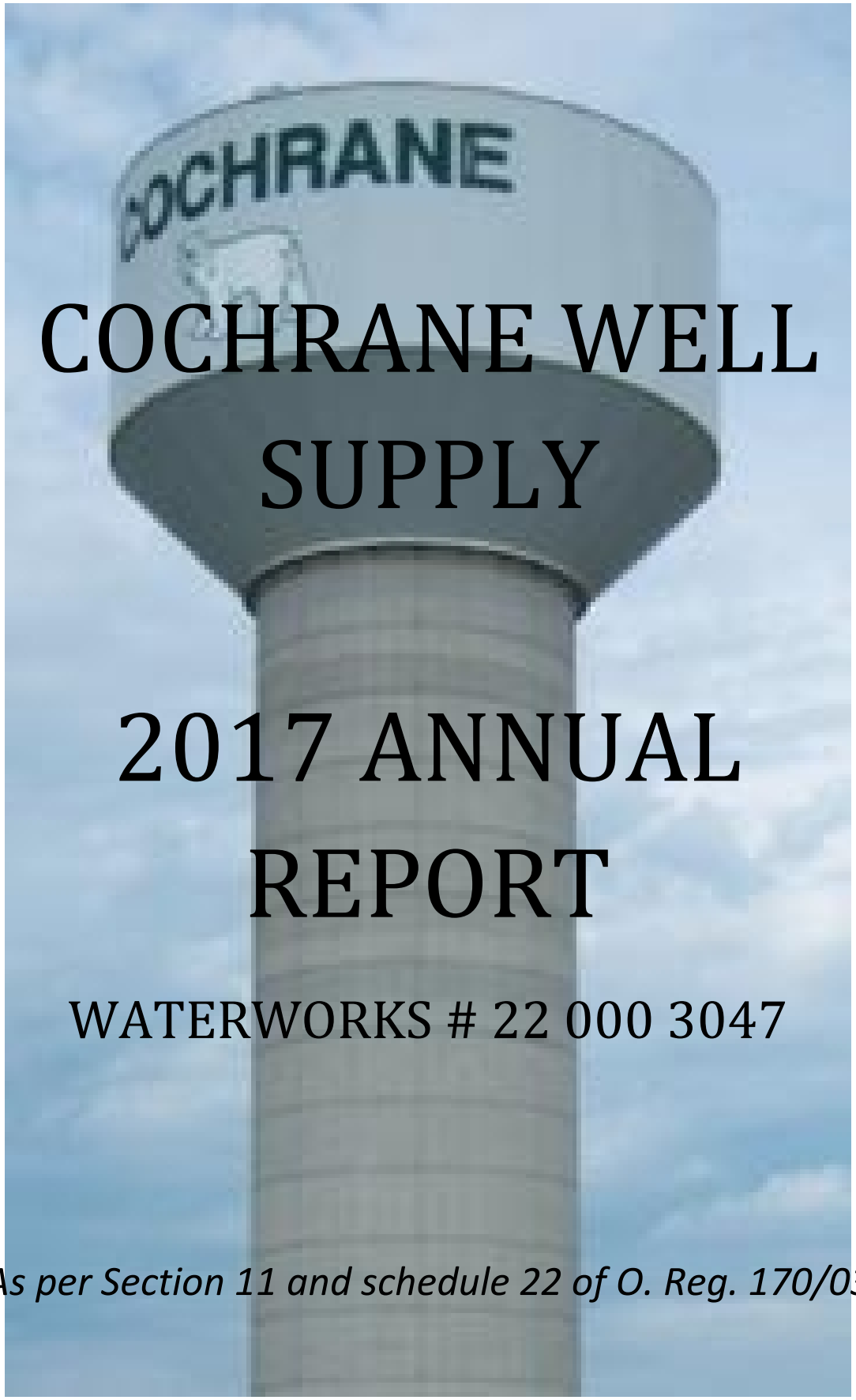

COCHRANE WELL SUPPLY

2017 ANNUAL REPORT

WATERWORKS # 22 000 3047

As per Section 11 and schedule 22 of O. Reg. 170/03

Reference Index

2017 Annual Report

A- **Annual Report**

B- **Compliance**

C- **Summary of Flows**

D- **Comparison of Flows**

ANNUAL REPORT

OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	**22 000 3047**
Drinking-Water System Name:	Cochrane Well Supply
Drinking-Water System Owner:	The Corporation of the Town of Cochrane
Drinking-Water System Category:	Large Municipal Residential System
Period being reported:	January 1, 2017 to December 31, 2017

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 [x] No [ ]

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Infrastructure Services
92 Second Street
Cochrane Ontario
P0L 1C0

Complete for all other Categories.

Number of Designated Facilities served:

4

Did you provide a copy of your annual report to all Designated Facilities you serve?
Yes [x] No [ ]

Number of Interested Authorities you report to: 0

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?
Yes [x] No [ ]

Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number

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 [ ] No [ ]

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

[x] Public access/notice via the web
[ ] Public access/notice via Government Office
[ ] Public access/notice via a newspaper
[ ] Public access/notice via Public Request
[ ] Public access/notice via a Public Library
[x] Public access/notice via other method ____*message on Water/Wastewater bill*_____

Describe your Drinking-Water System

The water treatment works relies on groundwater from 3 wells, each with a capacity of 45.3 litres per second. The maximum flow for each well cannot exceed 50 liters per second. The wells are located at the east side of Water Plant Road, Lot 19, Concession 1, in the Town of Cochrane, next to the Plant. While the population of Cochrane is about 5,500, the Plant has the capacity of delivering 8,000 cubic meters per day.
The treatment process was designed to remove high iron content, manganese and hardness present in the raw water supplied that is produced by the three wells. "Lime Softening" is the process that is used. First, hydrated lime (calcium hydroxide) is added to the water. This increases the pH of the water causing the calcium carbonate, iron and manganese to precipitate out of the water. Most of the precipitated particles settle out in the two clarifiers. Then carbon dioxide is added in re-carbonation tanks to reduce the pH to normal levels with the dual media filters used to filter out any remaining particles. The finished water is now stored in an interconnected twin-celled in-ground clear well/ reservoir that has a capacity of 2,300 cubic meters. Three high-lift pumps, each rated at 83.4 liters per second are used to pump the water into the Town's distribution system. On the other side of town, a 2,700 cubic meters elevated storage tank provides gravity flow to the town. This storage is used during peak demand times in the day, and is available to provide the very high flow rates that could be required by the fire department in case of a large fire. The plan and storage tank (tower) have complete automatic control and alarm systems that notify the operator of any problems. The plant also has an emergency diesel generator that allows water to be treated and pumped in the event of a power outage. Cochrane Water & Wastewater Services employs the services of Accuracy Environmental Laboratories Ltd. for all testing of water samples. Accuracy also sub-contracts some of these samples to other laboratories who provide the required testing as per Regulation 170/03. All laboratories employed for Town of Cochrnae water testing are accredited:

Testmark Laboratories
100 Wilson Avenue
Timmins Ontario
P4N 2S9
(705) 531-1121

Testmark Laboratories
1470 Government Rd. W. Box 426
Kirkland Lake, ON P2N 3J1
(705) 642-3361

Caduceon Environmental Labs
40 Camelot Drive
Ottawa, ON K2G 5X1
(613) 228-1145

Maxxam Analytics

Ontario **Drinking-Water Systems Regulation O. Reg. 170/03**

6740 Campobello Rd.
Mississauga, ON L5N 2L8
(905) 817-5751

List all water treatment chemicals used over this reporting period

Chlorine Gas – Disinfection
Sodium Bicarbonate – Flocculation/ Coagulation
Hydrated Lime – Softening process
Sodium Silicate – Flocculation / Coagulation
Carbon Dioxide – pH Adjustment

Were any significant expenses incurred to?

[ ] Install required equipment
[x] Repair required equipment
[x] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

Replaced one Rotork Valve
Replaced Turbidity Meters
Replaced broken hoses and pump parts
Replaced Flow Meter on Well # 6

Provide 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

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	156	0-0	0-6	0	
Treated	52	0-0	0-0	52	0-30
Distribution	260	0-0	0-0	260	0-390

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)	Unit of Measure

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

Turbidity	**8760**	**0-5.0**	**NTU**
Chlorine	**8760**	**0-5.0**	**Mg/L**
Fluoride (If the DWS provides fluoridation)			

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

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	June 2, 2015	<0.5	ug/L	No
Arsenic	June 2, 2015	<1	ug/L	No
Barium	June 2, 2015	14	ug/L	No
Boron	June 2, 2015	27.1	ug/L	No
Cadmium	June 2, 2015	<0.1	ug/L	No
Chromium	June 2, 2015	3.5	ug/L	No
***Lead**	2016	0.85	ug/L	
Mercury	June 2, 2015	<0.1	ug/L	No
Selenium	June 2, 2015	<1	ug/L	No
Sodium	January 7, 2015	22700	ug/L	Yes
Uranium	June 2, 2015	<1	ug/L	No
Fluoride	Dec 16, 2014	0.19	mg/L	No
Nitrite	Nov 10, 2015	< 0.03	mg/L	No
Nitrate	Nov 10, 2015	< 0.1	mg/L	No

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

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)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Plumbing	**Exempt**			
Distribution	**Exempt**	**0.1-2.0**	**Ug/L**	**None**

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	June 2, 2015	<0.4	**Ug/L**	**No**
Aldicarb	June 2, 2015	<0.6	Ug/L	No
Aldrin + Dieldrin	June 2, 2015	<0.004	Ug/L	No
Atrazine + N-dealkylated metobolites	June 2, 2015	<0.9	Ug/L	No
Azinphos-methyl	June 2, 2015	<0.3	Ug/L	No
Bendiocarb	June 2, 2015	<1	Ug/L	No
Benzene	June 2, 2015	<0.2	Ug/L	No
Benzo(a)pyrene	June 2, 2015	<0.005	Ug/L	No
Bromoxynil	June 2, 2015	<0.09	Ug/L	No
Carbaryl	June 2, 2015	<1	Ug/L	No
Carbofuran	June 2, 2015	<1	Ug/L	No
Carbon Tetrachloride	June 2, 2015	<0.2	Ug/L	No
Chlordane (Total)	June 2, 2015	<0.004	Ug/L	No
Chlorpyrifos	June 2, 2015	<0.3	Ug/L	No
Cyanazine	June 2, 2015	<0.3	Ug/L	No
Diazinon	June 2, 2015	<0.3	Ug/L	No
Dicamba	June 2, 2015	<0.8	Ug/L	No
1,2-Dichlorobenzene	June 2, 2015	<0.2	Ug/L	No
1,4-Dichlorobenzene	June 2, 2015	<0.2	Ug/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	June 2, 2015	<0.005	Ug/L	No

1,2-Dichloroethane	June 2, 2015	<0.2	Ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	June 2, 2015	<0.2	Ug/L	No
Dichloromethane	June 2, 2015	<1	Ug/L	No
2-4 Dichlorophenol	June 2, 2015	<0.6	Ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	June 2, 2015	<0.08	Ug/L	No
Diclofop-methyl	June 2, 2015	<0.08	Ug/L	No
Dimethoate	June 2, 2015	<0.3	Ug/L	No
Dinoseb	June 2, 2015	<0.07	Ug/L	No
Diquat	June 2, 2015	<7	Ug/L	No
Diuron	June 2, 2015	<6	Ug/L	No
Glyphosate	June 2, 2015	<20	Ug/L	No
Heptachlor + Heptachlor Epoxide	June 2, 2015	<0.0006	Ug/L	No
Lindane (Total)	June 2, 2015	<0.0004	Ug/L	No
Malathion	June 2, 2015	<0.3	Ug/L	No
Methoxychlor	June 2, 2015	<0.001	Ug/L	No
Metolachlor	June 2, 2015	<0.2	Ug/L	No
Metribuzin	June 2, 2015	<0.2	Ug/L	No
Monochlorobenzene				
Paraquat	June 2, 2015	<1	Ug/L	No
Parathion	June 2, 2015	<0.2	Ug/L	No
Pentachlorophenol	June 2, 2015	<0.6	Ug/L	No
Phorate	June 2, 2015	<0.3	Ug/L	No
Picloram	June 2, 2015	<0.08	Ug/L	No
Polychlorinated Biphenyls(PCB)	June 2, 2015	<0.05	Ug/L	No

Prometryne	June 2, 2015	<0.2	Ug/L	No
Simazine	June 2, 2015	<0.3	Ug/L	No
THM (NOTE: show latest annual average)	2017	53.55	Ug/L	No
Temephos	June 2, 2015	<20	Ug/L	No
Terbufos	June 2, 2015	<0.2	Ug/L	No
Tetrachloroethylene	June 2, 2015	<0.2	Ug/L	No
2,3,4,6-Tetrachlorophenol	June 2, 2015	<0.6	Ug/L	No
Triallate	June 2, 2015	<0.2	Ug/L	No
Trichloroethylene	June 2, 2015	<0.2	Ug/L	No
2,4,6-Trichlorophenol	June 2, 2015	<0.5	Ug/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	June 2, 2015	<0.09	Ug/L	No
Trifluralin	June 2, 2015	<0.2	Ug/L	No
Vinyl Chloride	June 2, 2015	<0.2	Ug/L	No

List any 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

COMPLIANCE

COMPLIANCE

To the best of our knowledge, the Cochrane Water Treatment Plant is in compliance with all regulatory requirements as outlined in the Drinking Water Works Permit, Municipal Drinking Water License, Permit to Take Water and Ontario Regulation 170/03.

In 2017, the Cochrane Water Treatment Plant underwent one Ministry of Environment and Climate Change annual inspections.

Inspection 1-F7NA1 on May 2, 2017

There were no non-compliance and one best practice issued during this inspection. We received a final inspection rating of 100%.

Best Practice Recommendations

- A program for inspecting and exercising valves did not exist. The owner has not implemented a program to inspect or exercise valves. The owner will exercise valves during a line break but there is not a real program implemented. Recommendation: It is recommended that the owner follow the following reference in order to initiate a formal program: AWWA Standard G200-09 Distribution System Operation and Management, Section 4.2.5 Valve exercising and replacement. This standard identifies the following minimum requirements for a valve exercising program: - A goal for the number of transmission valves to be exercised annually based on the percentage of the total valves in the system. - A goal for the number of distribution valves to be exercised annually. - Measures to verify that the goals are met and written procedures for action if the goals are not attained. - Critical valves in the distribution system shall be identified for exercising on a regular basis. Potential quality and isolation concerns shall be recognized. The program shall track the annual results and set goals to reduce the percent of inoperable valves. Additional reference material: Small System Operation and Maintenance Practices: A Best Practice by the National Guide to Sustainable Municipal Infrastructure. (InfraGuide, October 2005) Section 3.2.17 Exercise and Inspect Valves and Hydrants pg. 27 Water Quality in Distribution Systems: A Best Practice by the National Guide to Sustainable Municipal Infrastructure. (InfraGuide, July 2003) Section 3.2.7 Control of Valve and Hydrant Operations pg. 21. AWWA Manual 17 - Maintenance and Inspection of Valves and Fire Hydrants.

SUMMARY OF FLOWS

Summary of Flows

This report is prepared to comply with Schedule 22 section 3(1) of Reg 170/03 of the SDWA

(3) 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.

TREATED WATER

Month	Daily Average In m^3	Maximum Daily Flow in L/s
January	1,654	77.0
February	1,583	77.1
March	1,732	78.3
April	1,552	77.7
May	1,645	77.3
June	1,669	80.9
July	1,607	80.2
August	1,595	77.0
September	1,502	77.6
October	1,425	78.4
November	1,386	76.5
December	1,385	75.5
Total Average	**1,561**	**77.8**

RAW WATER

Month	Daily Average In m^3
January	1,827
February	1,712
March	1,895
April	1,741
May	1,771
June	1,816
July	1,790
August	1,740
September	1,671
October	1,563
November	1,536
December	1,553
Total Average	**1,718**

COMPARISON OF FLOWS

Comparison of the Summary of Flows

This report is prepared to comply with Schedule 22 section 3(2) of Reg 170/03 of the SDWA

(3) 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 license.

2017 Total Flow

Month	Raw Water Total Monthly Flow In m^3	Treated Water Total Monthly Flow In m^3
January	56651.4	51277.9
February	47941.1	44335.5
March	58742.4	53699.3
April	52240.0	46576.0
May	54895.2	51004.2
June	54468.5	50057.8
July	55492.9	49815.9
August	53933.4	49453.3
September	50126.2	45074.5
October	48444.7	44180.2
November	46069.2	41585.2
December	48136.4	42951.8
Total	**627,141.4**	**570,011.6**

Item	2017	2016	2015	2014
Avg. Raw Water Day Flow m^3/day	1,718	1,920	2,571	3007.29
Design Capacity m^3/day	7,856.60	7,856.60	7,856.60	7,856.60
% (Avg. day/design capacity)	21.87%	24.44%	32.72%	38.28%

Comparison of the Summary of Flows continued

The Total Flow (raw water) in 2017 was 627,141.4 $m^{3,}$ which represents 22.4% of the total capacity for the year. The average daily flow in 2017 was 1,718 m^3 which is only 21.87% of design. The approved plant treatment capacity of 7,856m^3/day was not exceeded during this period. The daily peak flow of 6,000L/s was not exceeded. The operating level of the plant is set at approximately 40 L/s with one of our 3 wells operating at a time.

The aquifer continues to perform within expectations and there is no concern at this time on the continued performance. Each of the wells #5,6 and 7 are drilled to a depth of 45 to 50 meters and equipped with a submersible well water pump with a rated capacity of 45.3 L/s at a TDH of 32.3 meters, pitless adapter, sanitary well seal, air line and supply line to the water treatment plant. The wells were last inspected by Lotowater Technical Services Inc. on December 5, 2014 and the recommendations were completed in October 2015. We also conducted a Raw Water Assessment in June 2015.

Based on available records the draw downs of each well is measured monthly and documented. Draw downs were reported as being for Well # 5 14.479 to 24.72 meters, Well # 6 14.60 to 32.89 meters and Well # 7 27.74 to 30.69 meters.