# Whitehead Elton Regional Water Co-operative Inc.

# 2017

# ANNUAL REPORT

# Board of Directors

President;

Donna Mitchell

Vice President;

Allan Sutherland

Secretary Treasurer;

Kathleen Steele

Directors;

Ross Farley, Cindy Izzard, Darryl Speers

Name of Public Water System:

**Whitehead Elton Regional Water Co-operative Inc.**

Name of Legal Owner:

**Whitehead Elton Regional Water Co-operative Inc**.

Contact Person: **Ralph Berg** Manager

Phone: **(204) 729 6116** Cell

**(204) 571 0910** Forrest Reservoir

**(204) 752 2378** Water Treatment Plant

Contact Numbers:

**Whitehead Elton Regional Water Co-operative Inc.**

**(204) 729 6116**

**(204) 752 2261** R.M. Of Whitehead

**(204) 728 7834** R.M. Of Elton

Emergency Numbers:

**Whitehead Elton Regional Water Co-operative Inc.**

**(204) 729 6116**

**(204) 730-2867** 24 Hour Emergency Line

**(204) 752 2261** R.M. Of Whitehead

**(204) 728 7834** R.M. Of Elton

Names of Operators:

**Ralph Berg**

**Bo Yeomans**

**Mike Beaule**

# TABLE of CONTENTS

## *1) Introduction:*

The 2017 Whitehead Elton Regional Water Cooperative Inc. Annual Report summarizes the water utility's ability to provide safe economical potable water and comply with provincial standards.

## *2) Description of the Water System:*

The Whitehead Elton Regional Water Cooperative Inc. provides potable water to a population of approximately 2300 residents. Corrective Actions were taken and reported as required for normal minor variations during the course of operations. Full results have been attached in Section 3.

The Whitehead Elton Regional Water Cooperative Inc. water system consists of a network of pressure pipelines, a water treatment plant, a booster station, a pressure reducing station and a water storage reservoir. The Whitehead Elton Regional Water Cooperative Inc. owns the Alexander Water Treatment Plant, Dungannan Pressure Reducing Station, Elton Booster Station and the Forrest Reservoir.

The R.M. of Elton owns three pressure reducing stations and one booster station located east of #10 Highway and north of #1 Highway.

## *2.1) Water Supply Source:*

The Whitehead Elton Regional Water Cooperative Inc. receives its water supply from two wells located in the R.M. Of Whitehead. The wells are situated to draw raw water from a sand and gravel aquifer.

The system provides treated water to the R.M. Of Elton, the villages of Forrest and Douglas, the R.M. Of Whitehead, the villages of Alexander and Kemnay and a few residents of the R.M. Of Riverdale and the R.M. Of Cornwallis.

## *2.2) Water Treatment Process:*

The water treatment process is designed to remove hardness, iron, manganese, total dissolved solids, turbidity and arsenic from the raw water supply to meet the aesthetic objectives outlined in the *Guidelines for Canadian Drinking Water Quality (GCDWQ).* The plant currently provides virus inactivation through chlorine treated water obtaining contact time within the treated water reservoirs.

Re-Chlorination is available at the Forrest Reservoir but it is not in use. The average daily flow through the Alexander Water Treatment Plant of raw water is 572.79 cubic meters per day, with the plant rated at a maximum daily flow of raw water of 1,080 cubic meters per day.

Raw water is diverted from a sand and gravel aquifer by two wells located approximately 2.5 km NE of the Alexander Water Treatment Plant. The well pumps deliver water to the WTP through a 150 mm HDPE raw water pipeline. Water passes through the reverse osmosis system to remove hardness, iron, manganese, total dissolved solids and turbidity. Following the membrane unit, permeate water is passed through a membrane contactor to remove carbon dioxide in the permeate water, therefore increasing the pH. By Pass water ( raw water ) passes through a 1.4 m diameter manganese greensand filter to remove iron and manganese allowing for hardness and pH adjustment in the treated water. A portion of the permeate water is also passed though the greensand filter for arsenic removal. Treated water from the R.O. Unit is pH buffered with Sodium Hydroxide injection and the combined treatment streams are chlorinated prior to entering the 550 cubic meter, six cell reservoir. The distribution pumps send water through a 200 mm pipeline to the distribution system.

Iron and Manganese are metals that cause laundry and plumbing fixture staining problems and can accumulate in the distribution pipes and cause reduced flow. Calcium Carbonate causes hardness in the water which diminishes the ability of the water to react with soap and lather. Hardness also forms scale deposits in kettles, hot water tanks and plumbing fixtures which can reduce their life expectancy.

## *2.3 Classification and Certification*

-The Alexander Water Treatment Plant is a Class 2 water treatment facility.
-The Whitehead Elton Regional Water Co-operative Inc. water distribution system is being assessed by Manitoba Conservation for classification but is currently rated as Class 1.
-The R.M. Of Whitehead's distribution system is Class 1.
-The R.M. Of Elton's distribution system is classed as a Small Distribution System.

The Facility classifications are used to determine certification requirements for the water system operators.

# *3.0 List of Water Quality Standards*

## *3.1 Water Quality Standards and Monitoring Requirements*

The Province of Manitoba has adopted a number of water quality standards from the Health Canada *Guidelines for Canadian Drinking Water Quality.* The health based parameters express the *maximum acceptable concentrations or MAC* for drinking water. Concentration values in excess of the guidelines constitute a health-related issue and require corrective actions. All health-based parameters were within the limits for 2017 for Whitehead Elton Regional Water Co-operative Inc. and both R.M.`s.

All public water systems, PWS, are required to monitor chlorine residual levels daily. Monitoring is done daily at both the Alexander Water Treatment Plant and the Forrest Reservoir. Results are recorded and at the end of each month, results are forwarded to our Provincial Drinking Water Officer. Copies of the originals must be kept on file and on hand for **TWO YEARS** at each facility.

Bacterial Testing for Total Coliforms and E.coli are done every two weeks, with sample sets being separated by at least 12 days. All results are kept in files at the Water Treatment Plant for a **period of 2 years.**

## *3.2 Drinking Water Officer Annual Reports*

***PWS 248.70 Whitehead Elton Regional Water Co-operative Inc.***
***PWS 248.80 R.M. Of Whitehead***
***PWS 63.50 R.M. Of Elton***

Manitoba
**Sustainable Development**
Office of Drinking Water
1129 Queens Ave, Brandon, MB R7A 1L9
**T** 204-570-1405 **F** 204-726-6567
christine.gerardy@gov.mb.ca
www.manitoba.ca/drinkingwater

*Sent via electronic mail: no hard copy to follow*

PWS 248.80

January 23, 2018

Cindy Izzard, CAO
Rural Municipality of Whitehead
Box 107
Alexander, MB R0K 0A0

*Sent via email to: caowhitehead@mymts.net*

**2017 Annual Compliance Audit**

Dear Ms. Izzard:

Please find enclosed the 2017 Annual Compliance Audit for the Whitehead (Whitehead Elton Regional) public water system (PWS). The report compares water system compliance to *The Drinking Water Safety Act* and its supporting regulations, and the terms and conditions of the water system's current operating licence (PWS-12-521).

Where non-compliance items are identified, the issues do not necessarily translate into increased public health risk. The Office of Drinking Water uses processes, including boil water advisories, to notify water users of a public health risk.

Please review the following terms and conditions of your operating licence to ensure ongoing compliance:

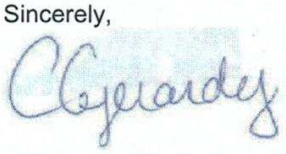
- Water quality sampling frequencies identified in *Table 2*.
- Water System Assessment (due date: March 1, 2024)

Health Canada has completed their review on National Guidelines, including algae (total microcystin toxins) manganese and lead. The new guidelines are expected to be finalized and posted in 2018 with minor changes following the public consultation stage. Owners and operators are encouraged to review Health Canada's guidelines and related chemistry results to determine what impact they may have on your water supply. You will receive notification of any changes to Health Canada's Guidelines for Canadian Drinking Water Quality and Manitoba Standards should they affect your water supply.

Earlier this past year, water suppliers received notification on changes to the water system assessment process and how those changes affect your water system. Please contact me if you require additional information about your assessment.

The 2017 Annual Compliance Audit is based on information submitted to this office. If your records conflict with the audit information, please call me at (204) 570-1405.

Sincerely,



Christine Gerardy
Regional Drinking Water Officer

Enclosures

e-copy: Ralph Berg, Manager WERWC werwc@mynetset.ca

Manitoba
Sustainable Development

## 2017 Annual Compliance Audit

Water System: WHITEHEAD ( WHITEHEAD ELTON REGIONAL ) - PWS

Code: 248.80

Water System Owner: Rural Municipality of Whitehead

Water System Operating Licence: PWS-12-521 Expiry Date: September 30, 2017

1) This report documents the Whitehead ( Whitehead Elton Regional ) Public Water System compliance for the period from January 1 to December 31, 2017.

2) Addendum A to this report provides specific information on the non-compliance incidents identified in the summary below.

3) Other than the information provided in attached Addendum A, the water supplier has complied with *The Drinking Water Safety Act,* its supporting regulations, and the terms and conditions of the water system's current operating licence

4) This report is based on information submitted by the water supplier, agents of the water supplier, and / or the Province of Manitoba.

### Summary of Non-Compliance Incidents:

| None reported |
|---|

Manitoba
Sustainable Development

Addendum A: Record of Non-Compliance
Water System: WHITEHEAD ( WHITEHEAD ELTON REGIONAL ) - PWS
Report period: January 1, 2017 to December 31, 2017.

### *Enforcement Action Taken*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Disinfection Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Bacteriological Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Microbial Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Turbidity Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Chemical Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Operational Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

Manitoba
Sustainable Development
Office of Drinking Water
1129 Queens Ave, Brandon, MB R7A 1L9
**T** 204-570-1405 **F** 204-726-6567
christine.gerardy@gov.mb.ca
www.manitoba.ca/drinkingwater

*Sent via electronic mail: no hard copy to follow*

PWS 63.50

January 23, 2018

Kathleen Steele, CAO
Rural Municipality of Elton
General Delivery
Forrest, MB R0K 0W0

*Sent via email to: kathy.steele@elton.ca*

**2017 Annual Compliance Audit**

Dear Ms. Steele:

Please find enclosed the 2017 Annual Compliance Audit for the Elton (Whitehead Elton Regional) public water system (PWS). The report compares water system compliance to *The Drinking Water Safety Act* and its supporting regulations, and the terms and conditions of the water system's current operating licence (PWS-11-488-01).

Where non-compliance items are identified, the issues do not necessarily translate into increased public health risk. The Office of Drinking Water uses processes, including boil water advisories, to notify water users of a public health risk.

Please review the following terms and conditions of your operating licence to ensure ongoing compliance:

- Water quality sampling frequencies identified in *Table 2*.
- Water System Assessment (due date: March 1, 2024)

Health Canada has completed their review on National Guidelines, including algae (total microcystin toxins) manganese and lead. The new guidelines are expected to be finalized and posted in 2018 with minor changes following the public consultation stage. Owners and operators are encouraged to review Health Canada's guidelines and related chemistry results to determine what impact they may have on your water supply. You will receive notification of any changes to Health Canada's Guidelines for Canadian Drinking Water Quality and Manitoba Standards should they affect your water supply.

Earlier this past year, water suppliers received notification on changes to the water system assessment process and how those changes affect your water system. Please contact me if you require additional information about your assessment.

The 2017 Annual Compliance Audit is based on information submitted to this office. If your records conflict with the audit information, please call me at (204) 570-1405.

Sincerely,

Christine Gerardy
Regional Drinking Water Officer

Enclosures

e-copy: Ralph Berg, Manager WERWC werwc@mynetset.ca

Manitoba
Sustainable Development

## 2017 Annual Compliance Audit

Water System: ELTON ( WHITEHEAD ELTON REGIONAL ) - PWS

Code: 63.50

Water System Owner: Rural Municipality of Elton

Water System Operating Licence: PWS-11-488-01 Expiry Date: November 30, 2021

1) This report documents the Elton ( Whitehead Elton Regional ) Public Water System compliance for the period from January 1 to December 31, 2017.

2) Addendum A to this report provides specific information on the non-compliance incidents identified in the summary below.

3) Other than the information provided in attached Addendum A, the water supplier has complied with *The Drinking Water Safety Act,* its supporting regulations, and the terms and conditions of the water system's current operating licence

4) This report is based on information submitted by the water supplier, agents of the water supplier, and / or the Province of Manitoba.

### Summary of Non-Compliance Incidents:

| None reported |
|---|

Manitoba
Sustainable Development

Addendum A: Record of Non-Compliance
Water System: ELTON ( WHITEHEAD ELTON REGIONAL ) - PWS
Report period: January 1, 2017 to December 31, 2017.

### *Enforcement Action Taken*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Disinfection Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Bacteriological Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Microbial Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Turbidity Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Chemical Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Operational Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

Manitoba
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Office of Drinking Water
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christine.gerardy@gov.mb.ca
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*Sent via electronic mail: no hard copy to follow*

PWS 248.70

January 23, 2018

Kathleen Steele, Secretary-Treasurer
Whitehead Elton Regional Water Cooperative Inc.
General Delivery
Forrest, MB R0K 0W0

*Sent via email to: kathy.steele@elton.ca*

**2017 Annual Compliance Audit**

Dear Ms. Steele:

Please find enclosed the 2017 Annual Compliance Audit for the Whitehead Elton Regional public water system (PWS). The report compares water system compliance to *The Drinking Water Safety Act* and its supporting regulations, and the terms and conditions of the water system's current operating licence (PWS-11-487-01).

Where non-compliance items are identified, the issues do not necessarily translate into increased public health risk. The Office of Drinking Water uses processes, including boil water advisories, to notify water users of a public health risk.

Please review the following terms and conditions of your operating licence to ensure ongoing compliance:

- Water quality sampling frequencies identified in *Table 2*.
- 2017 Public Water System Annual Report (due date: March 31, 2018)
- Advisory Notification Plan (due date: May 1, 2018)
- Water System Re-Assessment (due date: March 1, 2026)

Health Canada has completed their review on National Guidelines, including algae (total microcystin toxins) manganese and lead. The new guidelines are expected to be finalized and posted in 2018 with minor changes following the public consultation stage. Owners and operators are encouraged to review Health Canada's guidelines and related chemistry results to determine what impact they may have on your water supply. You will receive notification of any changes to Health Canada's Guidelines for Canadian Drinking Water Quality and Manitoba Standards should they affect your water supply.

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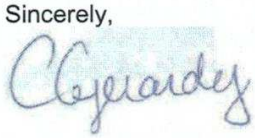
The 2017 Annual Compliance Audit is based on information submitted to this office. If your records conflict with the audit information, please call me at (204) 570-1405.

Sincerely,



Christine Gerardy
Regional Drinking Water Officer

Enclosures

e-copy: Ralph Berg, Manager WERWC werwc@mynetset.ca
Angela Meier, Manitoba Water Services Board

Manitoba
Sustainable Development

## 2017 Annual Compliance Audit

Water System: ELTON ( WHITEHEAD ELTON REGIONAL ) - PWS

Code: 63.50

Water System Owner: Rural Municipality of Elton

Water System Operating Licence: PWS-11-488-01 Expiry Date: November 30, 2021

1) This report documents the Elton ( Whitehead Elton Regional ) Public Water System compliance for the period from January 1 to December 31, 2017.

2) Addendum A to this report provides specific information on the non-compliance incidents identified in the summary below.

3) Other than the information provided in attached Addendum A, the water supplier has complied with *The Drinking Water Safety Act,* its supporting regulations, and the terms and conditions of the water system's current operating licence

4) This report is based on information submitted by the water supplier, agents of the water supplier, and / or the Province of Manitoba.

### Summary of Non-Compliance Incidents:

| None reported |
|---|

Manitoba
Sustainable Development

Addendum A: Record of Non-Compliance
Water System: WHITEHEAD ELTON REGIONAL - PWS
Report period: January 1, 2017 to December 31, 2017.

### *Enforcement Action Taken*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Disinfection Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Bacteriological Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Microbial Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Turbidity Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Chemical Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

### *Operational Requirements*

| Date | Incident | Outcome |
|---|---|---|
| | None reported | |

## *3.3 2017 General Chemical Analysis*

As part of the operating licence for Whitehead Elton Regional Water Co-operative Inc., a general chemical analysis of both the raw water and the treated water in the reservoir has to be done every **Three years**. Water samples were sent to the lab on February 28/17.

It is an extensive test including a physical test, Anions and Nutrients, Organic/Inorganic Carbon, Total Metals and Volatile Organic Compounds tests.

The tests were conducted at ALS Labs in Winnipeg. The results are on the following page. The highlighted areas on the results indicate that the raw water exceeds Aesthetic Objectives or Maximum Acceptable Concentrations cited in the *Guidelines for Canadian Drinking Water Standards.* None of the treated water produced exceeds MAC limits or Aesthetic Objectives.

If there are questions that you may have regarding the lab results, please use one of the contact numbers listed and we can assist in any questions or concerns.

## *Arsenic Test*

As part of our license with ODW, the Whitehead Elton Regional Water Co-operative is required to conduct an arsenic test on raw and treated water at the water treatment plant. The results of the Arsenic test are located in the General Chemical Analysis.

Whitehead Elton Regional Water Co-op
ATTN: MARK YEOMANS
Whitehead Elton Regional - PWS
Box 107
Alexander MB R0K 0A0

Date Received: 01-MAR-17
Report Date: 08-MAR-17 13:15 (MT)
Version: FINAL

Client Phone: 204-729-6116

# Certificate of Analysis

Lab Work Order #: L1895785

| | |
|---|---|
| Project P.O. #: | NOT SUBMITTED |
| Job Reference: | WHITEHEAD ELTON REGIONAL - PWS 248.70 |
| C of C Numbers: | |
| Legal Site Desc: | 46658 |

Hua Wo
Chemistry Laboratory Manager

## Physical Tests (WATER)

| | | | | ALS ID | L1895785-1 | | L1895785-2 | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sampled Date | 28-FEB-17 | | 28-FEB-17 | |
| | | | | Sampled Time | 10:00 | | 10:00 | |
| | | | | Sample ID | WHITEHEAD ELTON REGIONAL 1 - RAW | | WHITEHEAD ELTON REGIONAL 2 - TREATED | |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | | | | |
| Colour, True | CU | 15 | - | | <5.0 | | <5.0 | |
| Conductivity | umhos/cm | - | - | | 1040 | | 301 | |
| Hardness (as CaCO3) | mg/L | - | - | | 541 | HTC | 109 | HTC |
| Langelier Index (4 C) | No Unit | - | - | | 0.21 | | -0.18 | |
| Langelier Index (60 C) | No Unit | - | - | | 0.97 | | 0.59 | |
| pH | pH units | 6.5-8.5 | - | | 7.33 | | 8.03 | |
| Total Dissolved Solids | mg/L | 500 | - | | 755 | | 167 | |
| Transmittance, UV (254 nm) | %T/cm | - | - | | 90.4 | | 97.5 | |
| Turbidity | NTU | - | - | | 26.7 | | <0.10 | |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2015)**
**#1: GCDWQ - Aesthetic Objective**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs)**

## Anions and Nutrients (WATER)

| | | | | ALS ID | L1895785-1 | L1895785-2 |
|---|---|---|---|---|---|---|
| | | | | Sampled Date | 28-FEB-17 | 28-FEB-17 |
| | | | | Sampled Time | 10:00 | 10:00 |
| | | | | Sample ID | WHITEHEAD ELTON REGIONAL 1 - RAW | WHITEHEAD ELTON REGIONAL 2 - TREATED |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | | |
| Alkalinity, Total (as CaCO3) | mg/L | - | - | | 326 | 95.3 |
| Ammonia, Total (as N) | mg/L | - | - | | 0.242 | <0.010 |
| Bicarbonate (HCO3) | mg/L | - | - | | 398 | 116 |
| Bromide (Br) | mg/L | - | - | | <0.10 | <0.10 |
| Carbonate (CO3) | mg/L | - | - | | <0.60 | <0.60 |
| Chloride (Cl) | mg/L | 250 | - | | 11.3 | 4.75 |
| Fluoride (F) | mg/L | - | 1.5 | | 0.183 | 0.035 |
| Hydroxide (OH) | mg/L | - | - | | <0.34 | <0.34 |
| Nitrate (as N) | mg/L | - | 10 | | <0.0050 | <0.0050 |
| Nitrite (as N) | mg/L | - | 1 | | <0.0010 | <0.0010 |
| Sulfate (SO4) | mg/L | 500 | - | | 266 | 52.7 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2015)**
**#1: GCDWQ - Aesthetic Objective**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs)**

## Organic / Inorganic Carbon (WATER)

| | | | | ALS ID | L1895785-1 | L1895785-2 |
|---|---|---|---|---|---|---|
| | | | | Sampled Date | 28-FEB-17 | 28-FEB-17 |
| | | | | Sampled Time | 10:00 | 10:00 |
| | | | | Sample ID | WHITEHEAD ELTON REGIONAL 1 - RAW | WHITEHEAD ELTON REGIONAL 2 - TREATED |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | | |
| Dissolved Organic Carbon | mg/L | - | - | | 2.55 | 0.60 |
| Total Organic Carbon | mg/L | - | - | | 2.55 | 0.50 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2015)**
**#1: GCDWQ - Aesthetic Objective**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Total Metals (WATER)

| | | | | ALS ID | L1895785-1 | L1895785-2 |
|---|---|---|---|---|---|---|
| | | | | Sampled Date | 28-FEB-17 | 28-FEB-17 |
| | | | | Sampled Time | 10:00 | 10:00 |
| | | | | Sample ID | WHITEHEAD ELTON REGIONAL 1 - RAW | WHITEHEAD ELTON REGIONAL 2 - TREATED |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | | |
| Aluminum (Al)-Total | mg/L | 0.1 | - | | <0.0050 | <0.0050 |
| Antimony (Sb)-Total | mg/L | - | 0.006 | | <0.00020 | <0.00020 |
| Arsenic (As)-Total | mg/L | - | 0.01 | | 0.0155 | 0.00616 |
| Barium (Ba)-Total | mg/L | - | 1 | | 0.0171 | 0.00307 |
| Beryllium (Be)-Total | mg/L | - | - | | <0.00020 | <0.00020 |
| Bismuth (Bi)-Total | mg/L | - | - | | <0.00020 | <0.00020 |
| Boron (B)-Total | mg/L | - | 5 | | 0.078 | 0.066 |
| Cadmium (Cd)-Total | mg/L | - | 0.005 | | <0.000010 | <0.000010 |
| Calcium (Ca)-Total | mg/L | - | - | | 137 | 27.8 |
| Cesium (Cs)-Total | mg/L | - | - | | <0.00010 | <0.00010 |
| Chromium (Cr)-Total | mg/L | - | 0.05 | | <0.0010 | <0.0010 |
| Cobalt (Co)-Total | mg/L | - | - | | <0.00020 | <0.00020 |
| Copper (Cu)-Total | mg/L | 1 | - | | <0.00020 | 0.00628 |
| Iron (Fe)-Total | mg/L | 0.3 | - | | 2.31 | 0.024 |
| Lead (Pb)-Total | mg/L | - | 0.01 | | <0.000090 | <0.000090 |
| Lithium (Li)-Total | mg/L | - | - | | 0.0463 | 0.0144 |
| Magnesium (Mg)-Total | mg/L | - | - | | 48.5 | 9.73 |
| Manganese (Mn)-Total | mg/L | 0.05 | - | | 0.341 | 0.00368 |
| Molybdenum (Mo)-Total | mg/L | - | - | | 0.00455 | 0.00079 |
| Nickel (Ni)-Total | mg/L | - | - | | <0.0020 | <0.0020 |
| Phosphorus (P)-Total | mg/L | - | - | | 0.21 | <0.10 |
| Potassium (K)-Total | mg/L | - | - | | 4.66 | 1.33 |
| Rubidium (Rb)-Total | mg/L | - | - | | 0.00175 | 0.00050 |
| Selenium (Se)-Total | mg/L | - | 0.05 | | <0.0010 | <0.0010 |
| Silicon (Si)-Total | mg/L | - | - | | 13.2 | 2.98 |
| Silver (Ag)-Total | mg/L | - | - | | <0.00010 | <0.00010 |
| Sodium (Na)-Total | mg/L | 200 | - | | 11.2 | 15.7 |
| Strontium (Sr)-Total | mg/L | - | - | | 0.439 | 0.0886 |
| Tellurium (Te)-Total | mg/L | - | - | | <0.00020 | <0.00020 |
| Thallium (Tl)-Total | mg/L | - | - | | <0.00010 | <0.00010 |
| Thorium (Th)-Total | mg/L | - | - | | <0.00010 | <0.00010 |
| Tin (Sn)-Total | mg/L | - | - | | <0.00020 | <0.00020 |
| Titanium (Ti)-Total | mg/L | - | - | | <0.00050 | <0.00050 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2015)**
**#1: GCDWQ - Aesthetic Objective**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Total Metals (WATER)

| | | | | ALS ID | L1895785-1 | L1895785-2 |
|---|---|---|---|---|---|---|
| | | | | Sampled Date | 28-FEB-17 | 28-FEB-17 |
| | | | | Sampled Time | 10:00 | 10:00 |
| | | | | Sample ID | WHITEHEAD ELTON REGIONAL 1 - RAW | WHITEHEAD ELTON REGIONAL 2 - TREATED |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | | |
| Tungsten (W)-Total | mg/L | - | - | | <0.00010 | <0.00010 |
| Uranium (U)-Total | mg/L | - | 0.02 | | 0.00557 | 0.00105 |
| Vanadium (V)-Total | mg/L | - | - | | <0.00020 | <0.00020 |
| Zinc (Zn)-Total | mg/L | 5 | - | | <0.0020 | 0.0020 |
| Zirconium (Zr)-Total | mg/L | - | - | | <0.00040 | <0.00040 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2015)**
**#1: GCDWQ - Aesthetic Objective**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs)**

## Volatile Organic Compounds (WATER)

| | | | | ALS ID | L1895785-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 28-FEB-17 |
| | | | | Sampled Time | 10:00 |
| | | | | Sample ID | WHITEHEAD ELTON REGIONAL 1 - RAW |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Benzene | mg/L | - | 0.005 | | <0.00050 |
| 1,1-dichloroethene | mg/L | - | 0.014 | | <0.00050 |
| Dichloromethane | mg/L | - | 0.05 | | <0.00050 |
| Ethylbenzene | mg/L | 0.0016 | 0.14 | | <0.00050 |
| MTBE | mg/L | 0.015 | - | | <0.00050 |
| Tetrachloroethene | mg/L | - | 0.01 | | <0.00050 |
| Toluene | mg/L | 0.024 | 0.06 | | <0.00050 |
| Trichloroethene | mg/L | - | 0.005 | | <0.00050 |
| o-Xylene | mg/L | - | - | | <0.00050 |
| M+P-Xylenes | mg/L | - | - | | <0.00050 |
| Xylenes (Total) | mg/L | 0.02 | 0.09 | | <0.00071 |
| Surrogate: 4-Bromofluorobenzene (SS) | % | - | - | | 86.7 |
| Surrogate: 1,4-Difluorobenzene (SS) | % | - | - | | 96.9 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2015)**
**#1: GCDWQ - Aesthetic Objective**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

## *4) Water System Incidents and Corrective Actions*

There was no corrective actions reported to the Drinking Water Officer in 2017.

## *5 ) Drinking Water Safety Orders, Warnings and Charges*

There were no drinking water safety orders, warnings or charges issued to the Whitehead Elton Regional Water Co-operative Inc.

## 6) Major Expenses Incurred

The Whitehead Elton Regional Water Co-operative Inc. (WERWC) had two major pipeline expansion projects in 2017. One in the RM of Whitehead (Whitehead) and one in the RM of Elton (Elton), with most service connections completed by the end of 2017. For Whitehead and Elton, these projects completed the waterline expansion providing all services to those whom requested to be connected.

The South Well required the existing connections to be replaced with stainless steel fittings.

Surveillance cameras were installed at the Alexander Water Treatment Plant in 2017.

Due to the expansion in both municipalities, the need for increased staffing was required which resulted in three full-time permanent positions (increasing from the 1 full-time, one part-time and one casual).

A 2012 Hundi Santa Fe was purchased for the vehicle fleet due to increasing staffing required with the rural waterline expansions in the RM of Alexander and the RM of Elton.

It was identified that the waterline that runs under the Assiniboine River was floating and divers were hired to weight down the line.

## *7) Future System Expansion*

At this time, there are no upcoming projects. Further projects may develop as increasing Rural Development projects are brought forward, which may involve further expansion of the water treatment plant and remote reservoirs in the system.

## *8) Appendix A*

Appendix A contains all the bacterial test results for all 3 Public Water Systems.

## *9) Appendix B*

Appendix B contains the 2017 Water Use Report that has to be sent to the Provincial Government and the Monitoring Well Graph Reports . The Monitoring Wells are checked twice a year. One well is located at the raw water supply wells and the second is located a quarter of a mile away. These Monitoring Wells are a daily snapshot on the health of the aquifer we draw our water from.

# APPENDIX A

## 2017
## BACTERIAL SAMPLE RESULTS

## *2017 Bacterial Test Results*

| Community Code | Collection Date | Sample Identification | | Total Coliforms | E.Coli | Free Chlorine | Total Chlorine | HPC |
|---|---|---|---|---|---|---|---|---|
| 248.7 | 04-Jan-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 04-Jan-17 | W/E Sample#2 | Treated | 0 | 0 | 0.74 | 0.91 | |
| 248.7 | 04-Jan-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.71 | 0.77 | |
| 248.7 | 04-Jan-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.62 | 0.72 | |
| 248.8 | 04-Jan-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.81 | 0.87 | |
| 248.8 | 04-Jan-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.66 | 0.76 | |
| 63.5 | 04-Jan-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.62 | 0.68 | |
| 63.5 | 04-Jan-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.72 | 0.77 | |
| 248.7 | 19-Jan-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 19-Jan-17 | W/E Sample#2 | Treated | 0 | 0 | 0.85 | 1.03 | |
| 248.7 | 19-Jan-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.59 | 0.66 | |
| 248.7 | 19-Jan-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.94 | 1.04 | |
| 248.8 | 19-Jan-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.84 | 0.94 | |
| 248.8 | 19-Jan-17 | Whitehead Dist. | West Side | 0 | 0 | 0.50 | 0.54 | |
| 63.5 | 19-Jan-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.87 | 0.97 | |
| 63.5 | 19-Jan-17 | Elton Dist. | P.R. #2 | 0 | 0 | 1.53 | 1.72 | |
| 248.7 | 01-Feb-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 01-Feb-17 | W/E Sample#2 | Treated | 0 | 0 | 0.83 | 0.99 | |
| 248.7 | 01-Feb-17 | W/E Sample#3 | Incoming | 0 | 0 | 1.18 | 1.38 | |
| 248.7 | 01-Feb-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.79 | 0.87 | |
| 248.8 | 01-Feb-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.86 | 0.97 | |
| 248.8 | 01-Feb-17 | Whitehead Dist. | West Side | 0 | 0 | 0.58 | 0.59 | |
| 63.5 | 01-Feb-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.83 | 0.90 | |
| 63.5 | 01-Feb-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.70 | 0.84 | |
| 248.7 | 14-Feb-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 14-Feb-17 | W/E Sample#2 | Treated | 0 | 0 | 0.89 | 1.04 | |
| 248.7 | 14-Feb-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.77 | 0.85 | |
| 248.7 | 14-Feb-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.79 | 0.86 | |
| 248.8 | 14-Feb-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.70 | 0.79 | |
| 248.8 | 14-Feb-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.89 | 1.01 | |
| 63.5 | 14-Feb-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.72 | 0.85 | |
| 63.5 | 14-Feb-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.83 | 0.92 | |
| 248.7 | 01-Mar-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 01-Mar-17 | W/E Sample#2 | Treated | 0 | 0 | 1.02 | 1.14 | |
| 248.7 | 01-Mar-17 | W/E Sample#3 | Incoming | 0 | 0 | 1.22 | 1.27 | |
| 248.7 | 01-Mar-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.85 | 0.97 | |
| 248.8 | 01-Mar-17 | Whitehead Dist. | Alexander | 0 | 0 | 1.10 | 1.20 | |
| 248.8 | 01-Mar-17 | Whitehead Dist. | Dungannan | 0 | 0 | 1.19 | 1.22 | |
| 63.5 | 01-Mar-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.79 | 0.85 | |
| 63.5 | 01-Mar-17 | Elton Dist. | P.R. #2 | 0 | 0 | 1.35 | 1.47 | |
| 248.7 | 15-Mar-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 15-Mar-17 | W/E Sample#2 | Treated | 0 | 0 | 0.95 | 1.05 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 248.7 | 15-Mar-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.80 | 0.83 | |
| 248.7 | 15-Mar-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.85 | 0.91 | |
| 248.8 | 15-Mar-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.73 | 0.84 | |
| 248.8 | 15-Mar-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.84 | 0.96 | |
| 63.5 | 15-Mar-17 | Elton Dist. | School | 0 | 0 | 0.89 | 0.93 | |
| 63.5 | 15-Mar-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.72 | 0.80 | |
| 248.7 | 29-Mar-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 29-Mar-17 | W/E Sample#2 | Treated | 0 | 0 | 0.74 | 0.96 | |
| 248.7 | 29-Mar-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.70 | 74.00 | |
| 248.7 | 29-Mar-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.82 | 0.89 | |
| 248.8 | 29-Mar-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.81 | 0.90 | |
| 248.8 | 29-Mar-17 | Whitehead Dist. | West Side | 0 | 0 | 0.70 | 0.75 | |
| 63.5 | 29-Mar-17 | Elton Dist. | Berg | 0 | 0 | 0.82 | 0.89 | |
| 63.5 | 29-Mar-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.92 | 1.00 | |
| 248.7 | 12-Apr-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 12-Apr-17 | W/E Sample#2 | Treated | 0 | 0 | 0.85 | 0.97 | |
| 248.7 | 12-Apr-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.88 | 1.01 | |
| 248.7 | 12-Apr-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.82 | 0.90 | |
| 248.8 | 12-Apr-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.88 | 0.98 | |
| 248.8 | 12-Apr-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.70 | 0.81 | |
| 63.5 | 12-Apr-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.87 | 0.95 | |
| 63.5 | 12-Apr-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.78 | 0.85 | |
| 248.7 | 26-Apr-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 26-Apr-17 | W/E Sample#2 | Treated | 0 | 0 | 0.70 | 0.86 | |
| 248.7 | 26-Apr-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.79 | 0.85 | |
| 248.7 | 26-Apr-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.76 | 0.82 | |
| 248.8 | 26-Apr-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.67 | 0.85 | |
| 248.8 | 26-Apr-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.75 | 0.85 | |
| 63.5 | 26-Apr-17 | Elton Dist. | P.R. #1 | 0 | 0 | 0.73 | 0.78 | |
| 63.5 | 26-Apr-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.62 | 0.73 | |
| 248.7 | 10-May-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 10-May-17 | W/E Sample#2 | Treated | 0 | 0 | 0.54 | 0.77 | |
| 248.7 | 10-May-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.85 | 0.92 | |
| 248.7 | 10-May-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.77 | 0.85 | |
| 248.8 | 10-May-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.51 | 0.71 | |
| 248.8 | 10-May-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.56 | 0.74 | |
| 63.5 | 10-May-17 | Elton Dist. | P.R. #1 | 0 | 0 | 0.73 | 0.80 | |
| 63.5 | 10-May-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.65 | 0.69 | |
| 248.7 | 24-May-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 24-May-17 | W/E Sample#2 | Treated | 0 | 0 | 0.61 | 0.71 | |
| 248.7 | 24-May-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.74 | 0.80 | |
| 248.7 | 24-May-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.66 | 0.69 | |
| 248.8 | 24-May-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.71 | 0.80 | |
| 248.8 | 24-May-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.69 | 0.78 | |
| 63.5 | 24-May-17 | Elton Dist. | P.R. #1 | 0 | 0 | 0.72 | 0.83 | |
| 63.5 | 24-May-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.59 | 0.72 | |
| 248.7 | 07-Jun-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 248.7 | 07-Jun-17 | W/E Sample#2 | Treated | 0 | 0 | 0.79 | 0.89 | |
| 248.7 | 07-Jun-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.63 | 0.83 | |
| 248.7 | 07-Jun-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.83 | 0.90 | |
| 248.8 | 07-Jun-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.79 | 0.89 | |
| 248.8 | 07-Jun-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.73 | 0.79 | |
| 63.5 | 07-Jun-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.67 | 0.78 | |
| 63.5 | 07-Jun-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.77 | 0.86 | |
| 248.7 | 21-Jun-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 21-Jun-17 | W/E Sample#2 | Treated | 0 | 0 | 0.70 | 0.82 | |
| 248.7 | 21-Jun-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.70 | 0.78 | |
| 248.7 | 21-Jun-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.77 | 0.80 | |
| 248.8 | 21-Jun-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.67 | 0.73 | |
| 248.8 | 21-Jun-17 | Whitehead Dist. | Prairie Acres | 0 | 0 | 0.91 | 0.93 | |
| 63.5 | 21-Jun-17 | Elton Dist. | P.R. #1 | 0 | 0 | 0.72 | 0.80 | |
| 63.5 | 21-Jun-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.64 | 0.72 | |
| 248.7 | 05-Jul-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 05-Jul-17 | W/E Sample#2 | Treated | 0 | 0 | 0.85 | 0.96 | |
| 248.7 | 05-Jul-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.85 | 0.89 | |
| 248.7 | 05-Jul-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.80 | 0.85 | |
| 248.8 | 05-Jul-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.80 | 0.85 | |
| 248.8 | 05-Jul-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.83 | 0.94 | |
| 63.5 | 05-Jul-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.63 | 0.84 | |
| 63.5 | 05-Jul-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.63 | 0.69 | |
| 248.7 | 19-Jul-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 19-Jul-17 | W/E Sample#2 | Treated | 0 | 0 | 0.82 | 0.96 | |
| 248.7 | 19-Jul-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.88 | 0.91 | |
| 248.7 | 19-Jul-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.83 | 0.89 | |
| 248.8 | 19-Jul-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.79 | 0.88 | |
| 248.8 | 19-Jul-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.86 | 0.94 | |
| 63.5 | 19-Jul-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.92 | 1.02 | |
| 63.5 | 19-Jul-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.73 | 0.89 | |
| 248.7 | 01-Aug-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 01-Aug-17 | W/E Sample#2 | Treated | 0 | 0 | 0.79 | 0.91 | |
| 248.7 | 01-Aug-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.84 | 0.89 | |
| 248.7 | 01-Aug-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.78 | 0.86 | |
| 248.8 | 01-Aug-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.84 | 0.88 | |
| 248.8 | 01-Aug-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.91 | 0.94 | |
| 63.5 | 01-Aug-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.73 | 0.80 | |
| 63.5 | 01-Aug-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.59 | 0.70 | |
| 248.7 | 16-Aug-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 16-Aug-17 | W/E Sample#2 | Treated | 0 | 0 | 0.79 | 0.85 | |
| 248.7 | 16-Aug-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.82 | 0.85 | |
| 248.7 | 16-Aug-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.65 | 0.67 | |
| 248.8 | 16-Aug-17 | Whitehead Dist. | Alexander | 0 | 0 | 0.77 | 0.84 | |
| 248.8 | 16-Aug-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.80 | 0.90 | |
| 63.5 | 16-Aug-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.50 | 0.54 | |
| 63.5 | 16-Aug-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.63 | 0.68 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 248.7 | 30-Aug-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 30-Aug-17 | W/E Sample#2 | Treated | 0 | 0 | 1.17 | 1.18 | |
| 248.7 | 30-Aug-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.77 | 0.83 | |
| 248.7 | 30-Aug-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.65 | 0.69 | |
| 248.8 | 30-Aug-17 | Whitehead Dist. | Alexander | 0 | 0 | 1.03 | 1.17 | |
| 248.8 | 30-Aug-17 | Whitehead Dist. | Dungannan | 0 | 0 | 0.85 | 0.92 | |
| 63.5 | 30-Aug-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.76 | 0.83 | |
| 63.5 | 30-Aug-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.30 | 0.35 | |
| 248.7 | 13-Sep-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 13-Sep-17 | W/E Sample#2 | Treated | 0 | 0 | 0.90 | 1.24 | |
| 248.7 | 13-Sep-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.95 | 1.05 | |
| 248.7 | 13-Sep-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.94 | 1.05 | |
| 248.8 | 13-Sep-17 | Whithead Dist. | Alexander | 0 | 0 | 1.14 | 1.17 | |
| 248.8 | 13-Sep-17 | Whithead Dist. | Dungannan | 0 | 0 | 1.23 | 1.46 | |
| 63.5 | 13-Sep-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.99 | 1.05 | |
| 63.5 | 13-Sep-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.89 | 0.97 | |
| 248.7 | 27-Sep-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 27-Sep-17 | W/E Sample#2 | Treated | 0 | 0 | 1.20 | 1.56 | |
| 248.7 | 27-Sep-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.53 | 0.59 | |
| 248.7 | 27-Sep-17 | W/E Sample#4 | Outgoing | 0 | 0 | 1.02 | 1.09 | |
| 248.8 | 27-Sep-17 | Whithead Dist. | Alexander | 0 | 0 | 0.94 | 0.99 | |
| 248.8 | 27-Sep-17 | Whithead Dist. | Dungannan | 0 | 0 | 0.92 | 1.05 | |
| 63.5 | 27-Sep-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.97 | 1.10 | |
| 63.5 | 27-Sep-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.88 | 0.96 | |
| 248.7 | 11-Oct-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 11-Oct-17 | W/E Sample#2 | Treated | 0 | 0 | 1.52 | 1.61 | |
| 248.7 | 11-Oct-17 | W/E Sample#3 | Incoming | 0 | 0 | 1.03 | 1.12 | |
| 248.7 | 11-Oct-17 | W/E Sample#4 | Outgoing | 0 | 0 | 1.00 | 1.04 | |
| 248.8 | 11-Oct-17 | Whithead Dist. | Alexander | 0 | 0 | 0.51 | 0.63 | |
| 248.8 | 11-Oct-17 | Whithead Dist. | Dungannan | 0 | 0 | 0.84 | 0.90 | |
| 63.5 | 11-Oct-17 | Elton Dist. | P.R. #2 | 0 | 0 | 1.17 | 1.29 | |
| 63.5 | 11-Oct-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.87 | 0.90 | |
| 248.7 | 25-Oct-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 25-Oct-17 | W/E Sample#2 | Treated | 0 | 0 | 1.41 | 1.48 | |
| 248.7 | 25-Oct-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.89 | 0.96 | |
| 248.7 | 25-Oct-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.99 | 1.08 | |
| 248.8 | 25-Oct-17 | Whithead Dist. | Alexander | 0 | 0 | 0.91 | 0.96 | |
| 248.8 | 25-Oct-17 | Whithead Dist. | Dungannan | 0 | 0 | 0.83 | 0.89 | |
| 63.5 | 25-Oct-17 | Elton Dist. | P.R. #2 | 0 | 0 | 1.16 | 1.21 | |
| 63.5 | 25-Oct-17 | Elton Dist. | R.M. Office | 0 | 0 | 1.01 | 1.07 | |
| 248.7 | 8-Nov-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 8-Nov-17 | W/E Sample#2 | Treated | 0 | 0 | 0.96 | 1.06 | |
| 248.7 | 8-Nov-17 | W/E Sample#3 | Incoming | 0 | 0 | 1.27 | 1.33 | |
| 248.7 | 8-Nov-17 | W/E Sample#4 | Outgoing | 0 | 0 | 1.09 | 1.19 | |
| 248.8 | 8-Nov-17 | Whithead Dist. | Alexander | 0 | 0 | 1.08 | 1.19 | |
| 248.8 | 8-Nov-17 | Whithead Dist. | Dungannan | 0 | 0 | 0.57 | 0.65 | |
| 63.5 | 8-Nov-17 | Elton Dist. | P.R. #2 | 0 | 0 | 1.21 | 1.30 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 63.5 | 8-Nov-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.93 | 1.02 | |
| 248.7 | 22-Nov-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 22-Nov-17 | W/E Sample#2 | Treated | 0 | 0 | 1.15 | 1.28 | |
| 248.7 | 22-Nov-17 | W/E Sample#3 | Incoming | 0 | 0 | 1.10 | 1.19 | |
| 248.7 | 22-Nov-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.88 | 0.91 | |
| 248.8 | 22-Nov-17 | Whithead Dist. | Alexander | 0 | 0 | 0.61 | 0.67 | |
| 248.8 | 22-Nov-17 | Whithead Dist. | Dungannan | 0 | 0 | 0.58 | 0.67 | |
| 63.5 | 22-Nov-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.65 | 0.55 | |
| 63.5 | 22-Nov-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.80 | 0.86 | |
| 248.7 | 6-Dec-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 6-Dec-17 | W/E Sample#2 | Treated | 0 | 0 | 1.04 | 1.20 | |
| 248.7 | 6-Dec-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.98 | 1.05 | |
| 248.7 | 6-Dec-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.74 | 0.82 | |
| 248.8 | 6-Dec-17 | Whithead Dist. | Alexander | 0 | 0 | 1.09 | 1.21 | |
| 248.8 | 6-Dec-17 | Whithead Dist. | Dungannan | 0 | 0 | 0.85 | 0.93 | |
| 63.5 | 6-Dec-17 | Elton Dist. | P.R. #2 | 0 | 0 | 0.72 | 0.78 | |
| 63.5 | 6-Dec-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.66 | 0.75 | |
| 248.7 | 20-Dec-17 | W/E Sample#1 | Raw N. Well | 0 | 0 | 0.00 | 0.00 | |
| 248.7 | 20-Dec-17 | W/E Sample#2 | Treated | 0 | 0 | 0.60 | 0.65 | |
| 248.7 | 20-Dec-17 | W/E Sample#3 | Incoming | 0 | 0 | 0.70 | 0.80 | |
| 248.7 | 20-Dec-17 | W/E Sample#4 | Outgoing | 0 | 0 | 0.90 | 1.02 | |
| 248.8 | 20-Dec-17 | Whithead Dist. | Alexander | 0 | 0 | 0.60 | 0.75 | |
| 248.8 | 20-Dec-17 | Whithead Dist. | Dungannan | 0 | 0 | 0.77 | 0.90 | |
| 63.5 | 20-Dec-17 | Elton Dist. | P.R. #2 | 0 | 0 | 1.16 | 1.25 | |
| 63.5 | 20-Dec-17 | Elton Dist. | R.M. Office | 0 | 0 | 0.95 | 1.06 | |

# Appendix B

## 2017 Water Use Report

## Monitoring Well Graph Report

**Manitoba Sustainable Development**
Water Licensing Section
Box 16 – 200 Saulteaux Crescent
Winnipeg MB R3J 3W3
wateruse@gov.mb.ca

Manitoba Sustainable Development

# Annual Water Use Report for 20_17

Pursuant to ***The Water Rights Act***

| | |
|---|---|
| LICENSEE'S NAME: Whitehead Elton Regional Water Co-operative Inc. | LICENCE NO. PWS-11-487 |
| POST OFFICE ADDRESS General Delivery, Forrest Mb. R0K 0W0 | PHONE NO. 204 728 7834 |

SOURCE OF WATER SUPPLY (CHECK ONE)/ ☒ WELL ☐ SURFACE WATER _____ (Name of River, Creek, etc.)

**LOCATION OF PUMP (OR WELL):**

| QUARTER | SECTION | TOWNSHIP | RANGE | OR OTHER (SPECIFY) |
|---|---|---|---|---|
| SE | 21 | 10 | 21 | W1 |

**DESIGN PUMPING RATE:** LITRES PER SECOND 22.7 OR OTHER (SPECIFY) _____

**NOTE 1:** **QUANTITIES OF WATER IN TABLE BELOW EXPRESSED IN (CHECK ONE)**

☐ LITRES ☐ DECAMETRES

☒ OTHER (SPECIFY): Cubic Meters

**METER READING DECEMBER 31/20** 16 112524

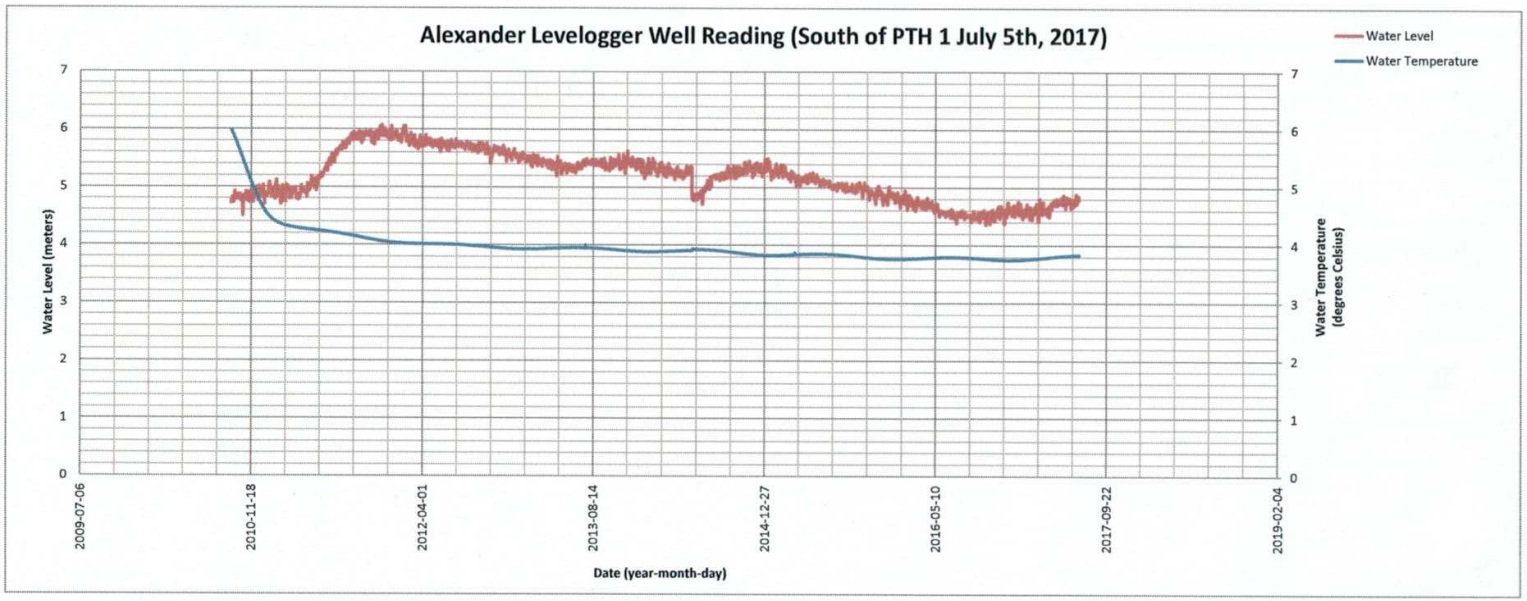
| | JANUARY | | FEBRUARY | | MARCH | | APRIL | |
|---|---|---|---|---|---|---|---|---|
| DAY OF MONTH | METER READING | DAILY CONSUMPTION | METER READING | DAILY CONSUMPTION | METER READING | DAILY CONSUMPTION | METER READING | DAILY CONSUMPTION |
| 1 | 113069 | 545 | 127013 | 479 | 140001 | 533 | 154769 | 495 |
| 2 | 113360 | 291 | 127346 | 333 | 140376 | 375 | 155341 | 572 |
| 3 | 113800 | 440 | 127767 | 421 | 140847 | 471 | 155844 | 503 |
| 4 | 114317 | 517 | 128232 | 465 | 141288 | 441 | 156282 | 438 |
| 5 | 114730 | 413 | 128696 | 464 | 141804 | 516 | 156818 | 536 |
| 6 | 115240 | 510 | 129131 | 435 | 142443 | 639 | 157250 | 432 |
| 7 | 115589 | 349 | 129559 | 428 | - | - | 157766 | 516 |
| 8 | 116065 | 476 | 130054 | 495 | 143342 | - | 158243 | 477 |
| 9 | 116624 | 559 | 130375 | 321 | 143728 | 386 | 158720 | 477 |
| 10 | 117015 | 391 | 130903 | 528 | 144110 | 382 | 159228 | 508 |
| 11 | 117426 | 411 | 131501 | 598 | 144676 | 566 | 159769 | 541 |
| 12 | 117832 | 406 | 131767 | 266 | 145173 | 497 | 160209 | 440 |
| 13 | 118208 | 376 | 132278 | 511 | 145483 | 310 | 160824 | 615 |
| 14 | 118668 | 460 | 132715 | 437 | 146026 | 543 | 161283 | 459 |
| 15 | 119260 | 592 | 133132 | 417 | 146402 | 376 | 161817 | 534 |
| 16 | 119579 | 319 | 133613 | 481 | 146903 | 501 | 162210 | 393 |
| 17 | 120043 | 464 | 134077 | 464 | 147402 | 499 | 162719 | 509 |
| 18 | 120738 | 695 | 134567 | 490 | 147966 | 564 | 163225 | 506 |
| 19 | 120992 | 254 | 135027 | 460 | 148415 | 449 | 163661 | 436 |
| 20 | 121466 | 474 | 135595 | 568 | 148890 | 475 | 164101 | 440 |
| 21 | 121991 | 525 | 136184 | 589 | 149401 | 511 | 164536 | 435 |
| 22 | 122395 | 404 | 136615 | 431 | 149920 | 519 | 165055 | 519 |
| 23 | 122844 | 449 | 137030 | 415 | 150382 | 462 | 165558 | 503 |
| 24 | 123335 | 491 | 137598 | 568 | 151015 | 633 | 166078 | 520 |
| 25 | 123810 | 475 | 138012 | 414 | 151396 | 381 | 166469 | 391 |
| 26 | 124296 | 486 | 138479 | 467 | 151853 | 457 | 166950 | 481 |
| 27 | 124802 | 506 | 139007 | 528 | 152421 | 568 | 167451 | 501 |
| 28 | 125341 | 539 | 139468 | 461 | 152893 | 472 | 167914 | 463 |
| 29 | 125680 | 339 | - | - | 153337 | 444 | 168483 | 569 |
| 30 | 126155 | 475 | - | - | 153804 | 467 | 168995 | 512 |
| 31 | 126534 | 379 | - | - | 154274 | 470 | - | - |
| TOTAL | 14010 | 14010 | 12934 | 12934 | 14806 | 14806 | 14721 | 14721 |

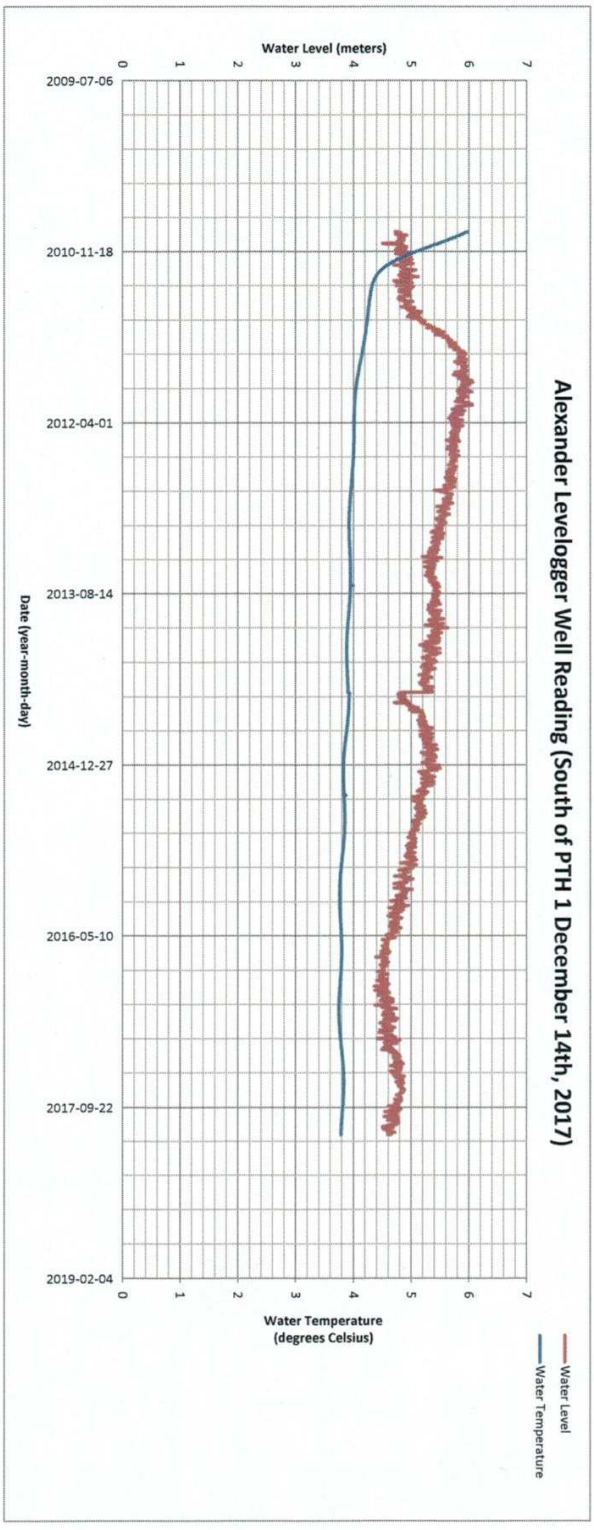
**NOTE2:/** March. 7th- Storm Related Absence

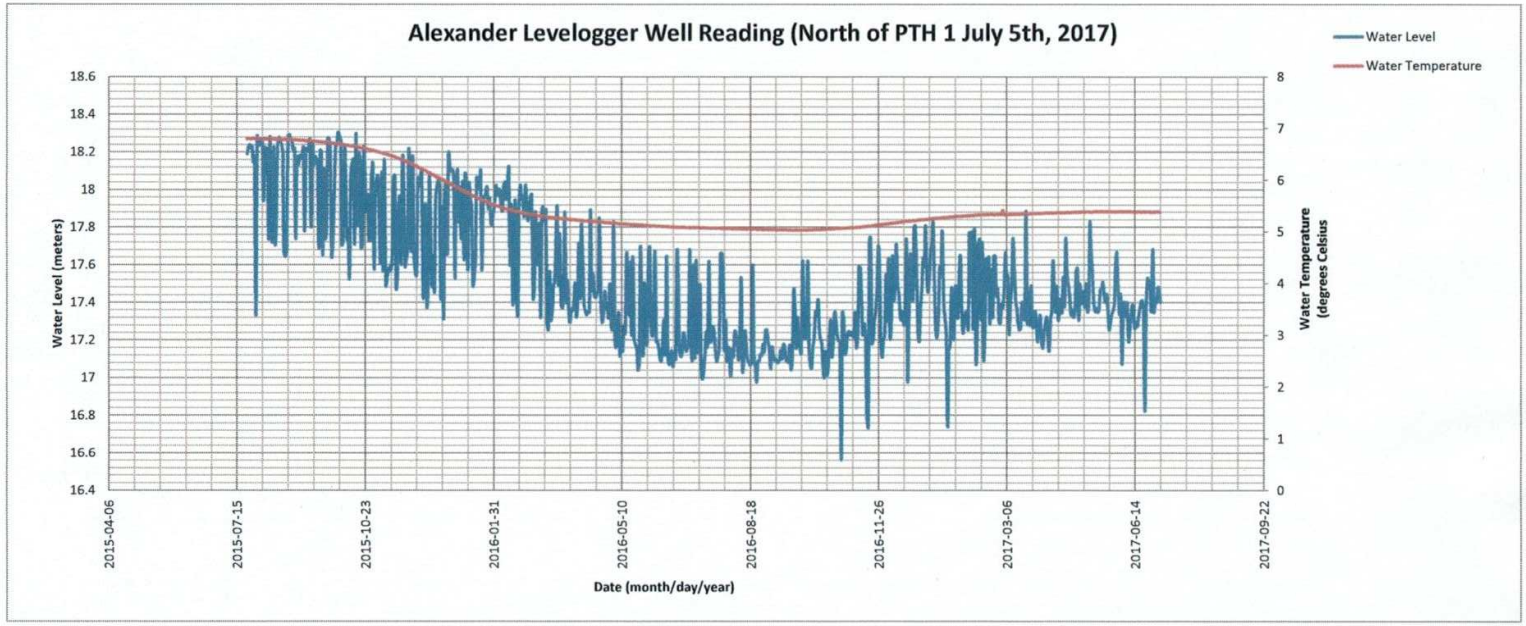
LICENSEE MUST COMPLETE "**ANNUAL WATER USE REPORT**" FOR EACH CALENDAR YEAR AND FORWARD THE REPORT TO THE WATER LICENSING SECTION AT THE ABOVE ADDRESS **NOT LATER THAN FEB. 1 OF THE FOLLOWING YEAR.**

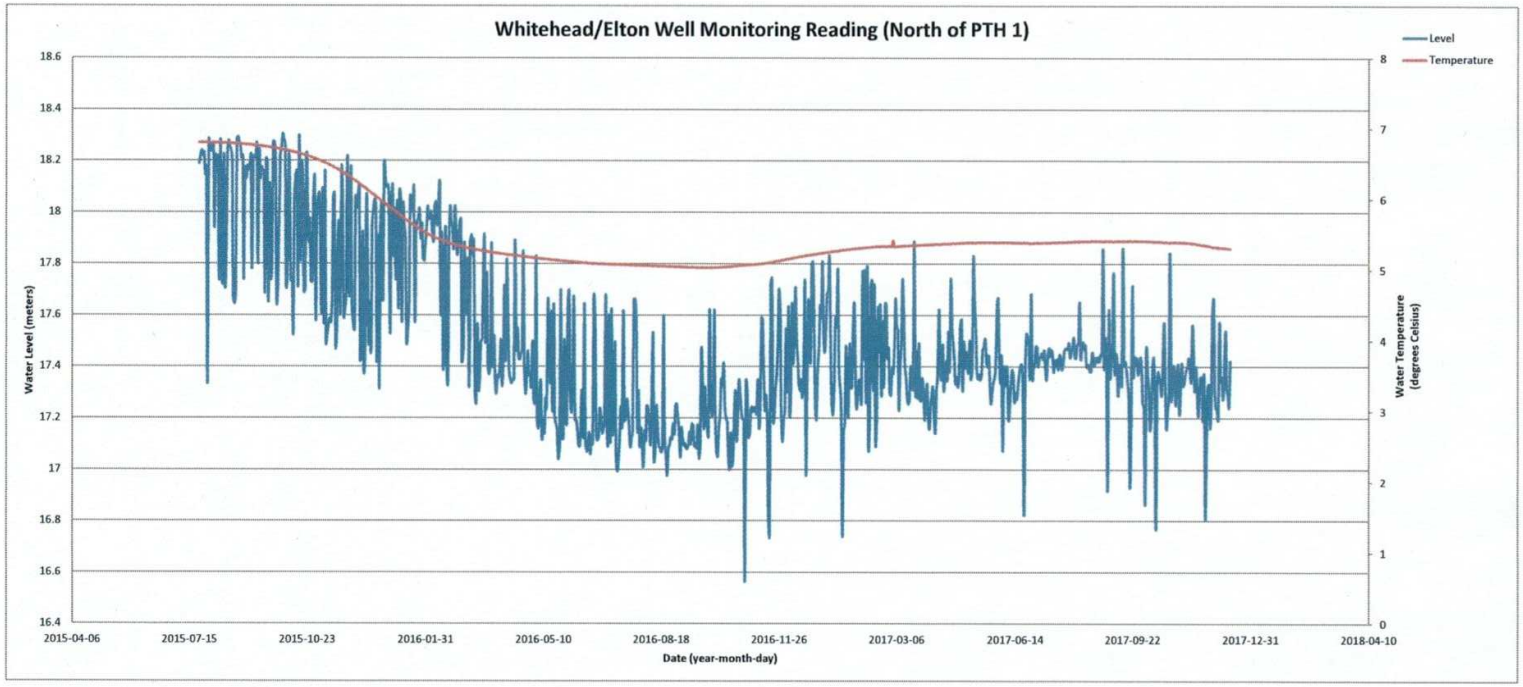
| DAY OF MONTH | MAY | | JUNE | | JULY | | AUGUST | |
|---|---|---|---|---|---|---|---|---|
| | METER READING | DAILY CONSUMPTION | METER READING | DAILY CONSUMPTION | METER READING | DAILY CONSUMPTION | METER READING | DAILY CONSUMPTION |
| 1 | 169563 | 568 | 187840 | 655 | 209516 | 540 | 230868 | 899 |
| 2 | 169999 | 436 | 188623 | 783 | 210074 | 558 | 231651 | 783 |
| 3 | 170525 | 526 | 189455 | 832 | 210643 | 569 | 232183 | 532 |
| 4 | 171079 | 554 | 190175 | 720 | 211342 | 699 | 232969 | 786 |
| 5 | 171618 | 539 | 191140 | 965 | 212103 | 761 | 233582 | 613 |
| 6 | 172410 | 792 | 192084 | 944 | 212858 | 755 | 234143 | 561 |
| 7 | 172870 | 460 | 193030 | 946 | 213782 | 924 | 234679 | 536 |
| 8 | 173471 | 601 | 193865 | 835 | 214751 | 969 | 235266 | 587 |
| 9 | 174003 | 532 | 194864 | 999 | 215378 | 627 | 235839 | 573 |
| 10 | 174589 | 586 | 195513 | 649 | 215973 | 595 | 236268 | 429 |
| 11 | 175128 | 539 | 196098 | 585 | 216734 | 761 | 236910 | 642 |
| 12 | 175696 | 568 | 196736 | 638 | 217360 | 626 | 237470 | 560 |
| 13 | 176324 | 628 | 197567 | 831 | 218120 | 760 | 238031 | 561 |
| 14 | 176757 | 433 | 198163 | 596 | 218839 | 719 | 238697 | 666 |
| 15 | 177335 | 578 | 198651 | 488 | 219687 | 848 | 239399 | 702 |
| 16 | 177954 | 619 | 199280 | 629 | 220303 | 616 | 239921 | 522 |
| 17 | 178583 | 629 | 200065 | 785 | 221049 | 746 | 240775 | 854 |
| 18 | 179176 | 593 | 200537 | 472 | 221494 | 445 | 241462 | 687 |
| 19 | 179905 | 729 | 200960 | 423 | 222379 | 885 | 242193 | 731 |
| 20 | 180475 | 570 | 201966 | 1006 | 223013 | 634 | 242959 | 766 |
| 21 | 181186 | 711 | 202561 | 595 | 223814 | 801 | 243623 | 664 |
| 22 | 181852 | 666 | 203513 | 952 | 224405 | 591 | 244261 | 638 |
| 23 | 182392 | 540 | 204147 | 634 | 224993 | 588 | 244981 | 720 |
| 24 | 183117 | 725 | 204750 | 603 | 225576 | 583 | 245641 | 660 |
| 25 | 183707 | 590 | 205244 | 494 | 226166 | 590 | 246444 | 803 |
| 26 | 184183 | 476 | 205979 | 735 | 226727 | 561 | 246943 | 499 |
| 27 | 184723 | 540 | 206808 | 829 | 227415 | 688 | 247510 | 567 |
| 28 | 185396 | 673 | 207751 | 943 | 228071 | 656 | 248148 | 638 |
| 29 | 185945 | 549 | 208307 | 556 | 228785 | 714 | 248758 | 610 |
| 30 | 186529 | 584 | 208976 | 669 | 229319 | 534 | 249360 | 602 |
| 31 | 187185 | 656 | - | - | 229969 | 650 | 250033 | 673 |
| TOTAL | 18190 | 18190 | 21791 | 21791 | 20993 | 20993 | 20064 | 20064 |

| DAY OF MONTH | SEPTEMBER | | OCTOBER | | NOVEMBER | | DECEMBER | |
|---|---|---|---|---|---|---|---|---|
| | METER READING | DAILY CONSUMPTION | METER READING | DAILY CONSUMPTION | METER READING | DAILY CONSUMPTION | METER READING | DAILY CONSUMPTION |
| 1 | 250866 | 833 | 270061 | 650 | 287989 | 513 | 304275 | 547 |
| 2 | 251572 | 706 | 270643 | 582 | 288560 | 571 | 304994 | 719 |
| 3 | 252022 | 450 | 271259 | 616 | 289130 | 570 | 305684 | 690 |
| 4 | 252571 | 549 | 271976 | 717 | 289606 | 476 | 306179 | 495 |
| 5 | 253163 | 592 | 272742 | 766 | 290115 | 509 | 306760 | 581 |
| 6 | 253790 | 627 | 273533 | 791 | 290678 | 563 | 307308 | 548 |
| 7 | 254486 | 696 | 274198 | 665 | 291161 | 483 | 307844 | 536 |
| 8 | 255245 | 759 | 274625 | 427 | 291721 | 560 | 308390 | 546 |
| 9 | 255930 | 685 | 275055 | 430 | 292256 | 535 | 309050 | 660 |
| 10 | 256446 | 516 | 275583 | 528 | 292842 | 586 | 309557 | 507 |
| 11 | 256928 | 482 | 276084 | 501 | 293316 | 474 | 310063 | 506 |
| 12 | 257552 | 624 | 276765 | 681 | 293859 | 543 | 310592 | 529 |
| 13 | 258189 | 637 | 277559 | 794 | 294429 | 570 | 311156 | 564 |
| 14 | 258739 | 550 | 278170 | 611 | 294968 | 539 | 311711 | 555 |
| 15 | 259387 | 648 | 278633 | 463 | 295520 | 552 | 312322 | 611 |
| 16 | 260098 | 711 | 279275 | 642 | 295993 | 473 | 312861 | 539 |
| 17 | 260698 | 600 | 279885 | 610 | 296617 | 624 | 313437 | 576 |
| 18 | 261351 | 653 | 280476 | 591 | 297237 | 620 | 313952 | 515 |
| 19 | 262024 | 673 | 280991 | 515 | 297782 | 545 | 314563 | 611 |
| 20 | 262798 | 774 | 281276 | 285 | 298334 | 552 | 315127 | 564 |
| 21 | 263668 | 870 | 281984 | 708 | 298923 | 589 | 315745 | 618 |
| 22 | 264421 | 753 | 282599 | 615 | 299476 | 553 | 316300 | 555 |
| 23 | 264964 | 543 | 283091 | 492 | 300139 | 663 | 316873 | 573 |
| 24 | 265525 | 561 | 283686 | 595 | - | - | 317566 | 693 |
| 25 | 266002 | 477 | 284182 | 496 | 301103 | - | 318046 | 480 |
| 26 | 266557 | 555 | 284827 | 645 | 301677 | 574 | 318736 | 690 |
| 27 | 267344 | 787 | 285310 | 483 | 302207 | 530 | 319099 | 363 |
| 28 | 268038 | 694 | 285937 | 627 | 302766 | 559 | 319792 | 693 |
| 29 | 269038 | 1000 | 286388 | 451 | 303256 | 490 | 320471 | 679 |
| 30 | 269411 | 373 | 286936 | 548 | 303728 | 472 | 320980 | 509 |
| 31 | - | - | 287476 | 540 | - | - | 321592 | 612 |
| TOTAL | 19378 | 19378 | 18065 | 18065 | 16252 | 16252 | 17864 | 17864 |


Alexander Levelogger Well Reading (South of PTH 1 July 5th, 2017)
Water Level
Water Temperature
Water Level (meters)
Water Temperature (degrees Celsius)
0
1
2
3
4
5
6
7
2009-07-06
2010-11-18
2012-04-01
2013-08-14
2014-12-27
2016-05-10
2017-09-22
2019-02-04
Date (year-month-day)


Alexander Levelogger Well Reading (South of PTH 1 December 14th, 2017)
Water Level (meters)
0
1
2
3
4
5
6
7
2009-07-06
2010-11-18
2012-04-01
2013-08-14
2014-12-27
2016-05-10
2017-09-22
2019-02-04
Date (year-month-day)
Water Temperature (degrees Celsius)
Water Level
Water Temperature


Alexander Levelogger Well Reading (North of PTH 1 July 5th, 2017)
Water Level
Water Temperature
Water Level (meters)
Water Temperature (degrees Celsius)
18.6
18.4
18.2
18
17.8
17.6
17.4
17.2
17
16.8
16.6
16.4
8
7
6
5
4
3
2
1
0
2015-04-06
2015-07-15
2015-10-23
2016-01-31
2016-05-10
2016-08-18
2016-11-26
2017-03-06
2017-06-14
2017-09-22
Date (month/day/year)


Whitehead/Elton Well Monitoring Reading (North of PTH 1)
Level
Temperature
Water Level (meters)
Water Temperature (degrees Celsius)
Date (year-month-day)
18.6
18.4
18.2
18
17.8
17.6
17.4
17.2
17
16.8
16.6
16.4
8
7
6
5
4
3
2
1
0
2015-04-06
2015-07-15
2015-10-23
2016-01-31
2016-05-10
2016-08-18
2016-11-26
2017-03-06
2017-06-14
2017-09-22
2017-12-31
2018-04-10