



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Englehart Drinking Water System

2015 ANNUAL/SUMMARY REPORT



Prepared by the Ontario Clean Water Agency
on behalf of the Town of Englehart



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INTRODUCTION

Municipalities throughout Ontario have been required to comply with Ontario Regulation 170/03 made under the Safe Drinking Water Act (SDWA) since June 2003. The Act was enacted following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

Section 11 of Regulation 170/03 requires the owner to produce an Annual Report. This report must include the following:

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

This annual report must be completed by February 28th of each year.

Section 22 of the regulation also requires a Summary Report which must be presented & accepted by Council by March 31st of each year for the preceding calendar year.

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

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

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

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

The reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2015 Annual/Summary Report.



Englehart Drinking Water System

Section 11

2015 ANNUAL REPORT



Section 11

ANNUAL REPORT

1.0 INTRODUCTION

Drinking-Water System Name: ENGLEHART DRINKING WATER SYSTEM
Drinking-Water System No.: 220000353
Drinking-Water System Owner: The Corporation of the Town of Englehart
Drinking-Water System Category: Large Municipal, Residential System
Period being reported: January 1, 2015 to December 31, 2015

Does your Drinking Water System serve more than 10,000 people? No

Is your annual report available to the public at no charge on a web site on the Internet? Yes at www.engehart.ca/

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

Englehart Town Office
61 Fifth Avenue
Englehart, Ontario P0J 1H0

Drinking Water Systems that receive drinking water from the Englehart Drinking Water System:

The Englehart Drinking Water System provides drinking water to the Town of Englehart and six neighbouring distribution systems:

- | | |
|----------------------------|----------------------|
| 1. Bradley Subdivision | MOE DWS #: 260069927 |
| 2. First St North | MOE DWS #: 260078871 |
| 3. Kap-kig-iwan Road | MOE DWS #: 260078650 |
| 4. Bryans' Road | MOE DWS #: 260080574 |
| 5. Brown's Road | MOE DWS #: 260078663 |
| 6. Clarksville Subdivision | MOE DWS #: 260078741 |

The Annual Report was provided to all Drinking Water System owners that are connected to the Englehart Drinking Water System.

The Ontario Clean Water Agency prepared the 2015 Annual/Summary Report for the Englehart Drinking Water System and provided a copy to the system owner; the Town of Englehart. A copy was also provided to the Municipality of Charlton and Dack (Bradley Subdivision and Clarksville Subdivision) and the following list of representatives for the remaining private lines:



- | | | |
|----|----------------------|-------------------|
| 1. | Ms. Cindy Kirkbride | First St North |
| 2. | Mr. Len Fisher | Kap-kig-iwan Road |
| 3. | Ms. Marie Bryan | Bryans' Road |
| 4. | Mr. Daryl Rowlandson | Brown's Road |

Notification to system users that the Annual Report is available for viewing is accomplished through:

- A notice inserted with Water Bill

2.0 DESCRIPTION OF THE DRINKING WATER SYSTEM

The Englehart Drinking Water System is owned by the Corporation of the Town of Englehart and consists of a Class 1 water treatment subsystem and a Class 1 water distribution subsystem. The Ontario Clean Water Agency is designated as the Overall Responsible Operator for both the water treatment and water distribution facilities. Certified municipal operators assist OCWA with operations by performing regular maintenance and checks of the system. The system is a communal ground water well supply that services the Town of Englehart and six neighbouring distribution systems.

Raw Water Supply

The water treatment plant is located on 56 First Street in Evanturel Township in the district of Timiskaming and is supplied by two deep-drilled wells; Well No. 2 and Well No. 3.

Well No. 2 is located in a separate well house situated approximately 40 meters south of the treatment plant (approximately 52 m east of 1st Street and 15 m north of 6th Avenue). The well is drilled to a depth of 89.3 meters and consists of a stainless steel intake screen and a 400 mm diameter steel casing which reduces to a 200 mm diameter steel casing. It is equipped with vertical turbine pump and fixed-rate control system to pump at the maximum rate of 15.15 L/second. It includes a magnetic flow meter and pump-to-waste provisions.

Well No. 3 is located in a separate well house situated approximately 20 meters east of the treatment plant (approximately 75 m east of 1st Street and 53 m north of 6th Avenue). The well is drilled to a depth of 90.5 meters and consists of stainless steel intake screen and a 300 mm diameter casing that later reduces to a 150 mm diameter steel casing. It is equipped with vertical turbine pump and fixed-rate control system to pump at the maximum rate of 18.9 L/second. It also includes a magnetic flow meter and pump-to-waste provisions.

Water Treatment

The production wells feed the main water treatment plant that has a maximum rated capacity of 2488 cubic meters per day (m³/d).

The process consists of a Filtronics Electromedia iron and manganese removal/pressure filtration system rated at 2998 m³/d. It consists of two reaction vessels and one filter tank. Sodium hypochlorite is injected into the low lift piping system, prior to the reaction vessels. It is

used as an oxidant for iron and manganese removal and as a disinfectant. Primary disinfection is achieved in the filter system and a 210 foot, 8 inch diameter contact pipe and is continuously monitored using a free chlorine residual analyzer. The system is also equipped with a turbidity analyzer, backwash flow meter and a filter backwash pump. The backwash residue discharges to the sanitary sewer. A treated water flow meter is located on the common header just downstream of the pressure filter system.

The sodium hypochlorite feed system consists of two (2) chemical storage tanks with spill containment and two (2) flow paced chemical metering pumps with automatic backup/switch over.

Water Storage and Pumping Capabilities

The reservoir consists of a twin cell underground clear well with a 3 meter depth and an overall storage volume 1360 m³. Each cell is vented and is accessible by an access hatch with ladder. A butterfly valve provides isolation of each cell if required. Two vertical turbine high lift pumps and fixed-rate control systems which pump at the maximum rates of 37.8 L/second and 45.4 L/second direct water into the distribution system. A distribution water flow meter and a continuous free chlorine analyzer are installed on the high lift discharge header.

Emergency Power

A 100 kW diesel generator was replaced with a 150 kW generator set in October 2014. It is located outside the water treatment building and can maintain all aspects of the operation during a power outage.

Distribution System

The Englehart Drinking Water System is classified as a Large Municipal Residential Drinking Water System and serves an estimated population of 1700 residents. Information regarding the age of the distribution system indicated that the it was originally installed in 1914. The water mains consists primarily of 12, 10, 8, and 6 inch diameter ductile iron constructed pipe with approximately 50 fire hydrants connected to the system to aid in fire protection. Residential service connections consist of 1/2, 5/8, and 3/4 inch copper tubing. There are no off site water storage facilities in the system. Additionally, the distribution system does not receive water from other sources but it provides drinking-water to six neighbouring regulated drinking water systems (one small municipal residential system and five non-municipal year-round residential systems) as listed below:

Distribution System	DWS #	Owner/Operating Authority	# of Service Connections
Town of Englehart	220000353	Town of Englehart	750
Bradley Subdivision	260069927	Municipality of Charlton & Dack	17
First St North,	260078871	Ms. Cindy Kirkbride	9
Kap-kig-iwan Road	260078650	Mr. Len Fisher	8
Bryan's Road	260080574	Ms. Marie Bryan	13
Brown's Road	260078663	Mr. Daryl Rowlandson	12
Clarksville Subdivision	260078741	Municipality of Charlton & Dack	18



3.0 LIST OF WATER TREATMENT CHEMICALS USED OVER THE REPORTING PERIOD

The following chemicals were used in the treatment process at the Englehart Water Treatment Plant.

- Sodium Hypochlorite - Disinfection
- Ammonium Sulphate - Chloramination
- Sodium bisulphite - available at the plant, but is currently not in use.

4.0 SIGNIFICANT EXPENSES INCURRED IN THE DRINKING WATER SYSTEM

OCWA is committed to maintaining the assets of the drinking water system and maintains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS). All routine maintenance activities conducted at the water treatment plant were accomplished in 2015.

Significant expenses incurred in the drinking water system include:

- The installation and implementation of a chloramination/ammoniation system including injectors, a total chlorine analyzer, chemical tanks and ammonium sulfate salts
- The installation of a 210 foot, 8 inch diameter contact pipe
- The installation of a sodium hypochlorite feed panel with two (2) flow monitors
- The installation of new water mains from 3rd Street to 4th Street, between 5th and 6th Avenues.

5.0 DETAILS ON NOTICES OF ADVERSE TEST RESULTS AND OTHER PROBLEMS REPORTED TO & SUBMITTED TO THE SPILLS ACTION CENTER

Based on information kept on record by OCWA, twenty-four (24) adverse water quality incidents were reported to the MOE's Spills Action Centre in 2015.

- Twenty-two of the incidents occurred from April 8th to September 6th, following the implementation of the chloramination process on April 8, 2015. For short durations after plant start-up, primary disinfection could not be achieved for water being directed to the clearwell.

Operations adjusted sodium hypochlorite and ammonium sulphate dosages in an attempt to prevent these incidents. An automatic plant shut-down feature was installed on September 10th to prevent improperly disinfected water from entering the clearwell during low chlorine residual events. On November 25th, a 210 foot, 8 inch pipe was installed prior to the ammonia injection point to also help ensure primary disinfection is achieved. The system is working well with no further incidents.

- A sodium exceedance occurred on a sample collected from the point of entry into the distribution system on October 7th. Testmark Laboratories contacted OCWA indicating that a treated water sample exceeded the maximum allowable concentration (MAC) for sodium having a result of 56.9 mg/L. The Health Unit, MOE SAC and the Owner were notified of the result.

A re-sample was collected on October 16th. A result of 52.8 mg/L was detected. The local Public Health Inspector was notified of the re-sample result on October 26, 2015 at 0855 hours (AWQI No. 126909)

- Inaccurate free chlorine residual results were observed from the continuous monitoring equipment (analyzer) used to monitor primary disinfection from 2353 hours on October 13th to 0224 hours on October 14th when the plant shutdown.

The Health Unit, MOE SAC and the Owner were notified of the result. The probe was replaced on October 14th and accurate readings resumed (AWQI No. 126883).

6.0 MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD

Summary of Microbiological Data

Sample Type	# of Samples	Range of <i>E. coli</i> Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw (Well No. 2)	52	0 to 0	0 to 0	0	N/A
Raw (Well No. 3)	52	0 to 0	0 to 0	0	N/A
Treated	52	0 to 0	0 to 0	52	<10 to <10
Distribution	160	0 to 0	0 to 0	56	<10 to 1370

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

Refer to *Appendix A* for a monthly summary of microbiological test results.

7.0 OPERATIONAL TESTING PERFORMED DURING THE REPORTING PERIOD

Summary of Raw Water Turbidity Data

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure
Turbidity (Well No. 2)	53	0.23 to 7.80	NTU
Turbidity (Well No. 3)	53	0.18 to 3.91	

Note: Samples required once every month.

A chloramination/ammoniation process was implemented at the Englehart water plant on April 8, 2015. Continuous monitoring for free chlorine residuals changed from the point of entry into the distribution system to before the clearwell.

Distribution chlorine residuals changed from free to combined as required under Section 1-2(2)(4) of Schedule 1 to Ontario Regulation 170/03.



Continuous Monitoring in the Treatment Process

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure
Free Chlorine (chlorination)	2328	0.50 to 1.98	mg/L
Free Chlorine (chloramination)	6432	0.08 to 4.98	
Total Chlorine (chloramination)	5136	1.28 to 2.50	

Note: For continuous monitors, 2328 is used as the number of samples from January to April 8th, 6432 is used from April 8th to December 31st. and 5136 is used from June 7th to December 31st.

Summary of Chlorine Residual Data in the Distribution System from January 1st to April 8th (chlorination)

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine (Location 1)	28	0.41 to 1.04	mg/L	<0.05
Free Chlorine (Location 2)	28	0.54 to 1.00		
Free Chlorine (Location 3)	28	0.52 to 1.14		
Free Chlorine (Location 4)	28	0.47 to 1.09		

Summary of Chlorine Residual Data in the Distribution System from April 9th to December 31st (chloramination)

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Combined Chlorine (Location 1)	78	0.44 to 2.92	mg/L	<0.25
Combined Chlorine (Location 2)	77	0.27 to 2.5		
Combined Chlorine (Location 3)	77	0.25 to 2.19		
Combined Chlorine (Location 4)	38	0.46 to 2.06		

Note: A total of seven operational checks for chlorine residual in the distribution system are collected each week. Four (4) samples were tested one day and three (3) on a second day. The sample sets were collected at least 48-hours apart and samples collected on the same day are from different locations.

Refer to *Appendix B* for a monthly summary of the above operational data.

Summary of Nitrate & Nitrite Data (sampled at the water treatment plant)

Date of Sample	Nitrate Result Value	Nitrite Result Value	Unit of Measure	Exceedance
January 5	<0.1	<0.05	mg/L	No
April 7	0.20	<0.03	mg/L	No
July 13	0.29	<0.03	mg/L	No
October 7	<0.1	<0.03	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L
MAC for Nitrite = 1 mg/L

Summary of Total Trihalomethane Data (sampled in the distribution system)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 5	80.3	ug/L	57.8	Yes
April 7	88.7			
July 13	29.0			
October 7	33.3			

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

A chloramination/ammoniation process implemented at the Englehart water plant has proven effective in reducing high TTHM levels in the distribution system.

Summary of Most Recent Lead Data

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

The Englehart Drinking Water System was eligible to follow the “Exemption from Plumbing Sampling” as described in section 15.1-5(9) and 15.1-5(10) of Schedule 15.1 of Ontario Regulation 170/03. The exemption applies to a drinking water system if, in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration (MAC) of 10 ug/L for lead. As such, the system was required to test for total alkalinity and pH in one distribution sample collected during the periods of December 15 to April 15 (winter period) and June 15 to October 15 (summer period). This testing is required in every 12-month period with lead testing in every third 12-month period.

Two rounds of alkalinity and pH testing were carried out on April 7th and October 14th of 2015. Results are summarized in the table below.

Summary of pH, Temperature & Alkalinity Data (sampled in the distribution system)

Date of Sample	# of Samples	Field pH Results (min to max)	Field Temperature (°C) (min to max)	Alkalinity Results (mg/L) (min to max)
April 7	2	6.67 to 6.94	7.6 to 9.5	232 to 233
October 14	2	7.69 to 7.78	7.0 to 7.7	133 to 236

Most Recent Schedule 23 Inorganic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Antimony	<0.5	ug/L	6	No
Arsenic	<1.0	ug/L	25	No
Barium	416	ug/L	1000	No
Boron	262	ug/L	5000	No
Cadmium	<0.1	ug/L	5	No
Chromium	2.6	ug/L	50	No
Mercury	<0.1	ug/L	1	No
Selenium	<1.0	ug/L	10	No
Uranium	<1.0	ug/L	20	No

Note: Sample required every 36 months (sample date = October 15, 2014). Next sampling scheduled for October 2017

Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Alachlor	<0.50	ug/L	5	No
Aldicarb	<0.50	ug/L	9	No
Aldrin + Dieldrin	<0.004	ug/L	0.7	No
Atrazine + N-dealkylated metabolites	<0.9	ug/L	5	No
Azinphos-methyl	<0.40	ug/L	20	No
Bendiocarb	<1.0	ug/L	40	No
Benzene	<0.20	ug/L	5	No
Benzo(a)pyrene	<0.005	ug/L	0.01	No
Bromoxynil	<0.60	ug/L	5	No
Carbaryl	<1.0	ug/L	90	No
Carbofuran	<1.0	ug/L	90	No
Carbon Tetrachloride	<0.20	ug/L	5	No
Chlordane (Total)	<0.004	ug/L	7	No
Chlorpyrifos	<0.40	ug/L	90	No
Cyaznifos	<0.40	ug/L	10	No
Diazinon	<0.40	ug/L	20	No
Dicamba	<0.20	ug/L	120	No
1,2-Dichlorobenzene	<0.20	ug/L	200	No
1,4-Dichlorobenzene	<0.20	ug/L	5	No
Dichlorodiphenyl trichloroethane (DDT) + metabolites	<0.005	ug/L	30	No
1,2-Dichloroethane	<0.20	ug/L	5	No
1,1-Dichloroethylene (vinylidene chloride)	<0.20	ug/L	14	No
Dichloromethane	<1.0	ug/L	50	No
2,4-Dichlorophenol	<0.60	ug/L	900	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	<0.20	ug/L	100	No
Diclofop-methyl	<0.20	ug/L	9	No
Dimethoate	<0.40	ug/L	20	No
Dinoseb	<0.06	ug/L	10	No
Diquat	<7.0	ug/L	70	No
Diuron	<5.0	ug/L	150	No
Glyphosate	<20	ug/L	280	No
Heptachlor + Heptachlor Epoxide	<0.004	ug/L	3	No
Lindane (Total)	<0.001	ug/L	4	No
Malathion	<0.40	ug/L	190	No
Methoxychlor	<0.001	ug/L	900	No
Metolachlor	<0.20	ug/L	50	No
Metribuzin	<0.20	ug/L	80	No
Monochlorobenzene	<0.20	ug/L	80	No
Paraquat	<1.0	ug/L	10	No
Parathion	<0.20	ug/L	50	No

Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Pentachlorophenol	<0.06	ug/L	60	No
Phorate	<0.40	ug/L	2	No
Picloram	<0.06	ug/L	190	No
Polychlorinated Biphenyls (PCB)	<0.04	ug/L	3	No
Prometryne	<0.20	ug/L	1	No
Simazine	<0.40	ug/L	10	No
Temephos	<10	ug/L	280	No
Terbufos	<0.20	ug/L	1	No
Tetrachloroethylene	<0.20	ug/L	30	No
2,3,4,6-Tetrachlorophenol	<0.6	ug/L	100	No
Triallate	<0.20	ug/L	230	No
Trichloroethylene	<0.20	ug/L	50	No
2,4,6-Trichlorophenol	<0.6	ug/L	5	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	<0.06	ug/L	280	No
Trifluralin	<0.20	ug/L	45	No
Vinyl Chloride	<0.20	ug/L	2	No

Note: Sample required every 36 months (sample date = October 15, 2014). Next sampling scheduled for October 2017

Inorganic or Organic Test Results that Exceeded Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg. 169/03) during the reporting period.

Most Recent Sodium Data Sampled at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 7, 2015	1	56.9	mg/L	20	Yes
October 16, 2015 (resample)	1	52.8			

Note: Sample required every 60 months. Next sampling scheduled for October 2020

The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste. It is required that the local Medical Officer of Health be notified when the concentration exceeds 20 mg/L so that persons on sodium restricted diets can be notified by their physicians. The adverse sodium result was reported to MOE SAC and the Timiskaming Health Unit on October 15, 2015 as required under Schedule 16 of O. Reg. 170/03 (AWQI# 126909).



Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 7, 2015	1	0.44	mg/L	1.5	No

Note: Sample required every 60 months. Next sampling scheduled for October 2020

Summary of Additional Testing Performed in Accordance with a Legal Instrument.

A new chloramination/ammoniation pilot project was implemented at the Englehart water treatment plant on April 8, 2015. Condition 2.0 of Schedule C of DWWP No. 209-201 requires the owner to carry out sampling outlined in the document titled “Chloramination Pilot – Work Plan for the Town of Englehart, Englehart Drinking Water System” prepared by OCWA.

The abovementioned report identifies the following additional sampling for the duration of the chloramination pilot program:

1. Chloramines (monochloramine) sampling at various locations within the distribution system, especially the dead-end locations (Bradley and Clarksville subdivisions). OCWA also collects and tests free ammonia every week..
2. Lead, pH and alkalinity sampling to determine the effect of chloramination on lead corrosion. One sample will be collected monthly.
3. THM sampling will also take place on a monthly basis to assess the effectiveness on the THM reduction.

A summary of the results are provided below.

Total Trihalomethane Data (monthly testing)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
May 5	35.3	ug/L	44.9	No
June 2	20.8			
July 8	38.8			
August 5	54.4			
September 2	35.6			
October 7	33.7			
November 4	37.1			
December 2	36.9			

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

pH, Temperature & Alkalinity Data (monthly testing)

Date of Sample	Field pH Results	Field Temperature (°C)	Alkalinity Results (mg/L)	Lead Results (mg/L)
May 5	7.40	12.8	230	<0.0001
June 2	7.62	11.5	229	<0.0001
July 8	7.34	15.8	232	<0.0001
August 5	7.22	14.8	238	<0.0001
September 2	7.05	15.6	220	<0.0001
October 7	7.68	11.0	229	<0.0001
November 4	7.45	16.7	243	0.1800
December 2	7.33	12.6	241	0.1400

Monochloramine & Free Ammonia Data (weekly testing)

Sample Type	# of Monochloramine Samples	Range of Monochloramine Results (min to max)	# of Free Ammonia Samples	Range of Free Ammonia Results (min to max)
Englehart (Location 1)	36	0.65 to 2.03	35	0.07 to 0.26
Englehart (Location 2)	36	0.81 to 1.94	35	0.04 to 0.29
Bradley Subdivision	36	0.28 to 1.96	35	0.06 to 0.28
Clarksville Subdivision	36	0.11 to 1.81	35	0.05 to 0.26



Englehart Drinking Water System

Schedule 22

2015 SUMMARY REPORT

FOR MUNICIPALITIES



Schedule 22

SUMMARY REPORTS FOR MUNICIPALITIES

1.0 INTRODUCTION

Drinking-Water System Name:	ENGLEHART DRINKING WATER SYSTEM
Municipal Drinking Water Licence (MDWL) No.:	209-101, Issue 2 (dated June 27, 2011)
Drinking Water Work Permit (DWWP) No.:	209-201 (issued June 23, 2011)
Permit to Take Water (PTTW) No.:	4742-854PPE (issued May 21, 2010)
Period being reported:	January 1, 2015 to December 31, 2015

2.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

According to information kept on record by OCWA, the Englehart Drinking Water System failed to meet the following legislative and /or regulative requirements:

1. Section 1-2(2) of Schedule 1 to Ontario Regulation 170/03 requires the owner and operating authority to ensure the treatment equipment is designed and operated so that at all times, primary disinfection is achieved as per the Ministry's Procedure for Disinfection of Drinking Water in Ontario.

The system failed to meet this requirement several times during the reporting period during initial start-up and fine-tuning of the chloramination process. Frequent incidents of low chlorine residuals to meet primary disinfection were reported from April to September. To prevent these incidents, an automatic feature was installed so that the plant will shut-down if the chlorine residual level drops below a certain set point.

It was also discovered that taste and odour issues occurred when the combined chlorine residual (CCR) in the distribution system neared 2.0 mg/L. In order to reduce the CCR in the distribution system and maintain primary disinfection, a 210 foot, 8 inch pipe was installed prior to the ammonia injection point. This helps to reduce the free chlorine residual levels and ensure primary disinfection is achieved.

2. Section 6-5 (1.1) of Schedule 6 to Ontario Regulation 170/03 requires that qualified persons respond to, and be promptly dispatched to, alarms resulting from the continuous monitoring equipment.

On three occasions (April 10, April 15 and April 16, 2015) free and total chlorine alarms were responded to by persons not adequately qualified to examine test results of continuous monitoring equipment (the individual who responded was not a certified operator).

OCWA met with the Town of Englehart to clarify the alarm response requirements of the regulation. The Town of Englehart and OCWA confirmed that only certified operators will respond to and take appropriate actions to alarms generated by continuous monitoring



equipment at the Englehart WTP.

- The system failed to meet the sodium standard of 20 mg/L for treated water having a result of 56.9 mg/L. This result was reported as an Adverse Water Quality Incident (AWQI) as required under Section 16-3 (1) 8 of Schedule 16 to Ontario Regulation 170/03.

Refer to Section 5.0 - DETAILS ON NOTICES OF ADVERSE TEST RESULTS AND OTHER PROBLEMS REPORTED TO & SUBMITTED TO THE SPILLS ACTION CENTER on page 6 of this report for additional details.

3.0 SUMMARY OF QUANTITIES & FLOW RATES

Water Usage

The following water usage tables summarize the quantities and flow rates of water taken and produced during the 2015 reporting period, including total monthly volumes, average monthly volumes, maximum monthly volumes, and maximum flow rates.

Raw Water

2015 - Monthly Summary of Water Takings from the Source (Well No. 2 and Well No. 3)

Governed by Permit to Take Water (PTTW) #4742-854PPE issued May 21, 2010

Well No. 2

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	8301	7612	8521	9491	10884	10563	8465	7231	7959	7412	5632	5511	97582
Average Volume (m ³ /d)	268	272	275	316	351	352	273	233	265	239	188	178	268
Maximum Volume (m ³ /d)	291	452	377	432	454	520	390	265	333	518	221	220	520
PTTW - Maximum Allowable Volume (m ³ /day)	1205	1205	1205	1205	1205	1205	1205	1205	1205	1205	1205	1205	1205
Maximum Flow Rate (L/min)	741	793	862	858	900	900	882	577	639	900	900	900	900
PTTW - Maximum Allowable Flow Rate (L/min)	909	909	909	909	909	909	909	909	909	909	909	909	909

Well No. 3

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	17422	16190	17533	18338	18994	20427	20476	20238	19448	16825	14941	15014	215846
Average Volume (m ³ /d)	562	578	566	611	613	681	661	653	648	543	498	484	591
Maximum Volume (m ³ /d)	603	990	817	921	740	936	902	751	804	1170	596	602	1170
PTTW - Maximum Allowable Volume (m ³ /day)	1591	1591	1591	1591	1591	1591	1591	1591	1591	1591	1591	1591	1591
Maximum Flow Rate (L/min)	1404	1395	1420	1440	1306	1406	1227	1331	1170	1419	1193	1229	1440
PTTW - Maximum Allowable Flow Rate (L/min)	1727	1727	1727	1727	1727	1727	1727	1727	1727	1727	1727	1727	1727

Combined Water Taking (Well No. 2 and Well No. 3)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	25723	23802	26054	27829	29878	30990	28941	27469	27407	24237	20573	20525	313428
Average Volume (m ³ /d)	830	850	840	928	964	1033	934	896	914	782	686	662	860
Maximum Volume (m ³ /d)	894	1442	1194	1353	1194	1424	1217	1067	1114	1688	817	822	1688
PTTW - Maximum Allowable Volume (m ³ /day)	2796	2796	2796	2796	2796	2796	2796	2796	2796	2796	2796	2796	2796

Treated Water
2015- Monthly Summary of Treated Water Supplied to the Distribution System

Governed Municipal Drinking Water Licence (MDWL) #209-101, Issue 2 - dated June 27, 2011

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	27444	25668	27274	27336	27591	28986	27039	25919	25405	22049	18741	18660	302112
Average Volume (m ³ /d)	885	917	880	911	890	966	872	836	847	711	625	602	829
Maximum Volume (m ³ /d)	962	1537	1249	1348	1070	1206	1125	925	1019	1509	704	668	1537
MDWLC of A - Rated Capacity (m ³ /day)	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488

Flow Monitoring

MDWL No. 209-101 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

- the flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution system, and
- the flow rate and daily volume of water that flows into the treatment subsystem.

The flow monitoring equipment identified in the MDWL is present and operating as required. These flow meters are calibrated on an annual basis as specified in the manufacturers' instructions.

Comparison of the Flow Summary to the Rated Capacity & Flow Rates Allowed in the Systems Licence & Permit

The system's Permit to Take Water #4742-854PPE allows the Town to withdraw water at the following rates:

Well No. 2: 909 L/minute / 1204.69 m³/day
 Well No. 3 1727 L/minute / 1591.10 m³/day
 Combined daily volume: 2795.79 m³/day

A review of the raw water flow data indicates that the total daily volume of water taken from each well never exceeded the allowable limits. The maximum combined volume measured was 1688 m³ on October 19, 2015



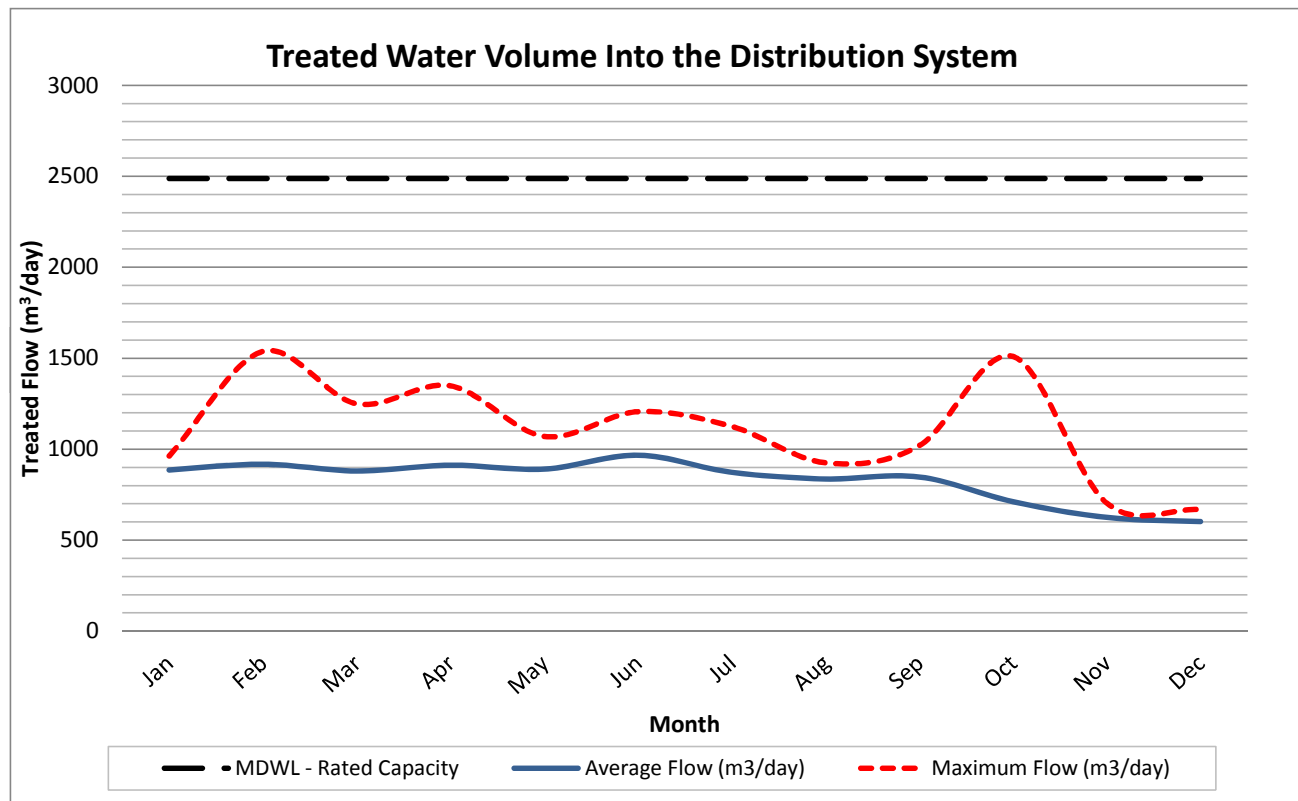
The maximum flow rates for each well were not exceeded during the reporting point. The maximum flow rate for Well No. 2 was 900 L/minute which occurred on several days in May, June, October, November and December. The maximum flow rate measured for Well No. 3 was 1440 L/minute on April 16th.

Schedule C, Section 1.1 of MDWL No. 209-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed a maximum flow rate of 2488 m³/day. The Englehart DWS complied with this limit having a recorded maximum volume of 1537 m³/day on February 18, 2015.

Figure 1 compares the average and maximum flow rates into the distribution system to the rated capacity of the system identified in the MDWL. This information enables the Owner to assess the system's existing and future planned water usage needs.

Figure 1: 2015 - Daily Volume of Treated Water into the Distribution System

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Flow (m ³ /day)	885	917	880	911	890	966	872	836	847	711	625	602
Maximum Flow (m ³ /day)	962	1537	1249	1348	1070	1206	1125	925	1019	1509	704	668
MDWL - Rated Capacity	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488
% Rated Capacity	39	62	50	54	43	48	45	37	41	61	28	27





4.0 CONCLUSION

In 2015, the Englehart drinking water system (DWS) provided safe and reliable drinking water to the community of Englehart and six neighbouring distribution systems while meeting the terms and conditions outlined in its site specific drinking water works permit and municipal drinking water licence.

The system was able to operate within the water taking limits of the permit and in accordance with the rated capacity of the licence while meeting the community's demand for water use.

The system did however failed to achieve primary disinfection on several occasions during the reporting period. Frequent taste and odour complaints and incidents of low chlorine residuals to meet primary disinfection were reported when implementing and fine-tuning the new chloramination process. These incidents were resolved through process adjustments, the installation of an automatic plant shutdown feature and the installation of a contact pipe.

The system failed to ensure only certified operators respond to regulatory alarms. OCWA met with the Town to clarify and confirm that only certified operators will respond to alarms.

The system also failed to meet the sodium standard of 20 mg/L having a result of 56.9 mg/L in the treated water. The result was reported as an Adverse Water Quality Incident to the Ministry's Spills Action Center (SAC) and the local Ministry of Health (MOH). The MOH is notified when sodium concentrations exceed 20 mg/L so that persons on sodium restricted diets can be notified by their physicians.

The background of the page features a decorative design of light blue, wavy, horizontal bands that resemble water or a stylized sun. The bands are of varying thickness and curve, creating a sense of movement and depth. The text is centered over this background.

APPENDIX A

Monthly Summary of Microbiological Test Results

MONTHLY MICROBIOLOGICAL REPORT

Facility Org Number: 6213
Facility Works Number: 220000353
Facility Name: ENGLEHART DRINKING WATER SYSTEM
Facility Owner: Municipality: Town of Englehart
Facility Classification: Class 1 Water Treatment
Service Population: 1700
Total Design Capacity: 2488.0 m3/day
From: 01/01/2015 to 31/12/2015

	01/2015	02/2015	03/2015	04/2015	05/2015	06/2015	07/2015	08/2015	09/2015	10/2015	11/2015	12/2015	Total	Avg	Max	Min
Raw Water																
Well 2 / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4	52			
Max Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0			< 0	
Mean Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0		< 0		
Min Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0				< 0
Well 2 / E. Coli: EC - cfu/100mL																
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4	52			
Max Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0			< 0	
Mean Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0		< 0		
Min Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0				< 0
Treated Water																
Treated Water (POE) / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4	52			
Max Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0			< 0	
Mean Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0		< 0		
Min Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0				< 0
Treated Water (POE) / E. Coli: EC - cfu/100mL																
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4	52			
Max Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0			< 0	
Mean Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0		< 0		
Min Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0				< 0
Treated Water (POE) / HPC - cfu/mL																
Count Lab	4	4	5	4	4	5	4	5	4	4	5	4	52			
Max Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 10	
Mean Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10

MONTHLY MICROBIOLOGICAL REPORT

Facility Org Number: 6213
Facility Works Number: 220000353
Facility Name: ENGLEHART DRINKING WATER SYSTEM
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Service Population: 1700
Total Design Capacity: 2488.0 m3/day
From: 01/01/2015 to 31/12/2015

	01/2015	02/2015	03/2015	04/2015	05/2015	06/2015	07/2015	08/2015	09/2015	10/2015	11/2015	12/2015	Total	Avg	Max	Min
Distribution System Water																
Distribution / Total Coliform: TC - cfu/100mL																
Count Lab	12	15	15	12	13	15	12	15	12	12	15	12	160			
Max Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0			< 1	
Mean Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0		< 0		
Min Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0				< 0
Distribution / E. Coli - cfu/100mL																
Count Lab	12	15	15	12	13	15	12	15	12	12	15	12	160			
Max Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0			< 1	
Mean Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0		< 0		
Min Lab	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0	< 0				< 0
Distribution / HPC - cfu/mL																
Count Lab	4	7	5	4	5	5	4	5	4	4	5	4	56			
Max Lab	< 10	< 10	< 10	1370	< 10	< 10	< 10	< 10	< 10	< 10	< 10	20			< 1370	
Mean Lab	< 10	< 10	< 10	350	< 10	< 10	< 10	< 10	< 10	< 10	< 10	12.5		< 34.33		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10



APPENDIX B

Monthly Summary of Operational Data

MONTHLY SUMMARY OF OPERATIONAL DATA

Facility Org Number: 6213
Facility Works Number: 220000353
Facility Name: ENGLEHART DRINKING WATER SYSTEM
Facility Owner: Municipality: Town of Englehart
Facility Classification: Class 1 Water Treatment
Service Population: 1700
Total Design Capacity: 2488.0 m3/day
From: 01/01/2015 to 31/12/2015

	01/2015	02/2015	03/2015	04/2015	05/2015	06/2015	07/2015	08/2015	09/2015	10/2015	11/2015	12/2015	Total	Avg	Max	Min
Raw Water																
Well 2 / Turbidity - NTU																
Count IH	4	4	5	5	1	5	5	6	4	4	6	4	53			
Max IH	0.66	0.68	0.56	0.43	0.62	0.97	1.87	7.8	0.39	6.58	1.13	0.58			7.8	
Mean IH	0.54	0.465	0.454	0.364	0.62	0.448	0.716	1.992	0.31	1.89	0.507	0.445		0.757		
Min IH	0.48	0.23	0.31	0.27	0.62	0.29	0.36	0.25	0.27	0.24	0.24	0.35				0.23
Well 3 / Turbidity - NTU																
Count IH	4	4	5	5	1	5	5	6	4	4	6	4	53			
Max IH	0.47	0.46	0.65	0.61	0.59	1.04	1.22	3.08	0.84	3.91	3.7	0.38			3.91	
Mean IH	0.435	0.398	0.482	0.328	0.59	0.408	0.436	0.783	0.443	1.118	0.818	0.253		0.548		
Min IH	0.38	0.27	0.37	0.18	0.59	0.22	0.22	0.24	0.26	0.18	0.19	0.19				0.18

Treated Water																	
Treated Water (POE) / CI Residual: Free - mg/L (chlorination)																	
Max OL	1.984	1.984	1.984	1.984											1.984		
Mean OL	1.183	1.205	1.225	0.351	Chloramination began April 8, 2015										0.330		
Min OL	0.555	0.496	0.526	0.510												0.496	
Filter / CI Residual: Free-CT - mg/L (chloramination)																	
Max OL				3.86	3.27	4.98	4.977	4.977	4.975	4.977	4.976	4.976			4.98		
Mean OL				2.091	1.946	1.853	1.725	1.684	1.927	2.064	2.009	1.466		1.863			
Min OL				1.09	0.26	0.08	1.05	0.090	0.411	1.21	1.25	1.03				0.080	
Treated Water (POE) / CI Residual: Total - mg/L (chloramination)																	
Max OL						2.124	2.278	2.363	2.504	2.471	2.2	1.903			2.504		
Mean OL						Monitoring of TCR started on June 7th		1.976	2.053	1.978	2.009	1.963	1.94	1.643	1.937		
Min OL						1.831	1.851	1.676	1.275	1.521	1.663	1.359				1.275	

Distribution System Water																
Residual No. 1 / CI Residual: Free - mg/L																
Count IH	9	8	9	2	0	0	0	0	0	0	0	0	28			
Max IH	0.95	0.73	0.72	1.04											1.04	
Mean IH	0.558	0.58	0.533	0.845										0.577		
Min IH	0.44	0.45	0.41	0.65												0.41
Residual No. 1 / CI Residual: Combined - mg/L																
Count IH	0	0	0	8	8	9	9	9	8	9	9	9	78			
Max IH				2.92	1.99	1.9	1.89	1.88	1.67	1.76	1.75	1.51			2.92	
Mean IH				1.431	1.806	1.624	1.758	1.648	1.553	1.591	1.636	1.386		1.604		
Min IH				0.44	1.44	1.19	1.6	1.36	1.35	1.46	1.49	1.28				0.44

MONTHLY SUMMARY OF OPERATIONAL DATA

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	01/2015	02/2015	03/2015	04/2015	05/2015	06/2015	07/2015	08/2015	09/2015	10/2015	11/2015	12/2015	Total	Avg	Max	Min
Distribution System Water																
Residual No. 2 / CI Residual: Free - mg/L																
Count IH	9	8	9	2	0	0	0	0	0	0	0	0	28			
Max IH	1	0.93	0.86	0.93											1.00	
Mean IH	0.714	0.775	0.693	0.845										0.734		
Min IH	0.56	0.63	0.54	0.76												0.54
Residual No. 2 / CI Residual: Combined - mg/L																
Count IH	0	0	0	7	8	9	9	9	8	9	9	9	77			
Max IH				2.5	2.02	1.9	1.91	1.88	1.86	1.84	1.89	1.52			2.5	
Mean IH				1.479	1.826	1.759	1.749	1.682	1.648	1.711	1.699	1.393		1.663		
Min IH				0.27	1.47	1.04	1.24	1.55	1.37	1.56	1.53	1.19				0.27
Residual No. 3 / CI Residual: Free - mg/L																
Count IH	9	8	9	2	0	0	0	0	0	0	0	0	28			
Max IH	1.14	1.03	1.12	0.86											1.14	
Mean IH	0.776	0.838	0.766	0.86										0.796		
Min IH	0.6	0.68	0.52	0.86												0.52
Residual No. 3 / CI Residual: Combined - mg/L																
Count IH	0	0	0	7	8	9	9	9	8	9	9	9	77			
Max IH				1.96	1.95	1.95	2.19	2	1.85	1.81	1.91	1.6			2.19	
Mean IH				1.353	1.845	1.8	1.87	1.75	1.661	1.692	1.696	1.449		1.686		
Min IH				0.25	1.57	1.62	1.61	1.32	1.31	1.48	1.46	1.04				0.25
Residual No. 4 / CI Residual: Free - mg/L																
Count IH	4	5	5	1	0	0	0	0	0	0	0	0	15			
Max IH	1.09	0.96	0.9	0.93											1.09	
Mean IH	0.89	0.724	0.748	0.93										0.79		
Min IH	0.76	0.47	0.58	0.93												0.47
Residual No. 4 / CI Residual: Combined - mg/L																
Count IH	0	0	0	3	4	5	4	5	4	4	5	4	38			
Max IH				1.83	2.03	1.88	1.93	2	1.86	2.06	1.95	1.61			2.06	
Mean IH				1.193	1.853	1.834	1.912	1.828	1.753	1.84	1.83	1.52		1.751		
Min IH				0.46	1.56	1.72	1.89	1.63	1.53	1.59	1.71	1.47				0.46