

KAGAWONG WTP

SUPPLY SYSTEM

ANNUAL SUMMARY REPORT

2014



**Ontario Clean Water Agency
Agence Ontarienne Des Eaux**

SECTION 1: INTRODUCTION

This report is a summary of water quality information for the Kagawong Water Treatment Facility, published in accordance with Schedule 22 of Ontario's Drinking-Water Systems Regulation for the reporting period of [January 1, 2014 to December 31, 2014](#). The Kagawong Water Treatment Facility is categorized as a Large Municipal Residential Drinking Water System.

This report is prepared by The Ontario Clean Water Agency on behalf of the Town of Kagawong. A copy of the Summary Report must be provided to the members of the municipal council before [March 31, 2015](#).

SECTION 2: WHAT DOES THE REPORT CONTAIN

The report must list the requirements of the Act, the regulations, the system's approval and any order that the system **failed to meet** at any time during the period covered by the report. 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.

For the purpose of enabling the owner of the system to assess the rated capability of their system to meet existing and future planned water uses, the following information is required to be included in this report:

- A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
- A comparison of the summary to the rated capacity and flow rates approved in the systems approval.

SECTION 3: DAILY FLOW RATES

In accordance with the Municipal Drinking Water License #255-101, the maximum water to be directed to the distribution system is 1002m³/d. The maximum daily treated flow into the distribution system in 2014 was 447.1 m³ in June.

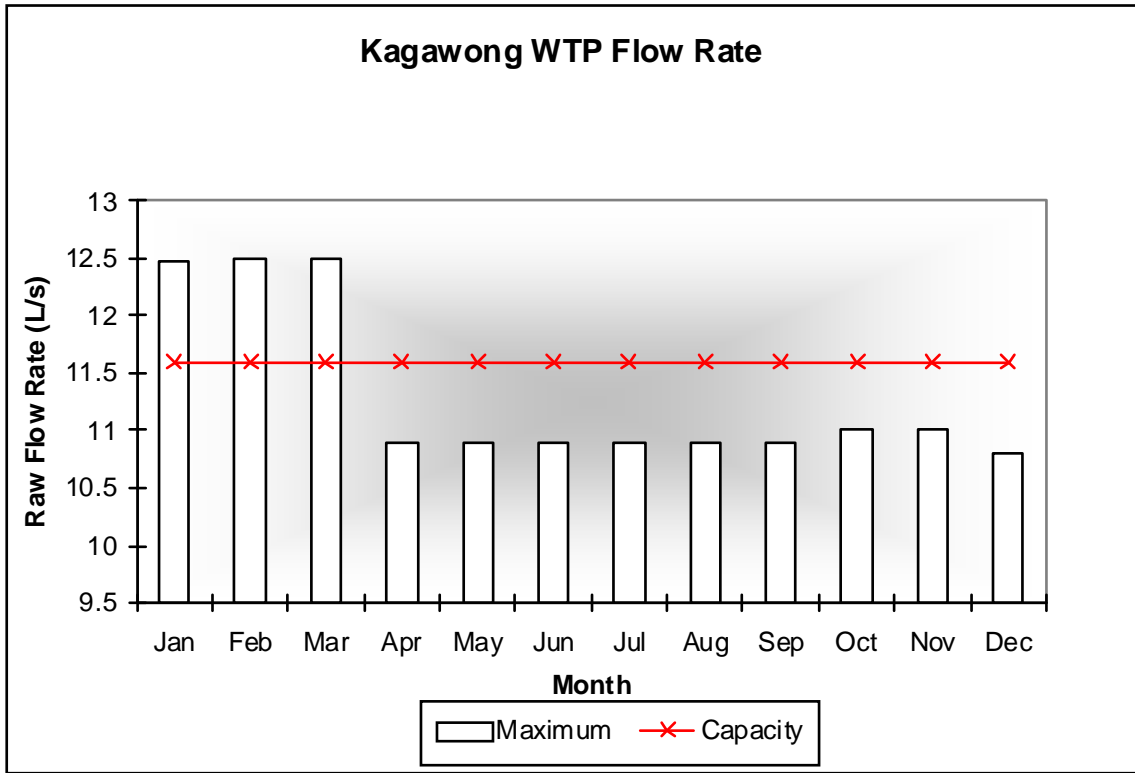
In accordance with the PTTW, the allowable rate of water taking is 11.67 L/s with a maximum daily volume of 1008.0 m³/d. The monthly average raw water flow for this reporting period was 224.6 m³/d and the maximum daily flow was 495.3 m³/d.

Flow totals and comparison of flow rates to the rated capacity are included in the table and graphs below.

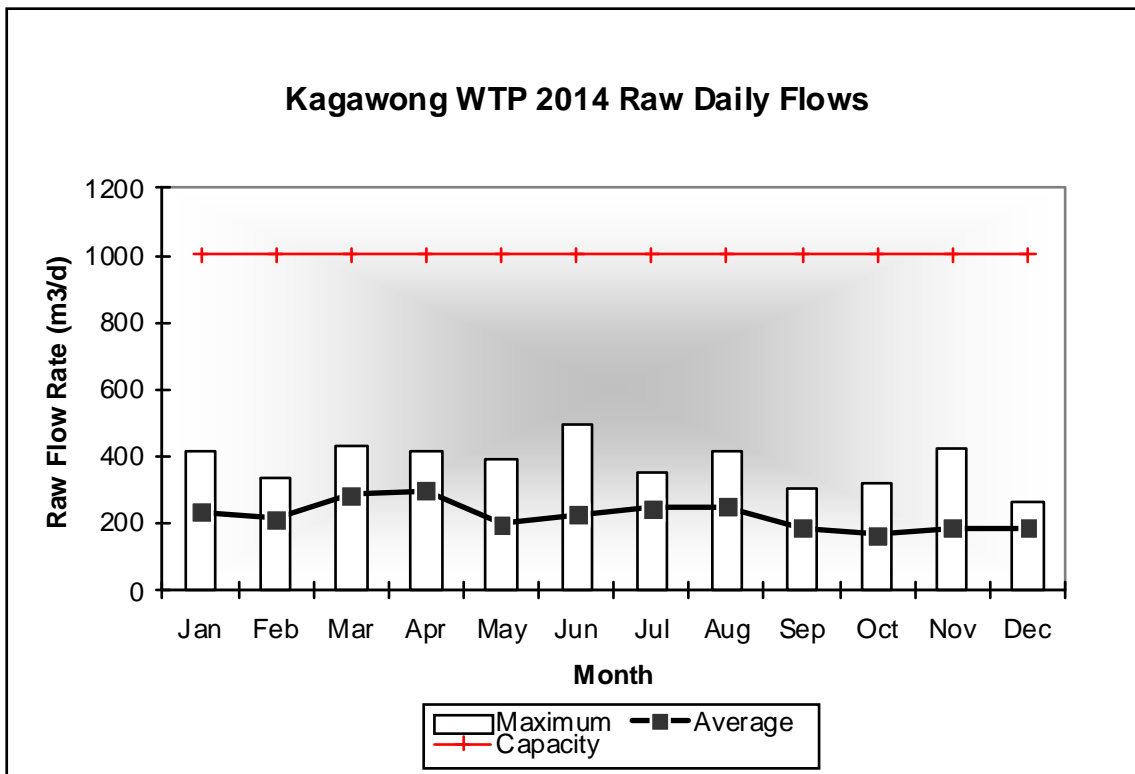
The quantity of water supplied during the reporting period **did** exceed the PTTW instantaneous flow limits. In January, February and March, the facility consistently exceeded the 11.67 L/S limit. On March 5, the system was throttled so that exceedances would not occur. Since this time, there have been no exceedances of the PTTW.

2014	RAW WATER FLOW DATA - TOTAL ALL SOURCES					
	Month	Total Monthly Raw Flow (m ³)	Average Raw Flow (m ³ /d)	Maximum Raw Flow (m ³ /d)	Maximum Raw Flow Rate (L/s)	Maximum Rated Capacity
L/s (PTTW)						m ³ /d (PTTW)
January	7316	236.0	414.9	12.48	11.67	1008
February	6017	214.9	334.8	12.50	11.67	1008
March	8876	286.3	432.6	12.50	11.67	1008
April	8962	298.8	417.9	10.90	11.67	1008
May	6161	198.7	392.5	10.91	11.67	1008
June	6893	229.8	495.3	10.94	11.67	1008
July	7635	246.3	355.4	10.93	11.67	1008
August	7824	252.4	413.4	10.98	11.67	1008
September	5642	188.1	305.2	10.98	11.67	1008
October	5158	166.4	321.0	11.03	11.67	1008
November	5615	187.2	423.1	11.01	11.67	1008
December	5879	189.7	262.6	10.88	11.67	1008
Total	81,982					
Average		224.6				
Maximum			495.3	12.50		

Comparison of Monthly Maximum Flow Rates



Comparison of Monthly Average and Maximum Daily Flow



Raw Water Taking (well #1)	Total Taking m3/d	Average Day m3/d	Max Day m3/d	Max Day % of MDWL allowable 1008 m3/d
2014	81,982.4	225	495	49.1%
2013	136,580.4	377	743	73.7%
2012	154,543.3	422	692	68.6%
2011	158,454.0	434	877	87.0%
2010	127,099.0	356	767	76.1%
2009	132,853.0	364	675	66.9%

Attached as *Appendix A*, find a summary of water taking, including average and maximum flows.

SECTION 4: SYSTEM FAILURES AND CORRECTIONS

There was one Ministry of the Environment Drinking Water Inspection conducted on May 27, 2014; Inspection Report # 1-BDWQ3. The facility received a 90.47 % rating and there were 3 non compliances. A summary of findings and actions taken follows.

Non-compliances found within the inspection report:

1. The Permit to Take Water (#7363-7SXNEP), which forms part of the MDWL for this facility, allows a maximum instantaneous flow rate of 700 litres per minute (11.67 litres per second) and a maximum daily water taking rate of 1,008,000 litres per day. Throughout the inspection period, the maximum daily flow rate was maintained well below the identified limit. However, from the end of May 2013 until the beginning of March 2014, there were almost daily exceedances of the maximum instantaneous flow rate, as measured in litres per second. As an explanation, it was indicated that the exceedances occur when the low lift pumps start as they automatically ramp to 100% to ensure adequate flow to feed the filter units. It is also believed that the exceedances are the result of a design issue with this type of US Filter membrane plant.

The system was throttled on March 5 and flows have not exceeded the permit since that time.

2. On September 12 and 13, 2013, an issue with the turbidimeter on one of the filter units resulted in no continuous monitoring of filtrate for between approximately 36 and 48 hours. Manual monitoring of turbidity at 15 minute intervals commenced on September 13, but a significant period of time passed with no turbidity monitoring of the filter effluent.

Operators were trained on the importance of monitoring turbidity whether the analyzer is functioning or broken.

3. Total suspended solids (TSS) composite sampling at the point of discharge from the backwash reservoir is required monthly, in accordance with Condition 4.4 (Table 7) of Schedule C of the MDWL. The October 2013 sample was missed.

Operators were provided with detailed sampling plans to help maintain proper sampling requirements throughout the year.

Adverse incidents

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
06-Aug-14	Filter Turbidity	Loss of analyzer	NTU	Analyzer was repaired and turbidity grabs were taken beginning on the second day of the analyzer being down	14-Aug-14
28-Apr-14	Pressure/repair	0	PSI	2 sets of bacteriological samples taken 24 hours apart	03-May-14

SECTION 5: CONCLUSION

The Kagawong WTP delivers water that, in all its treated and distribution samples, indicates the water to be free of bacteriological contamination.

The Kagawong WTP for the 2014 operating year was able to meet the demand of water use within the town without exceeding the Permit to Take Water or Municipal Drinking Water License daily limit. The instantaneous flows exceeded for the first quarter of 2014 but the issue was resolved when the system was throttled.

Attached as *Appendix B*, find the 2014 Annual Report as required by Drinking-Water System Regulation O. Reg. 170/03.

APPENDIX A

Annual Record of Water Taking

Service Population:

Total Design Capacity: 1002.0 m3/day

	01/2014	02/2014	03/2014	04/2014	05/2014	06/2014	07/2014	08/2014	09/2014	10/2014	11/2014	12/2014	Total	Avg	Max	Min
Raw Water / Flow - m ³ /d																
Max OL	414.900	334.800	432.600	417.900	392.500	495.300	355.400	413.400	305.226	321.000	423.100	262.600			495.300	
Mean OL	236.010	214.925	286.332	298.760	198.742	229.770	246.294	252.387	188.069	166.403	187.187	189.668		224.609		
Min OL	110.700	131.300	151.200	122.200	0.000	22.800	0.000	164.100	108.907	54.400	6.000	95.500				0.000
Total OL	7316.300	6017.900	8876.300	8962.800	6161.000	6893.100	7635.100	7824.000	5642.061	5158.500	5615.600	5879.700	81982.361			
Raw Water / Flow Rate - l/s																
Max OL	12.480	12.500	12.500	10.900	10.910	10.910	10.940	10.930	10.980	11.030	11.010	10.880			100.000	
Treated Water / Flow - m ³ /d																
Max OL	319.200	294.800	385.200	376.400	350.100	447.100	319.700	374.600	248.000	202.300	365.600	197.100			447.100	
Mean OL	220.055	209.543	264.374	293.393	218.532	261.087	245.155	233.006	164.814	143.310	176.212	164.975		218.987		
Min OL	122.800	91.800	137.900	148.000	49.400	74.000	169.400	154.400	86.400	59.000	17.700	121.500				17.700
Total OL	6821.700	5867.200	8195.600	8801.800	6774.500	7832.600	7599.800	7223.200	4944.433	4442.600	5286.350	1979.700	75769.483			

APPENDIX B

**Annual Report:
2014 Operating Year**

Section 1 Drinking-Water System Number: 210001843
 Drinking-Water System Name: KAGAWONG DRINKING WATER SYSTEM
 Drinking-Water System Owner: Title Holder: Municipality
 Drinking-Water System Category: Large Municipal Residential
 Period being reported: 01/2014 12/2014

Section 2	Population Served	
	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
	Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.	Township of Billings, Township Office 15 Old Mill Road Kagawong, Ontario POP 110
	Number of Designated Facilities served:	0
	Did you provide a copy of your annual report to all Designated Facilities you serve?	NA
	Number of Interested Authorities you report to:	0
	Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?	NA
	List all Drinking-Water Systems (if any), and their DWS Number which receive all of their drinking water from your system:	N/A
	Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?	NA
	Indicate how you notified system users that your annual report is available, and is free of charge.	Public access/notice via newspaper
	Indicate if you notified system users that your annual report is available and is free of charge using an alternate method	YES

Section 3 Facility Description
A US Filter membrane filtration plant supplying water to the Town of Kagawong drawing water from Mudge Bay, Lake Huron. The low lift system consists of two VFD controlled pumps and a sodium hypochlorite system for seasonal control of Zebra Mussels. The treatment consists of three membrane filter trains, a chlorine contact reservoir, clear well and two high lift pumps supplying the tower and the Town. Primary disinfection is achieved with Sodium Hypochlorite. Membrane cleaning involves the use of sodium hypochlorite or citric acid. Waste water is neutralized by calcium thiosulphate or sodium hydroxide, stored on site and periodically removed to disposal while the supernatant is discharged back to the Lake. The rated capacity of the system is 11.6 L/s. The elevated storage tower has a maximum volume of 600m3.

Section 4 Water Treatment Chemicals Sodium Hypochlorite (12%)
 Sodium Hydroxide
 Citric Acid
 Calcium Thiosulphate (Captor) De-chlorination agent

Section 5 Significant Expenses
 Were any significant expenses incurred to?
 Install required equipment
 Repair required equipment
 Replace required equipment

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

DIXON ELECTRIC (1983) LTD	REPL. OF DEFECTIVE SOFT START ON HIGH LIFT PUMP#2	\$1,401.20
DIXON ELECTRIC (1983) LTD	REPL. SOFT START HLP#2	\$1,401.20
QMI-SAI CANADA LIMITED	DWQMS AUDIT KAG. WTP	\$1,269.78
LANDMARK MUNICIPAL SERVICES ULC	SAFETY IMPROVEMENTS TO LADDER & RESCUE EQUIPMENT AS PER CSA REQUIREMENTS	\$8,056.90
EVOQUA WATER TECHNOLOGIES LLC	PARTS FOR MEMBRANE FILTER REP.	\$1,172.33
J.L. RICHARDS & ASSOC.- EFT	FILTER STUDY	\$6,780.00
Espanola Hub	MEMBRANE UPGRADE	\$13,488.28
Espanola Hub	ENG. SERVICES MEM. FILT. RETRO	\$11,052.12
Espanola Hub	ENG. SERV. FEE FOR MEMBRANE FILTRATION PROJECT.	\$3,462.50
Espanola Hub	ENG. SERV. FEE FOR MEMBRANE FILTRATION PROJECT.	\$6,218.50

Section 6 AWQI's
 Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
06-Aug-14	Filter Turbidity	Loss of analyzer	NTU	Analyzer was repaired and turbidity grabs were taken beginning on the second day of the analyzer being down	14-Aug-14
28-Apr-14	Pressure/ repair		0 PSI	2 sets of bacteriological samples taken 24 hours apart	03-May-14

Drinking-Water System Number: 210001843
 Drinking-Water System Name: KAGAWONG DRINKING WATER SYSTEM
 Drinking-Water System Owner: Title Holder: Municipality
 Drinking-Water System Category: Large Municipal Residential
 Period being reported: 01/2014 12/2014

Table 2

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

	No. of Samples Collected for period being reported	Range of Results	
		Minimum	Maximum
Free Chlorine Residual, In-House (mg/L) - DW	105	0.4	1.88
Turbidity, On-Line (NTU) - Filt1	8760	0	1.0
Turbidity, On-Line (NTU) - Filt2	8760	0	0.74
Turbidity, On-Line (NTU) - Filt3	8760	0	1.0
Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.7	3.95

Drinking-Water System Number: 210001843
 Drinking-Water System Name: KAGAWONG DRINKING WATER SYSTEM
 Drinking-Water System Owner: Title Holder: Municipality
 Drinking-Water System Category: Large Municipal Residential
 Period being reported: 01/2014 12/2014

Table 3

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

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
24-May-11	Backwash Total Suspended solids	13-Jan-14	2	mg/L
		03-Feb-14	2	mg/L
		03-Mar-14	2	mg/L
		02-Apr-14	2	mg/L
		05-May-14	3	mg/L
		02-Jun-14	2	mg/L
		14-Jul-14	2	mg/L
		05-Aug-14	2	mg/L
		02-Sep-14	2	mg/L
		02-Oct-14	3	mg/L
		10-Nov-14	2	mg/L
		01-Dec-14	2	mg/L
		AVG	2.17	mg/L

Drinking-Water System Number: 210001843
 Drinking-Water System Name: KAGAWONG DRINKING WATER SYSTEM
 Drinking-Water System Owner: Title Holder: Municipality
 Drinking-Water System Category: Large Municipal Residential
 Period being reported: 01/2014 12/2014

Table 4

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

TREATED WATER	Sample Date (mm/dd/yyyy)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Antimony: Sb (ug/L) - TW	13/01/2014	< 0.02	6.0	No	No
Arsenic: As (ug/L) - TW	13/01/2014	0.5	25.0	No	No
Barium: Ba (ug/L) - TW	13/01/2014	17.7	1000.0	No	No
Boron: B (ug/L) - TW	13/01/2014	36	5000.0	No	No
Cadmium: Cd (ug/L) - TW	13/01/2014	0.003	5.0	No	No
Chromium: Cr (ug/L) - TW	13/01/2014	< 0.5	50.0	No	No
Mercury: Hg (ug/L) - TW	13/01/2014	< 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	13/01/2014	< 1.0	10.0	No	No
Uranium: U (ug/L) - TW	13/01/2014	0.191	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	08/01/2013	0.07	1.5	No	No
Nitrite (mg/L) - TW	13/01/2014	< 0.003	1.0	No	No
Nitrite (mg/L) - TW	02/04/2014	< 0.003	1.0	No	No
Nitrite (mg/L) - TW	02/07/2014	< 0.003	1.0	No	No
Nitrite (mg/L) - TW	08/10/2014	< 0.003	1.0	No	No
Nitrate (mg/L) - TW	13/01/2014	0.174	10.0	No	No
Nitrate (mg/L) - TW	02/04/2014	0.189	10.0	No	No
Nitrate (mg/L) - TW	02/07/2014	0.156	10.0	No	No
Nitrate (mg/L) - TW	08/10/2014	0.137	10.0	No	No
Sodium: Na (mg/L) - TW	17/01/2011	6160	20*	Yes	Yes

*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified

when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

Drinking-Water System Number: 210001843
 Drinking-Water System Name: KAGAWONG DRINKING WATER SYSTEM
 Drinking-Water System Owner: Title Holder: Municipality
 Drinking-Water System Category: Large Municipal Residential
 Period being reported: 01/2014 12/2014

Table 5: Summary of Lead testing under Schedule 15.1 during this reporting period

Location Type	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
		Minimum	Maximum		
Distribution Water - Lead Results (ug/L)	0	N/A	N/A	10	0
Distribution Water - Alkalinity (mg/L)	0	66	74	n/a	n/a
Distribution Water - pH In-House	0	8.12	8.22	n/a	n/a

Drinking-Water System Number: 210001843
Drinking-Water System Name: KAGAWONG DRINKING WATER SYSTEM
Drinking-Water System Owner: Title Holder: Municipality
Drinking-Water System Category: Large Municipal Residential
Period being reported: 01/2014 12/2014

Table 6

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

	Sample Date (mm/dd/yyyy)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
TREATED WATER					
Alachlor (ug/L) - TW	13/01/2014	< 0.02	5.00	No	No
Aldicarb (ug/L) - TW	13/01/2014	< 0.01	9.00	No	No
Aldrin+Dieldrin (ug/L) - TW	13/01/2014	< 0.01	0.70	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	13/01/2014	0.020	5.00	No	No
Azinphos-methyl (ug/L) - TW	13/01/2014	< 0.02	20.00	No	No
Bendiocarb (ug/L) - TW	13/01/2014	< 0.01	40.00	No	No
Benzene (ug/L) - TW	13/01/2014	< 0.32	5.00	No	No
Benzo(a)pyrene (ug/L) - TW	13/01/2014	< 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	13/01/2014	< 0.33	5.00	No	No
Carbaryl (ug/L) - TW	13/01/2014	< 0.01	90.00	No	No
Carbofuran (ug/L) - TW	13/01/2014	< 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	13/01/2014	< 0.16	5.00	No	No
Chlordane: Total (ug/L) - TW	13/01/2014	< 0.01	7.00	No	No
Chlorpyrifos (ug/L) - TW	13/01/2014	< 0.02	90.00	No	No
Cyanazine (ug/L) - TW	13/01/2014	< 0.03	10.00	No	No
Diazinon (ug/L) - TW	13/01/2014	< 0.02	20.00	No	No
Dicamba (ug/L) - TW	13/01/2014	< 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	13/01/2014	< 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	13/01/2014	< 0.36	5.00	No	No
DDT + metabolites (ug/L) - TW	13/01/2014	< 0.01	30.00	No	No
1,2-Dichloroethane (ug/L) - TW	13/01/2014	< 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	13/01/2014	< 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	13/01/2014	< 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	13/01/2014	< 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	13/01/2014	< 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	13/01/2014	< 0.4	9.00	No	No
Dimethoate (ug/L) - TW	13/01/2014	< 0.03	20.00	No	No
Dinoseb (ug/L) - TW	13/01/2014	< 0.36	10.00	No	No
Diquat (ug/L) - TW	13/01/2014	< 1.0	70.00	No	No
Diuron (ug/L) - TW	13/01/2014	< 0.03	150.00	No	No
Glyphosate (ug/L) - TW	13/01/2014	< 1.0	280.00	No	No
Heptachlor+hepachlor epoxide (ug/L) - TW	13/01/2014	< 0.01	3.00	No	No
Lindane (ug/L) - TW	13/01/2014	< 0.01	4.00	No	No
Malathion (ug/L) - TW	13/01/2014	< 0.02	190.00	No	No
Methoxychlor (ug/L) - TW	13/01/2014	< 0.01	900.00	No	No
Metolachlor (ug/L) - TW	13/01/2014	< 0.01	50.00	No	No
Metribuzin (ug/L) - TW	13/01/2014	< 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	13/01/2014	< 0.3	80.00	No	No
Paraquat (ug/L) - TW	13/01/2014	< 1.0	10.00	No	No
Parathion (ug/L) - TW	13/01/2014	< 0.02	50.00	No	No
PCB (ug/L) - TW	13/01/2014	< 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	13/01/2014	< 0.15	60.00	No	No
Phorate (ug/L) - TW	13/01/2014	< 0.01	2.00	No	No
Picloram (ug/L) - TW	13/01/2014	< 1.0	190.00	No	No
Prometryne (ug/L) - TW	13/01/2014	< 0.03	1.00	No	No
Simazine (ug/L) - TW	13/01/2014	< 0.01	10.00	No	No
Temephos (ug/L) - TW	13/01/2014	< 0.01	280.00	No	No
Terbufos (ug/L) - TW	13/01/2014	< 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	13/01/2014	< 0.35	30.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	13/01/2014	< 0.14	100.00	No	No
Triallate (ug/L) - TW	13/01/2014	< 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	13/01/2014	< 0.44	50.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	13/01/2014	< 0.25	5.00	No	No
2,4,5-T (ug/L) - TW	13/01/2014	< 0.22	280.00	No	No
Trifluralin (ug/L) - TW	13/01/2014	< 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	13/01/2014	< 0.17	2.00	No	No
DISTRIBUTION WATER					
Trihalomethane: Total (ug/L) Annual Average - DW	01/01/2015	55.75	100.00	No	Yes