



Town of Petrolia
Bright's Grove
Water Treatment Plant

2012

Annual Report

Prepared for the Town of Petrolia
By the Ontario Clean Water Agency

Table of Contents

1.	INTRODUCTION.....	
1.1	Background.....	1
1.2	MAINTENANCE COSTS	2
1.3	Terms and Conditions of the MDWL	2
	Terms and Conditions of the DWWP.....	3
2.	CERTIFICATIONS	
2.1	MDWL / DWWP.....	4
2.2	Permit to Take Water.....	4
2.3	Facility Classification	5
2.4	Operator Certification	5
3.	WATER FLOWS	
3.1	Raw Water Flows	6
3.2	Treated Water Flows	7
3.3	WasteWater Flows	8
4.	CHEMICALS	
4.1	Properties	9
4.2	Usage	9
5.	SAMPLING PROGRAM & ANALYTICAL RESULTS	
5.1	Introduction	10
5.2	Turbidity/Disinfection	10
5.3	Distribution Chlorine Residuals	10
6.	NON-COMPLIANCE WITH TERMS AND CONDITIONS OF THE MDWL / DWWP	11
7.	DECLARATION OF COUNCIL RESOLUTION.....	
7.1	Declaration.....	12
7.2	Council Resolution.....	12
8.	REFERENCES.....	13

APPENDICES

- Appendix A** Sampling Program
Appendix B Sampling Results

LIST OF TABLES

Table 1-2	Petrolia Water Treatment Plant Maintenance Costs.....	1
Table 1-3	Terms & Conditions of MDWL / DWWP.....	2-3
Table 2-1	Municipal Drinking Water License / Drinking Water Works Permit	4
Table 2-2	Permit To Take Water (PTTW)	4
Table 2-3	Facility Classification	5
Table 2-4	Operator Certification.....	5
Table 3-1	Raw Water Flows for 2012.....	6
Table 3-2	Treated Water Flows for 2012	7
Table 3-3	Wastewater Flows for 2012	8
Table 4-1	Properties of Chemical Feed Systems	9
Table 4-2	Annual Chemical Usage at Petrolia WTP for 2012.....	9
Table 5-2	Distribution Free Chlorine Residuals.....	10
Table 6-1	Non-Compliance Items in the Terms and Conditions of the MDWL/DWWP	11

1. INTRODUCTION

BACKGROUND

The Petrolia WTP is located in the City of Sarnia at Bright's Grove, approximately 20 km from the Town of Petrolia. The municipal street address of the plant is 2701 Old Lakeshore Road.

The Petrolia Water Treatment Plant (WTP) currently supplies potable water to the Town of Petrolia and other service area municipalities including the Township of Enniskillen, Village of Oil Springs and Township of Dawn-Euphemia. The total population presently served by the Petrolia WTP is reported at 9,639.

The Petrolia WTP provides treatment for water drawn from Lake Huron. The main treatment processes in the plant are membrane filtration, fluoridation and chlorination. The permitted capacity for the plant to take water from Lake Huron is 15,586 m³/d, although the plant is approved for a treatment capacity of 12,000 m³/d.

This Report is the 2012 Annual Report for the Town of Petrolia Bright's Grove WTP and follows the format presented in Safe Drinking Water Act, O Reg. 170/03.

MAINTENANCE COSTS

Operation and Maintenance costs referred to in this table are costs incurred throughout the calendar year of 2012.

Table 1-2 lists the maintenance costs of the Petrolia Water Treatment Plant.

Table 1-2 Petrolia Water Treatment Plant Maintenance Costs

Item	Cost (\$)
Repair and maintenance	29,334.00
Grounds and Janitorial Maintenance	5,500
Sludge haulage	7,250
H&S upgrades	568
Solids Residual cleanout	0
Capital Purchases by Town of Petrolia	Not Available
Total	42,652

TERMS AND CONDITIONS OF THE MUNICIPAL DRINKING WATER LICENSE AND THE DRINKING WATER WORKS PERMIT

Table 1-3 lists the headings of the Terms and Conditions of the Municipal Drinking Water License (MDWL) and the Drinking Water Works Permit (DWWP)

Table 1-3 Terms and Conditions of the MDWL / DWWP

Section No.	Heading
MDWL	
Schedule A	Drinking Water System Information -License; Permits To Take Water; Financial Plans; Accredited Operating Authority
Schedule B	General Conditions 1.0 Definitions 2.0 Applicability 3.0 License Expiry 4.0 License Renewal 5.0 Compliance 6.0 License and Drinking Water Works Permit Availability 7.0 Permits To Take Water 8.0 Financial Plan 9.0 Interpretation 10.0 Adverse Effects 11.0 Change of Owner or Operating Authority 12.0 Information to be Provided 13.0 Records Retention 14.0 Chemicals and Material 15.0 Drawings 16.0 Operations and Maintenance Manual
Schedule C	System Specific Conditions 1.0 Performance Limits 2.0 Flow Measurement and Recording Requirements 3.0 Calibration of Flow Measuring Devices 4.0 Additional Sampling, Testing and Monitoring
Schedule D	Conditions for Relief from Regulatory Requirements 1.0 Lead Regulatory Relief

Section No.	Heading
DWWP	
Schedule A	Drinking Water System Description
Schedule B	<p>General</p> <p>1.0 Applicability</p> <p>2.0 Alterations to the Drinking Water System</p> <p>3.0 Watermain Additions, Modifications, Replacements and Extensions</p> <p>4.0 Minor Modifications to the Drinking Water System</p> <p>5.0 Equipment With Emissions to Air</p> <p>6.0 Previously Approved Works</p> <p>7.0 System Specific Conditions</p>

2. CERTIFICATIONS

This section covers all certifications related to Petrolia WTP and distribution system, including:

- ♦ Municipal Drinking Water License
- ♦ Drinking Water Works Permit
- ♦ Permits To Take Water;
- ♦ Facility/distribution system classification; and,
- ♦ Operator classification.

LICENSES AND PERMITS

Table 2-1 summarizes the Municipal Drinking Water License and the Drinking Water Works Permit

Table 2-1 Certificates

Certificate Type	Certificate Number	Date Issued	Expiry Date	Application Renewal Date	Brief Description of Works Approved
Municipal Drinking Water License	License Number: 034-101 Issue Number: 4	Aug 23, 2011	Aug 21, 2016	Feb 20, 2016	Contains Drinking Water System information, general conditions, system specific conditions and conditions for relief from regulatory requirements
Drinking Water Works Permit	Permit Number : 034-201 Issue Number : 1	Aug 19, 2011			Contains Drinking Water System description and general information

PERMIT TO TAKE WATER

The Permit to Take Water (PTTW) for the Petrolia WTP is summarized in Table 2-2

Table 2-2 Permit To Take Water (PTTW)

Permit Number	Source	Issued Date	Expiry Date	Permitted Amount of Taking
5412-6RNNF5	Lake Huron	Sept 29, 2007	April 30, 2013	15,586 m3/day

2.3 FACILITY CLASSIFICATION

Details of Petrolia facility certifications are presented in Table 2-3.

Table 2-3 Facility Classification

Facility Type	Facility Name	Facility Level	Certificate No.	Date of Issue
Plant	Petrolia Water Treatment Plant	II	WT #805	November 9, 2005
Distribution	Petrolia Water Distribution System	II	WD #2908	November 1994

OPERATOR CERTIFICATION

The Petrolia Water Supply System (PWSS) was operated by the Town of Petrolia & the Ontario Clean Water Agency. Effective November 15, 2010, the Ontario Clean Water Agency became the operating authority for the Petrolia Water Treatment Plant and the main transmission line up to Discovery Line. Staff members responsible for the water supply and distribution system are licensed operators with their certifications presented in Table 2-4.

Table 2-4 Operator Certification

Name	Position	Certificate Level		Certification Number		Expiry Date	
		Plant	Dist.	Plant	Dist.	Plant	Dist.
Mike Weber	WTP Senior Operator ORO	III	III	12011	56617	Feb. 2015	July 2014
Terry Bender	WTP ORO backup	IV	IV	1011	1512	May 2014	May 2014
Troy Simpson	WTP Operator	II	II	73949	76899	Sept. 2015	June 2015
Dave Hunt	WTP ORO backup	IV	IV	3082	3083	Aug 2014	Aug 2014
Piyush Patel	WTP Operator	I	I	64950	64951	Mar 2013	Mar 2013

3. WATER FLOWS

This section gives a summary of records made under the permit to take water.

This section also gives a summary and discussion of the quantity of treated water supplied in 2012 compared to the rated capacity specified in the Municipal Drinking Water License and the Drinking Water Works Permit, including monthly average and maximum daily flows.

Additional, this section accounts for the wastewater production from the water treatment process.

RAW WATER FLOWS

A summary of the daily quantities of water being taken from Lake Huron (i.e., raw water flow rates) are shown in Table 3-1.

The permitted capacity for the plant to take water from Lake Huron is 15,586 m³/d. The raw water supplied to the treatment system should not exceed this value at anytime.

Table 3-1 shows that the highest maximum day demand of 8,365 m³/d has not exceeded the flow allowed in the PTTW of 15,586 m³/d.

Table 3-1 Raw Water Flows for 2012

Date	Total (m ³)	Max. Day (m ³ /d)
January	146,611	7,085
February	127,704	5,408
March	139,617	4,838
April	149,515	5,678
May	175,807	6,810
June	188,726	8,092
July	220,564	8,365
August	194,930	7,242
September	173,471	6,753
October	158,605	6,726
November	137,458	5,422
December	147,653	5,964
2012 Total/Max	1,960,661	

TREATED WATER FLOWS

The treated water flows for 2012 are shown in Table 3-2.

Table 3-2 shows that the plant's rated capacity of 12,000 m³/d has not been exceeded in 2012. The maximum daily flow was 6,790 m³ or 56.58% of rated capacity.

Table 3-2 Treated Water Flows for 2012

Date	Total(m³)	Max. Day (m³/d)	% Max of Rated Capacity
January	115,502	5,747	47.9
February	100,117	4,277	35.6
March	109,162	3,837	32
April	117,471	4,532	37.8
May	139,230	5,470	45.6
June	151,541	6,645	55.4
July	180,187	6,790	56.6
August	154,924	5,879	49
September	136,465	5,394	45
October	123,791	5,398	45
November	106,775	4,254	35.5
December	113,283	4,687	39.1
2012 Total/Max	1,548,448		

WASTEWATER FLOWS

Wastewater is generated from flushing & cleaning the strainers & racks. Table 3-3 shows wastewater production monthly and this volume as a percent of raw water flows.

Table 3-3 Wastewater Flows for 2012

Date	Total Monthly Wastewater Volume (m³)	% Wastewater to Raw Flow
January	16022	12
February	14017	12
March	16167	13
April	16459	12
May	17894	11
June	16802	10
July	15982	8
August	18870	11
September	18464	12
October	18022	12
November	16279	13
December	19066	14
2012 Total/Max.	204044	11

4. CHEMICALS

This section gives a summary of listing treatment chemicals used, including average dosage rates with special reference to any abnormal usage.

PROPERTIES

Table 4-1 shows the properties of the chemicals used at Petrolia WTP.

Table 4-1 Properties of Chemical Feed Systems

Chemical	Purpose	Concentration (%)	Specific Gravity (g/mL)	Target Dosage (mg/L)
Chlorine gas	Pre-chlorination	100	-	1.3-2.5 mg/L
Liquid Polymer	Wastewater settling	50	1.10	4-25 mg/L
Hydrofluorosilicic acid	Fluoridation	25	1.204	0.4 - 0.8 mg/L

USAGE

Table 4-2 summarizes the annual chemical usage and monthly average dosages.

Table 4-2 Annual Chemical Usage at Petrolia WTP for 2012

Chemical	Volume (L) or Weight (kg)	Range of Monthly Avg. Dosages (mg/L)	Comments of Any Abnormal Usage
Chlorine gas	2900 kg	1.2 to 2.6	Varies with raw turbidity
Liquid Polymer	654 kg	0.0 to 1.2	Varies with raw turbidity
Hydrofluorosilicic acid	2401 kg	0.3 to 0.6	0.2 mg/l exists naturally in feedwater

5. SAMPLING ANALYTICAL RESULTS

SAMPLING PROGRAM - APPENDIX A

SAMPLING RESULTS - APPENDIX B

5.1.1 Introduction

Appendix B contains the sampling results for 2012, which are summarized in tables.

5.1.2 Turbidity/Disinfection

Raw water turbidity is greatest during the spring run-off and fall turnover when temperatures and flows are low. Based on the online surface scatter turbidity meter data, the raw water turbidity reached as high as 214.54 NTU, and had an average of 29.71 NTU. Based on site grab samples raw water turbidity reached a high of 352 NTU

Filtrate turbidity at Petrolia WTP is measured continuously on the each rack using three separate on-line HACH laser turbidity meters. SCADA captures data every 1 minute. Treated turbidity on the combined turbidity analyzer recorded daily ranged from 0.018 to 0.190 NTU

5.1.3 Distribution Chlorine Residuals

O Reg 170/03 states that a minimum free chlorine residual of 0.2 mg/L or a minimum combined chlorine residual of 1.0 mg/L should be maintained in the water distribution system.

O Reg 170/03 requires and states that the distribution water quality is considered to be adverse if the free chlorine residual is measured to be less than 0.05 mg/L. The corrective action is to restore chlorination immediately and follow the instructions as directed by the Medical Officer of Health.

A statistical analysis of the free chlorine residuals measured in the distribution system is presented in Table 5-2.

Table 5-2 Distribution Free Chlorine Residuals

Location	Sample Count	Minimum	Maximum
Distribution System	260	0.84	1.59

6. NON-COMPLIANCE WITH TERMS AND CONDITIONS OF THE MUNICIPAL DRINKING WATER LICENSE AND THE DRINKING WATER WORKS PERMIT

This section provides details of any non-compliance in 2012 with the Terms and Conditions of the latest Municipal Drinking Water License (MDWL) and the Drinking Water Works Permit (DWWP) as well as details of how and when the non-compliance was corrected.

Table 6-1 Non-Compliance Items in the Terms and Conditions of the MDWL / DWWP

	Description	Resolution
1	<p>Outside the 72 hour review of data captured by continuous online analyzers – A time sensitive battery was replace in the SCADA computer on Fri. Dec 14, 2012; the battery defaulted to the year 2013 therefore when the operator attempted to review data on the weekend he could not. The computer tech who installed the battery was contacted on Monday, Dec. 17, all data was transferred and review.</p> <p>No data was lost. The operational process is fully alarmed; this was an isolated incident that resulted in no adverse water quality incident.</p>	<p>Notified MOE inspector Michelle Vandenneuvel of the situation that occurred. She was notified verbally and via email of this occurrence; no follow up was required.</p>

7. DECLARATION OF COUNCIL RESOLUTION**DECLARATION**

DECLARATION	
I, the undersigned, hereby declare that, to the best of my knowledge, the information contained in this report and the information in support of this report is complete and accurate in every way.	
Name	Title
Deb Thomson	Process & Compliance Tech
2701 Old Lakeshore Road Bright's Grove, Ontario N0N 1C0	Tel: (519) 899-2304 Fax: (519) 899-2306 E-mail: dthomson@ocwa.com
February 26, 2013	

COUNCIL RESOLUTION

Note: The author of this report requests that this report be presented to council & a motion to accept the report is included in the official minutes. Please sign this declaration & return a copy to the WTP ORO.

COUNCIL RESOLUTION	
I, the undersigned, hereby declare that this report has been presented to council.	
Name	Title
Address	Contact Numbers
Town of Petrolia 411 Greenfield Street Petrolia, Ontario N0N 1R0	Tel: (519) 882-2350 Fax: (519) 882-3373
Date	Signature

8. REFERENCES

- | | |
|-----------|---|
| MOE, 2002 | Ministry of the Environment. 2002. Safe Drinking Water Act. |
| KMK, 2001 | KMK Consultants Limited. February 2001. Petrolia Water Treatment Plant, First Engineers' Report. |
| KMK, 2004 | KMK Consultants Limited. January 2004. Town of Petrolia, Petrolia Water Treatment Plant Design Report. Membrane Filtration Option to Meet Ontario's New Drinking Water Regulations. |
| MOE, 2010 | Ministry of the Environment. 2010. Ontario Drinking Water Systems Regulations. |

APPENDICES

SAMPLING PROGRAM

Table C-1 Sampling Protocol

Parameter	Frequency Required	Additional Frequency	Chemicals Analyzed
Raw Water			
Microbiological	Weekly	-	Table A (excluding HPC or BKG)
Turbidity	Continuous	Daily (On-line Reading)	Turbidity
pH	Continuous	Daily (Grab sample measurement)	pH
Temperature	Continuous	Daily (Grab sample)	Temperature
Treated Water			
Microbiological	Weekly	-	Table A
Turbidity	Continuous	Daily (On-line Reading)	Turbidity
Chlorine	Continuous	Daily (Grab sample measurement – free and total)	Free Chlorine
Volatile Organics	Annually	-	Table B
Inorganics	Annually	-	Table C
Nitrates/Nitrites	Quarterly	-	Nitrates/Nitrites
Pesticides & PCB	Annually	-	Table D
Fluoride	Continuous	Daily (Grab sample measurement)	Fluoride
pH	Continuous	Daily (Grab sample measurement)	pH
Distribution Water			
Microbiological	Weekly (Total of 15 Monthly) ¹	Weekly (Total of 24 Monthly) ¹	Table A
Chlorine	Grab samples simultaneous to microbiological samples	-	Free Chlorine
Volatile Organics	Quarterly (THMs at a point reflecting maximum residence time in the distribution system)	-	Only THMs
Inorganics	Annually (Lead at a point reflecting maximum residence time in the distribution system)	-	Only Lead
Backwash/Wastewater Effluent to Lake Huron			
Total Suspended Solids	Quarterly	-	Total Suspended Solids
Note: 1. A minimum of 8 samples, plus an additional 1 sample per 1,000 population, shall be taken monthly, with at least 1 sample taken every week. Given a population of 7,000 this equals to a minimum of 15 samples.			

Table C-2 Tables 1 & 2, Schedules 23 & 24 Ontario Drinking Water O.Reg 170/03

Table 1 - Microbiological		
Total Coliforms	<i>Escherichia coli</i> or fecal coliforms	Heterotrophic plate count or total coliform background count by membrane filter analysis.
Table 2 Schedule 24 – Volatile Organics		
Benzene Carbon Tetrachloride 1,2-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichloroethane	1,1-Dichloroethylene Dichloromethane Ethylbenzene Monochlorobenzene Tetrachloroethylene	Toluene Trihalomethanes Trichloroethylene Vinyl chloride Xylene
Table 2 Schedule 23 – Inorganics		
Arsenic Barium Boron Cadmium Chromium	Copper Fluoride Iron Lead- O.Reg 170/03 (Sched 15.1) Manganese	Mercury Nitrite Nitrate Selenium Uranium
Table 2 Schedule 24 – Pesticides and PCBs		
Alachlor Aldicarb Aldrin+Dieldrin Atrazine Azinphos-methyl Bendiocarb Bromoxynil Carbaryl Carbofuran Chlordane(Total) Chlorpyrifos Cyanazine Diazinon Dicamba 2,4-Dichlorophenol	DDT 2,4-D Diclofop-methyl Dimethoate Dinoseb Diquat Diuron Glyphosate Heptachlor+Heptachlor epoxide Lindane(Total) Malathion Methoxychlor Metolachlor Metribuzin	Paraquat Parathion Pentachlorophenol Phorate Picloram PCB Prometryne Simazine Temephos Terbufos 2,3,4,6-Tetrachlorophenol Triallate 2,4,6-Trichlorophenol Trifluralin 2,4,5-T

SAMPLING RESULTS

Annual Raw Water & Treated Water Analysis Report



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OCWA-Petrolia (Town of Petrolia-Brights Grove)

Attn : Dave Hunt

Box 790, 1215 Fort St.
Sarnia, ON
N7T 7J9,

Phone: 519-344-7429x251/519-312-1344
Fax: pdf

Works #: 220002903

February-28-12

Date Rec. : 15 February 2012

LR Report: CA14399-FEB12

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Approval Date	4: Analysis Approval Time	5: MAC	6: Half MAC	7: AO/OG	8: MDL	9: RW RW-Waterworks -Raw Water	10: TW TW-Waterworks -Treated Water
Sample Date & Time									14-Feb-12 09:00	14-Feb-12 09:55
Temperature Upon Receipt [°C]					---	---	---	---	6.0	6.0
Free Chlorine [mg/L]	---	---	---	---	---	---	---	---	---	1.61
Alkalinity [mg/L as CaCO ₃]	17-Feb-12	10:57	21-Feb-12	14:26	---	---	30-500	2	82	80
pH [no unit]	17-Feb-12	10:57	21-Feb-12	14:26	---	---	6.5-8.5	0.05	7.95	7.77
Colour [TCU]	15-Feb-12	21:13	16-Feb-12	14:32	---	---	5	3	3 <MDL	3 <MDL
Turbidity [NTU]	15-Feb-12	21:01	21-Feb-12	14:27	1	0.5	5	0.13	10.9	0.13 <MDL
Total Dissolved Solids [mg/L]	15-Feb-12	20:58	17-Feb-12	07:59	---	---	500	30	115	100
Fluoride [mg/L]	16-Feb-12	14:34	17-Feb-12	08:36	1.5	0.75	---	0.06	0.08	0.36
Organic Nitrogen [mg/L]	21-Feb-12	21:54	21-Feb-12	21:54	---	---	0.15	0.05	0.06	0.09
Total Kjeldahl Nitrogen [mg/L]	15-Feb-12	21:05	21-Feb-12	21:54	---	---	---	0.05	0.11	0.09
Ammonia+Ammonium (N) [mg/L]	16-Feb-12	08:00	17-Feb-12	08:01	---	---	---	0.04	0.05	< 0.04
Chloride [mg/L]	16-Feb-12	15:42	24-Feb-12	16:21	---	---	250	0.03	7.9	9.4
Sulphate [mg/L]	16-Feb-12	15:42	24-Feb-12	16:21	---	---	500	0.06	16	16
Nitrite (as N) [mg/L]	15-Feb-12	19:26	23-Feb-12	13:45	1	0.5	---	0.005	0.005 <MDL	0.005 <MDL
Nitrate (as N) [mg/L]	15-Feb-12	19:26	23-Feb-12	13:45	10	5	---	0.013	0.300	0.325
Nitrate + Nitrite (as N) [mg/L]	15-Feb-12	19:26	23-Feb-12	13:45	10	5	---	0.013	0.300	0.325
Dissolved Organic Carbon [mg/L]	17-Feb-12	09:00	21-Feb-12	13:36	---	---	5	0.2	1.2	1.2
Sulphide (as H ₂ S) [mg/L]	16-Feb-12	10:15	17-Feb-12	09:44	---	---	0.05	0.006	0.006 <MDL	0.007

Original LIMS

Page 1 of 5

Data reported represents the sample submitted to SGS. Reproduction of this analytical report in full or in part is prohibited without prior written approval. Please refer to SGS General Conditions of Services located at http://www.sgs.com/terms_and_conditions_service.htm. (Printed copies are available upon request.)

Test method information available upon request. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.



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Works #: 220002903

LR Report : CA14399-FEB12

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Approval Date	4: Analysis Approval Time	5: MAC	6: Half MAC	7: AO/OG	8: MDL	9: RW- Waterworks -Raw Water	10: TW- Waterworks -Treated Water
Hardness [mg/L as CaCO ₃]	16-Feb-12	16:00	24-Feb-12	09:27	---	---	80-100	0.05	99.1	106
Aluminum [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	---	---	100	0.2	221	99.6
Copper [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	---	---	1000	0.5	1.4	1.0
Iron [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	---	---	300	3.0	451	164
Manganese [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	---	---	50	0.01	7.54	7.22
Zinc [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	---	---	5000	1	3	2
Antimony [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	6	3	---	0.02	0.20	0.14
Arsenic [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	25	12.5	---	0.2	0.7	0.8
Barium [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	1000	500	---	0.01	17.7	16.1
Boron [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	5000	2500	---	0.2	15	14
Cadmium [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	5	2.5	---	0.003	0.003 <MDL	0.007
Chromium [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	50	25	---	0.5	0.6	0.8
Mercury [ug/L]	17-Feb-12	10:34	20-Feb-12	10:40	1	0.5	---	0.02	0.02 <MDL	0.02 <MDL
Sodium [mg/L]	16-Feb-12	16:00	24-Feb-12	09:28	20*	---	200	0.01	4.73	5.81
Selenium [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	10	5	---	1	1 <MDL	1 <MDL
Uranium [ug/L]	16-Feb-12	16:00	24-Feb-12	09:28	20	10	---	0.001	0.267	0.280
MIB [ng/L]	17-Feb-12	15:09	22-Feb-12	14:38	---	---	---	3	3 <MDL	3 <MDL
Geosmin [ng/L]	17-Feb-12	15:09	22-Feb-12	14:38	---	---	---	3	3 <MDL	3 <MDL
Methane [L/m ³]	23-Feb-12	14:15	23-Feb-12	15:08	---	---	3	0.006	0.008	0.008
Ethylbenzene [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	---	---	2.4	0.33	0.33 <MDL	0.33 <MDL
Toluene [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	---	---	24	0.36	0.36 <MDL	0.36 <MDL
Xylene (total) [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	---	---	300	0.39	0.39 <MDL	0.39 <MDL
o-xylene [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	---	---	---	0.17	0.17 <MDL	0.17 <MDL
m/p-xylene [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	---	---	---	0.39	0.39 <MDL	0.39 <MDL
Benzene [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	5	2.5	---	0.32	0.32 <MDL	0.32 <MDL
Carbon tetrachloride [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	5	2.5	---	0.16	0.16 <MDL	0.16 <MDL
1,2-Dichlorobenzene [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	200	100	3	0.41	0.41 <MDL	0.41 <MDL
1,4-Dichlorobenzene [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	5	2.5	1	0.36	0.36 <MDL	0.36 <MDL
1,1-Dichloroethylene (vinylidene chloride) [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	14	7	---	0.33	0.33 <MDL	0.33 <MDL
1,2-Dichloroethane [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	5	2.5	---	0.35	0.35 <MDL	0.35 <MDL
Dichloromethane [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	50	25	---	0.35	0.35 <MDL	0.35 <MDL
Monochlorobenzene [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	80	40	30	0.30	0.3 <MDL	0.3 <MDL
Tetrachloroethylene (perchloroethylene) [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	30	15	---	0.35	0.35 <MDL	0.35 <MDL

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Page 2 of 5

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Phone: 705-652-2000 FAX: 705-652-6365

Works #: 220002903

LR Report : CA14399-FEB12

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Approval Date	4: Analysis Approval Time	5: MAC	6: Half MAC	7: AO/OG	8: MDL	9: RW-Waterworks -Raw Water	10: TW -Treated Water
Trichloroethylene [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	5	2.5	—	0.44	0.44 <MDL	0.44 <MDL
Vinyl Chloride [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	2	1	—	0.17	0.17 <MDL	0.17 <MDL
Trihalomethanes (total) [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	100	50	—	0.37	0.48	8.4
Bromoform [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	—	—	—	0.34	0.34 <MDL	0.34 <MDL
Bromodichloromethane [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	—	—	—	0.26	0.26 <MDL	2.6
Chloroform [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	—	—	—	0.29	0.48	4.3
Dibromochloromethane [ug/L]	16-Feb-12	15:38	21-Feb-12	11:02	—	—	—	0.37	0.37 <MDL	1.5
Diquat [ug/L]	16-Feb-12	08:31	22-Feb-12	16:55	70	35	—	1	1 <MDL	1 <MDL
Paraquat [ug/L]	16-Feb-12	08:31	22-Feb-12	16:55	10	5	—	1	1 <MDL	1 <MDL
Glyphosate [ug/L]	17-Feb-12	08:32	22-Feb-12	16:31	280	140	—	6	6 <MDL	6 <MDL
Polychlorinated Biphenyls (PCBs) - Total [ug/L]	16-Feb-12	15:14	23-Feb-12	14:42	3	1.5	—	0.04	0.04 <MDL	0.04 <MDL
Benzo(a)pyrene [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	0.01	0.005	—	0.004	0.004 <MDL	0.004 <MDL
Alachlor [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	5	2.5	—	0.02	0.02 <MDL	0.02 <MDL
Aldicarb [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	9	4.5	—	0.01	0.01 <MDL	0.01 <MDL
Aldrin + Dieldrin [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	0.7	0.35	—	0.01	0.01 <MDL	0.01 <MDL
Aldrin [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01 <MDL	0.01 <MDL
Dieldrin [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01 <MDL	0.01 <MDL
Atrazine + N-dealkylated metabolites [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	5	2.5	—	0.01	0.03	0.03
Atrazine [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.02	0.01
Desethyl atrazine [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01	0.01
Azinphos-methyl [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	20	10	—	0.02	0.02 <MDL	0.02 <MDL
Bendiocarb [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	40	20	—	0.01	0.01 <MDL	0.01 <MDL
Carbaryl [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	90	45	—	0.01	0.01 <MDL	0.01 <MDL
Carbofuran [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	90	45	—	0.01	0.01 <MDL	0.01 <MDL
Chlordane (total) [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	7	3.5	—	0.01	0.01 <MDL	0.01 <MDL
a-chlordane [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01 <MDL	0.01 <MDL
g-chlordane [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01 <MDL	0.01 <MDL
Oxychlordane [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01 <MDL	0.01 <MDL
Chlorpyrifos [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	90	45	—	0.02	0.02 <MDL	0.02 <MDL
Cyanazine [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	10	5	—	0.03	0.03 <MDL	0.03 <MDL
Diazinon [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	20	10	—	0.02	0.02 <MDL	0.02 <MDL
(DDT) + Metabolites [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	30	15	—	0.01	0.01 <MDL	0.01 <MDL
op-DDT [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01 <MDL	0.01 <MDL

Original LIMS

Page 3 of 5

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LR Report : CA14399-FEB12

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Approval Date	4: Analysis Approval Time	5: MAC	6: Half MAC	7: AO/OG	8: MDL	9: RW- Waterworks -Raw Water	10: TW- Waterworks -Treated Water
pp-DDD [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01 <MDL	0.01 <MDL
pp-DDE [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01 <MDL	0.01 <MDL
pp-DDT [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01 <MDL	0.01 <MDL
Dimethoate [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	20	10	—	0.03	0.03 <MDL	0.03 <MDL
Diuron [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	150	75	—	0.03	0.03 <MDL	0.03 <MDL
Heptachlor + Heptachlor Epoxide [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	3	1.5	—	0.01	0.01 <MDL	0.01 <MDL
Heptachlor [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01 <MDL	0.01 <MDL
Heptachlor epoxide [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	—	—	—	0.01	0.01 <MDL	0.01 <MDL
Lindane [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	4	2	—	0.01	0.01 <MDL	0.01 <MDL
Malathion [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	190	95	—	0.02	0.02 <MDL	0.02 <MDL
Methoxychlor [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	900	450	—	0.01	0.01 <MDL	0.01 <MDL
Metolachlor [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	50	25	—	0.01	0.01 <MDL	0.01 <MDL
Metribuzin [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	80	40	—	0.02	0.02 <MDL	0.02 <MDL
Parathion [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	50	25	—	0.02	0.02 <MDL	0.02 <MDL
Phorate [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	2	1	—	0.01	0.01 <MDL	0.01 <MDL
Prometryne [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	1	0.5	—	0.03	0.03 <MDL	0.03 <MDL
Simazine [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	10	5	—	0.01	0.01 <MDL	0.01 <MDL
Temephos [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	280	140	—	0.01	0.01 <MDL	0.01 <MDL
Terbufos [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	1	0.5	—	0.01	0.01 <MDL	0.01 <MDL
Triallate [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	230	115	—	0.01	0.01 <MDL	0.01 <MDL
Trifluralin [ug/L]	16-Feb-12	07:43	22-Feb-12	11:35	45	22.5	—	0.02	0.02 <MDL	0.02 <MDL
2,4-dichlorophenoxyacetic acid (2,4-D) [ug/L]	17-Feb-12	07:48	21-Feb-12	15:00	100	50	—	0.19	0.19 <MDL	0.19 <MDL
2,4,5-trichlorophenoxyacetic acid (2,4,5-T) [ug/L]	17-Feb-12	07:48	21-Feb-12	15:00	280	140	20	0.22	0.22 <MDL	0.22 <MDL
Bromoxynil [ug/L]	17-Feb-12	07:48	21-Feb-12	15:00	5	2.5	—	0.33	0.33 <MDL	0.33 <MDL
Dicamba [ug/L]	17-Feb-12	07:48	21-Feb-12	15:00	120	60	—	0.20	0.20 <MDL	0.20 <MDL
Didofop-methyl [ug/L]	17-Feb-12	07:48	21-Feb-12	15:00	9	4.5	—	0.40	0.40 <MDL	0.40 <MDL
Dinoseb [ug/L]	17-Feb-12	07:48	21-Feb-12	15:00	10	5	—	0.36	0.36 <MDL	0.36 <MDL
Picloram [ug/L]	17-Feb-12	07:48	21-Feb-12	15:00	190	95	—	0.25	0.25 <MDL	0.25 <MDL
2,4-dichlorophenol [ug/L]	17-Feb-12	07:48	21-Feb-12	15:00	900	450	0.3	0.15	0.15 <MDL	0.15 <MDL
2,4,6-trichlorophenol [ug/L]	17-Feb-12	07:48	21-Feb-12	15:00	5	2.5	2	0.25	0.25 <MDL	0.25 <MDL
2,3,4,6-tetrachlorophenol [ug/L]	17-Feb-12	07:48	21-Feb-12	15:00	100	50	1	0.14	0.14 <MDL	0.14 <MDL
Pentachlorophenol [ug/L]	17-Feb-12	07:48	21-Feb-12	15:00	60	30	30	0.15	0.15 <MDL	0.15 <MDL
Heterotrophic Plate Count (HPC) [cfu/1mL]	15-Feb-12	12:10	17-Feb-12	11:07	—	—	—	—	9	0

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Page 4 of 5

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Total and / or Free Residual Chlorine was not analyzed by the analytical laboratory at SGS.

MAC - Maximum Acceptable Concentration

Half MAC - Half of the Maximum Acceptable Concentration

AO/OG - Aesthetic Objective / Operational Guideline

MDL - SGS Method Detection Limit

*Sodium > 20mg/L is an indicator of adverse water quality.


Carrie Greenlaw
Project Specialist
Environmental Services, Analytical

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Page 5 of 5

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Table B-1 Chemical/Physical Characteristics of the Distribution Water

Parameter	Units	Criteria	2011				
			SC	Minimum	Maximum	Average	Exceeds
Lead	ug/L	10	9	.04	1.5	.44	
Trihalomethanes	ug/L	100 (MAC)	20	21	43	32.25	

Table B-2 Bacteriological Data

	Number of Samples	Range of E.Coli or Fecal Results (min#)-(max#)	Range of Total Coliform (min# - max#)	Number of HPC Samples	Range of HPC Results (min#)-(max#)
Raw	52	0-100 cfu/100ml	0-17,800 cfu/100ml	0	
Treated	52	0-0 cfu/100ml	0-0 cfu/100ml	52	<10-20 cfu/100ml
Distribution	260	0-0c fu/100ml	0-0 cfu/100ml	260	<10->2000 cfu/100ml

Table B-3 Operational testing done under Schedule 7, 8 or 9 Regulation 170/03 during the period covered by this annual report

	Number of Grab Samples	Range of Results (min#)-(max#)	Unit of Measure
Turbidity	8760	0.017-0.999	NTU
Chlorine	8760	0.79-3.18	mg/l
Fluoride (If the DWS provides fluoridation)	8760	Ave 0.59	mg/l

Table B-4 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
Not Applicable				