

South Dundas Water Treatment Plant
99 Augusta Street, Morrisburg



Supervisor of Water & Wastewater
Ian Kemp

2013 Annual Report

2013 ANNUAL REPORT ON DRINKING WATER QUALITY

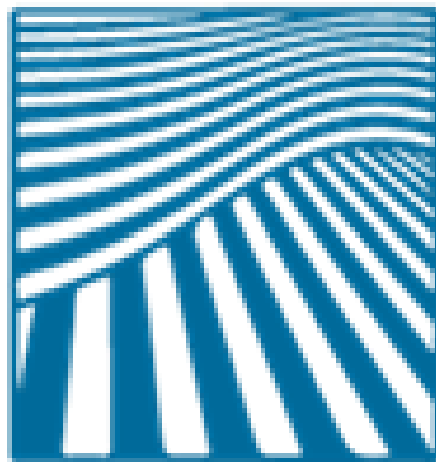
Reporting period - JAN 1st - DEC 31st 2013

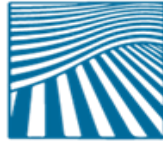
SOUTH DUNDAS WATER TREATMENT PLANT 99 AUGUSTA ST MORRISBURG

Drinking Water System Number : 220001012

Drinking Water System Owner : Municipality of South Dundas

Drinking Water System Category : Large Municipal Residential





2013 Annual Report

Availability

Public Access via the web <http://www.southdundas.com>
Public Access via Public Request Municipal Offices, 34 Ottawa Street,
Morrisburg
Public Notice via Local Newspaper

Free copies of this report and the Summary report prepared in accordance to Schedule 22 of Ontario Regulation 170/03, are available by public request at the municipal offices, and at www.southdundas.com. Notices of availability are generally made through the local newspapers and radio. Further information on the Drinking Water Regulations can be found on the Ministry of the Environment web site at www.ene.gov.on.ca.

Drinking Water Quality

The Municipality of South Dundas is proud to present this annual report on drinking water quality. This report has been prepared in accordance to Section 11 of Ontario Regulation 170/03. Regulation 170/03 sets requirements for public waterworks with regard to sampling and testing, levels of treatment, licensing of staff, and notification of authorities and the public about water quality.



2013 Annual Report

Inside This Report

1. Plant Description and Treatment Process	page 4
2. Monetary expenses incurred during this reporting period	page 8
3. Notifications Submitted in accordance to the Safe Drinking Water Act	page 8
4. Definitions and Terms	page 9
5. Water Quality Test Results	page 10
6. Flow Data	page 16
7. Training Accreditations	Page 18



2013 Annual Report

1. Drinking Water System

The water treatment plant (in service date: June 2006) and distribution system provide water to a population of approximately 3,900 residents in Morrisburg and Iroquois.

Raw Water Source

Source water for the South Dundas Regional WTP is the St. Lawrence River. Historically, the unfiltered water quality from this stretch of the St. Lawrence has been excellent.

Raw water turbidity is generally less than 1 NTU, with relatively few events greater than 5 NTU. The actual range of turbidity varies seasonally and by event from a low of about 0.1 NTU to as high as 10 NTU.

Prior to the construction of the South Dundas Regional WTP, the water quality issues most often discussed in this area related to taste and odour.

The range in temperature for raw water varies from about 0.4C to 23C on an annual basis. In terms of predictable operational challenges, temperature is the factor that most directly drives the CT calculation for the facility.

System Description

Treatment

Intake

Raw water is drawn from the St. Lawrence River through a wooden intake structure and approximately 100 m of 450 mm pipe to the low lift pumping station.

Sodium Hypochlorite is added at the opening of the intake for Zebra Mussel control when raw water temperatures are above 10C. The addition of sodium hypochlorite at this location is not for raw water disinfection purposes.



2013 Annual Report

Raw Water Pumping (Low Lift)

A Low Lift pump house is located at the bottom of Augusta Street, Morrisburg, on the bank of the St. Lawrence River. Water is pumped from the St. Lawrence River through a raw water well using three vertical turbine pumps, each equipped with variable

speed drives, along approximately 980 m of 400 mm pipe to the water treatment plant located at 99 Augusta Street, Morrisburg.

The pump house contains an intrusion alarm and the equipment therein is monitored by SCADA.

Filtration

Inside the water treatment facility, water undergoes ultra-filtration through membrane cassettes (ZeeWeed membranes, manufactured by Zenon) which are housed in large concrete tanks. There are three concrete filter tanks, each of which contains two ultra-filtration cassettes.

Taste and Odour Control

Three granular activated carbon (GAC) contactors provide taste and odour control.

Disinfection

Sodium Hypochlorite is used for disinfection. Chlorination takes place at two locations prior to the distribution system:

- At the outlet of the GAC tanks (primary disinfection), and
- On the high lift pump discharge manifold, after the plant chlorine residual analyser (residual disinfection).

Clear well Storage

A two-compartment, baffled clear well storage provides chlorine contact time of approximately 156 minutes at maximum daily flow and maximum water depth.



2013 Annual Report

High Lift Pumping

Four vertical turbine pumps, each equipped with a variable speed drive, discharge water from the treatment facility through a 450 mm discharge manifold. Water exiting the plant enters the Morrisburg distribution system.

Distribution

Water Transmission Main

An 11.5 km water transmission main carries treated drinking water from Morrisburg through the Iroquois booster station, reservoir and elevated storage facility to consumers in Iroquois.

Elevated Storage

The distribution system includes elevated storage facilities in Morrisburg and Iroquois. Storage capacity for the towers is:

945 M³ Morrisburg: Epoxy Lined, Multi-Legged Steel Tank

945 M³ Iroquois: Epoxy Lined, Multi-Legged Steel Tank

Water Main & Laterals

There are approximately 15 kms of water mains servicing the connections in Morrisburg and approximately 12 Kms of water mains servicing the connections in Iroquois.

Mains and laterals are constructed of: ductile, PVC, copper or galvanized pipe.

Appurtenances

There are approximately 160 hydrants and 325 valves within the distribution system for both villages.



2013 Annual Report

Iroquois Booster Station and Reservoir

Residual disinfection is provided by sodium hypochlorite injection on the high lift pumping discharge manifold in the booster station.

Clear well storage is provided by a two-compartment, baffled clear well whose volume is designed to provide peak-hour water demand equalization as well as fire and emergency demands.

High lift pumping is accomplished by three pumps discharging through a 300 mm discharge manifold. Water exiting the booster station enters the Iroquois distribution system.



2013 Annual Report

2. Monetary expenses incurred during this reporting period

Under Section 11 of Ontario Reg. 170/03, a description of any major expenses incurred during this reporting period must be included in the annual report. The major expenses for this drinking water system are listed below.

- Valve # 150 in Morrisburg was replaced
- Hydrant 65A and 1.5 lengths of 6" service pipe to the Hydrant replaced
- Hypo pump for filter clean was replaced

3. Notifications submitted in accordance to the Safe Drinking Water Act

Under Ontario Reg. 170/03, notifications were required for any instances where a sample result indicated that a parameter used to measure water quality exceeded a Maximum Acceptable Concentration (MAC). Once a notification is received from a laboratory or an observation of any other indicator of adverse water quality is made by operations personnel, corrective action as dictated by the regulations is initiated in an effort to confirm the initial result. If confirmed, further action may be recommended by the Medical Officer of Health. If not confirmed sampling will typically return to the normal schedule, or depending on the parameter, water operations may choose to increase the sampling frequency to more closely monitor the parameter for a period of time.

There were no notifications during this reporting period.



2013 Annual Report

4. Definition & Terms

TCU - True Colour Units

mg - milligram

N/A - Not Applicable

N/D - Non -Detectable

NTU - Nephelometric Turbidity Units - A measure of the amount of particles in water.

mg/l - Milligrams per litre. This is a measure of the concentration of a parameter in water, also called parts per million (ppm).

ug/l - Micrograms per litre, also called parts per billion.

ng/l - Nanograms per litre, parts per trillion.

Parameter-A substance that we sample and analyze for in the water.

AO - Aesthetic objective. AOs are not health related, but may affect the

taste, odour, colour or clarity of the water

OG - Operational guideline. Set to ensure efficient treatment and distribution of water.

MAC - Maximum Acceptable Concentration. This is a health-related drinking water standard established for contaminants having known or suspected adverse health effects when above a certain concentration. The length of time the MAC can be exceeded without injury to health will depend on the nature and concentration of the parameter.



2013 Annual Report

5. Water Quality Test Results

Microbiological testing done under schedule 10, 11 or 12 of regulation 170/03, during this reporting period

	Number of Samples	Range of E.Coli or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(Max #)
Raw	52	0-19	0-88	0	N/A
Treated	52	0-0	0-0	52	<2-500
Distribution	156	0-0	0-0	52	<2-8

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

	Number of Grab Samples	Range Of Results(min#)-(Max#)
Raw Turbidity	8760	0.22 - 4.94
Permeate Turbidity	8760	0.03 - 0.07
Train #1	8760	0.01 - 0.04
Train #2	8760	0.02 - 0.03
Train #3	8760	0.01 - 1.02
Chlorine	8760	0.41 - 2.46



2013 Annual Report

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
Dec 17/10	Total Suspended Solids	29/06/13	18	mg/L
Dec 17/10	Total Suspended Solids	28/10/13	14	mg/L
Dec 17/10	Total Suspended Solids	28/11/13	10	mg/L
Dec 17/10	Total Suspended Solids	29/13/13	3	mg/L
	*Annual Average Concentration		11.25	mg/L

***Municipal Drinking Water Licence – Schedule C – Residue Management 1.5.2**



2013 Annual Report

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

Parameter	Sample Date	Result value	Unit of Measure	Exceedance
Antimony	08/05/13	0.0001	mg/L	
Arsenic	08/05/13	0.0009	mg/L	
Barium	08/05/13	0.024	mg/L	
Boron	08/05/13	0.013	mg/L	
Cadmium	08/05/13	<0.00002	mg/L	
Chromium	08/05/13	0.002	mg/L	
Lead	06/04/13	0.000136	mg/L	
Mercury	10/05/13	<0.00002	mg/L	
Selenium	08/05/13	<0.001	mg/L	
Sodium	08/05/13	14.7	mg/L	
Uranium	08/05/13	0.00030	mg/L	
Fluoride	07/05/13	0.2	mg/L	
Nitrite	07/05/13	<0.1	mg/L	
Nitrate	07/05/13	0.4	mg/L	



2013 Annual Report

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

Parameter	Sample date	Result value	Unit of Measure	Exceedance
Alachlor	14/05/13	<0.3	µg/L	
Aldicarb	14/05/13	<3	µg/L	
Aldrin + Dieldrin	09/05/13	<0.02	µg/L	
Atrazine + N-dealkylated metabolites	14/05/13	<0.5	µg/L	
Azinphos-methyl	14/05/13	<1	µg/L	
Bendiocarb	14/05/13	<3	µg/L	
Benzine	08/05/13	<0.5	mg/L	
Benzo(a)pyrene	14/05/13	<0.005	µg/L	
Bromozynil	14/05/13	<0.3	µg/L	
Carbaryl	14/05/13	<3	µg/L	
Carbofuran	14/05/13	<1	µg/L	
Carbon Tetrachloride	08/05/13	<0.2	µg/L	
Chlordane (Total)	09/05/13	<0.04	µg/L	
Chlorpyrifos	14/05/13	<0.5	µg/L	
Cyanazine	14/05/13	<0.5	µg/L	
Diazinon	14/05/13	<1	µg/L	
Dicamba	14/05/13	<5	µg/L	
1,2-Dichlorobenzine	08/05/13	<0.1	µg/L	
1,4-Dichlorobenzine	08/05/13	<0.2	µg/L	
Dichlorodiphenyltrichloroethane (DDT)+metabolites	09/05/13	<0.01	µg/L	
1,2-Dichloroethane	08/05/13	<0.1	µg/L	
1,1-Dichloroethylene (vinylidene chloride)	08/05/13	<0.1	µg/L	



2013 Annual Report

Parameter	Sample date	Result value	Unit of Measure	Exceedance
Dichloromethane	08/05/13	<0.3	µg/L	
2-4 Dichlorophenol	14/05/13	<0.1	µg/L	
2,4-Dichlorophenoxy acetic acid (2,4_D)	14/05/13	<5	µg/L	
Diclofop-methyl	14/05/13	<0.5	µg/L	
Dimethoate	14/05/13	<1	µg/L	
Dinoseb	14/05/13	<0.05	µg/L	
Diquat	09/05/13	<5	µg/L	
Diuron	14/05/13	<5	µg/L	
Glyphosate	09/05/13	<25	µg/L	
Heptachlor + Heptachlor Epoxide	09/05/13	<0.1	µg/L	
Lindane (Total)	09/05/13	<0.1	µg/L	
Malathion	14/05/13	<5	µg/L	
Methoxychlor	09/05/13	<0.1	µg/L	
Metochlor	14/05/13	<3	µg/L	
Metribuzin	14/05/13	<3	µg/L	
Monochlorobenzine	08/05/13	<3	µg/L	
Paraquat	09/05/13	<1	µg/L	
Parathian	14/05/13	<3	µg/L	
Pentachlorophenol	14/05/13	<0.1	µg/L	
Phorate	14/05/13	<0.3	µg/L	
Picloram	14/05/13	<5	µg/L	
Polychlorinated Biphenyls (PCB)	09/05/13	<0.05	µg/L	
Prometryne	14/05/13	<0.1	µg/L	
Simazine	14/05/13	<0.5	µg/L	



2013 Annual Report

Parameter	Sample date	Result value	Unit of Measure	Exceedance
THM	N/A	47.625	µg/L	
Temephos	14/05/13	<10	µg/L	
Terbufos	14/05/13	<0.3	µg/L	
Tetrachloroethylene	08/05/13	<0.1	µg/L	
2,3,4,6-Tetrachlorophenol	14/05/13	<0.1	µg/L	
Triallate	14/05/13	<10	µg/L	
Trichloroethylene	08/05/13	<0.2	µg/L	
2,4,6-Trichlorophenol	14/05/13	<0.1	µg/L	
2,4,5- Trichlorophenoxy acetic acid (2,4,5-T)	14/05/13	<10	µg/L	
Trifluralin	14/05/13	<0.5	µg/L	
Vinyl Chloride	08/05/13	<0.2	µg/L	



South Dundas Water Treatment Plant
99 Augusta Street, Morrisburg

Supervisor of Water & Wastewater
Ian Kemp

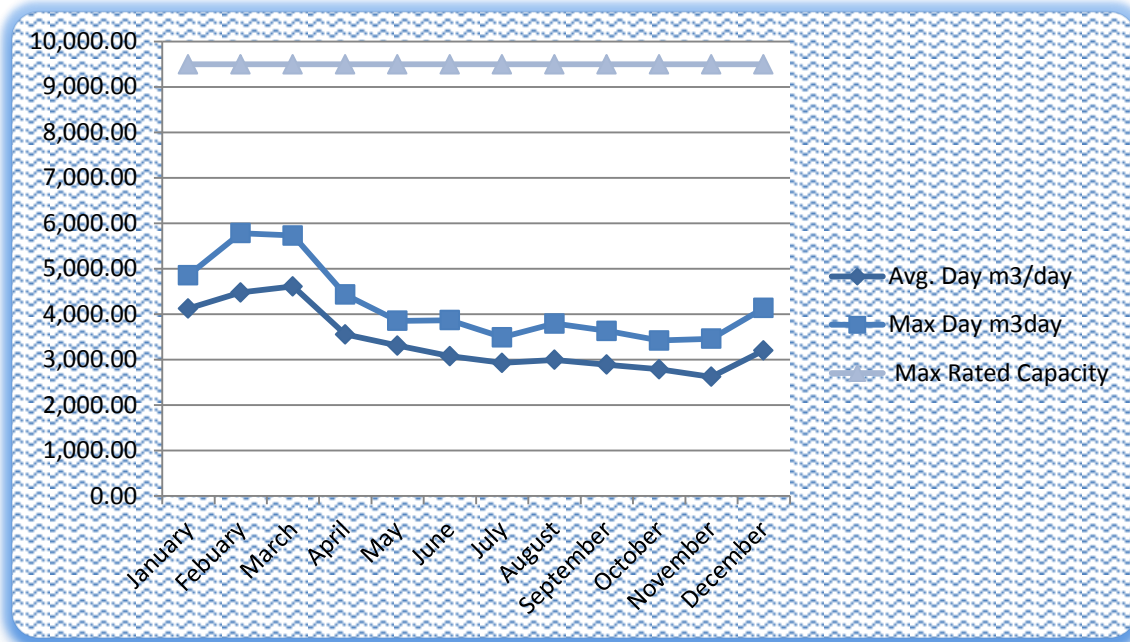
2013 Annual Report Flow Data

Month	Raw Flow	Treated Flow											
		Total Flow m ³	Treated Flow m ³	Avg. Day m ³ /day	Max Day m ³ day	Free Chlorine Residual			Turbidity		NO ₂ mg/L	NO mg/L	THM µg/L
						Avg. mg/L	Min. mg/L	Max. mg/L	Min. NTU	Max. NTU			
January	141,572.95	127,868.46	4,124.79	4,856.89	1.23	1.12	1.34	0.03	0.04				
February	137,929.10	125,290.19	4,474.65	5,782.52	1.19	1.04	1.33	0.03	0.04	0.1	0.3	26.8	
March	155,175.50	142,846.41	4,607.95	5,728.08	1.11	1.01	1.26	0.03	0.04				
April	117,764.70	106,611.40	3,553.72	4,430.26	1.1	0.97	1.3	0.03	0.05				
May	111,366.82	99,231.21	3,307.70	3,851.84	1.09	0.82	1.34	0.04	0.05	0.1	4	48.8	
June	104,413.70	92,238.11	3,074.60	3,866.95	1.06	0.88	1.28	0.04	0.07				
July	108,700.70	91,041.45	2,924.94	3,488.23	1.19	0.41	1.79	0.04	0.05				
August	116,784.53	92,803.75	2,993.67	3,790.89	1.43	1.13	1.9	0.04	0.05	0.1	0.03	70.7	
September	104,071.99	86,663.22	2,888.77	3,631.66	1.52	1.09	1.87	0.04	0.04				
October	99,552.54	86,391.33	2,786.82	3,419.57	1.47	1.11	1.95	0.04	0.04				
November	88,533.00	78,609.00	2,620.30	3,458.00	1.51	1.05	1.89	0.03	0.04	0.1	0.3	44.2	
December	110,424.25	99,186.40	3,199.56	4,134.97	1.46	0.88	2.46	0.03	0.03				
Total	1,396,289.78	1,228,780.93											
Minimum	88,533.00	78,609.00				0.41		0.03					
Maximum	155,175.50	142,846.41		5,782.52			2.46		0.07				
Average	116,896.87	102,690.41	3,379.79	4,203.32	1.28					0.1	1.1575	47.625	
ODWS										1	10	100	

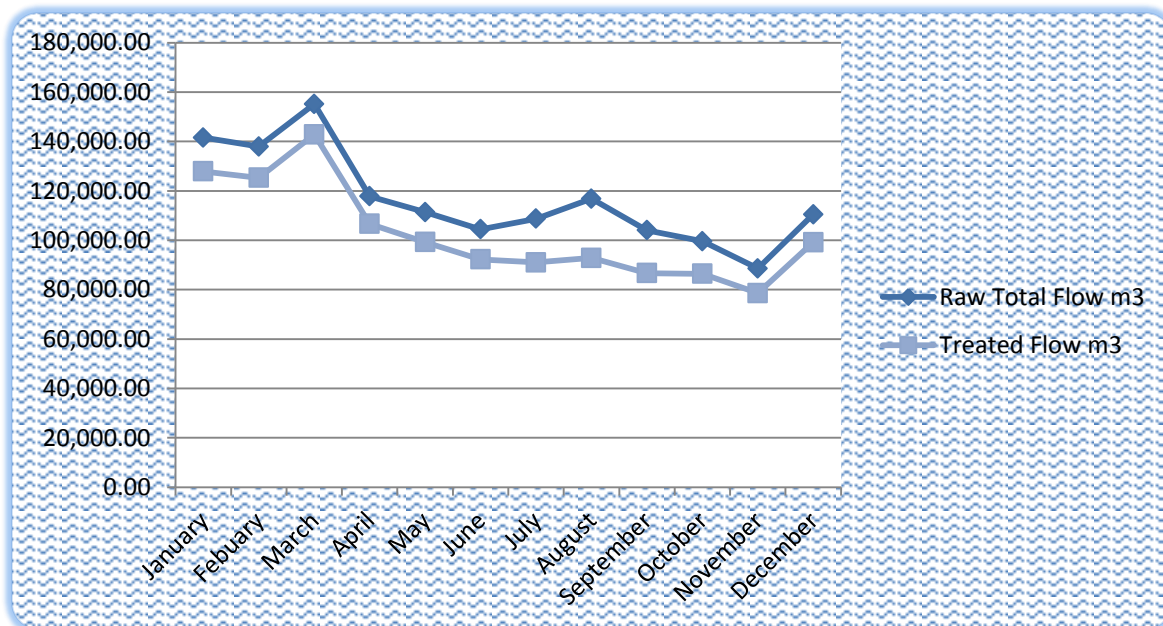


2013 Annual Report

AVERAGE DAILY FLOW 2013 – Showing the daily Maximum Capacity



RAW WATER FLOW and TREATED WATER FLOW - 2013





2013 Annual Report

Operator Training

NAME Course	C.Witteker		D.Villeneuve		A. Cassell		N.Hewage		I.Kemp	
	Date	Hrs/Ceu	Date	Hrs/Ceu	Date	Hrs/Ceu	Date	Hrs/Ceu	Date	Hrs/Ceu
Iroquois BS Pump Training			03/10/13	2hrs	03/10/13	2hrs			03/10/13	2hrs
Iroquois STW Generator EOWWA Conference Perth			15/10/13	1hrs	15/10/13	1hrs	15/10/13	1hrs	15/10/13	1hrs
Hewtek Data Regs	31/10/13	0.7 ceu			31/10/13	0.7 ceu			22/23/10/13	16hrs