



Collingwood Public Utilities



Devil's Glen Country Club Communal Water Treatment Plant 2009 Annual Compliance Report



**Operated By
Collingwood Public Utilities**

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Definitions

Collingwood Public Utilities	CPU
Ministry of the Environment	MOE
Flow	(m³/d) cubic metres per day
Weight	(kg) kilograms
Chlorine Residuals	(mg/l) milligrams/litre
Chlorine Dosages	(mg/l) milligrams/litre
Temperature	(°C) degree Celsius
Turbidity	(NTU) nephelometric turbidity unit
Conditions	Visual checks
Bacteriological Sample	Sample count / Safe or adverse
Organic Sample	(mg/l) milligrams/litre (unless expressed otherwise)
Pesticides & PCB	(mg/l) milligrams/litre (unless expressed otherwise)
Inorganic	(mg/l) milligrams/litre (unless expressed otherwise)
Physical	(mg/l) milligrams/litre (unless expressed otherwise)
Maximum allowable concentration	MAC
American Water Works Association.	(AWWA)
Not in service	NIS

Section 1 Drinking Water System General Information

This report has been prepared in accordance with the reporting requirements of the Safe Drinking Water Act 2002 O. Reg. 170/03, s 11 (6,f) , (7) , (8) & 10.

Collingwood Public Utilities is pleased to provide Devil's Glen Country Club with this Communal Water Treatment Plant 2009 Annual Compliance Report. CPU's goal is to provide our clients with the cleanest, safest and most dependable supply of potable water possible. The following is general information pertaining to Devil's Glen Communal Water Treatment Plant:

MOE PLANT CLASSIFICATION	: Water Treatment System (Municipal Class III)
DRINKING-WATER SYSTEM NUMBER	: 260062972
DRINKING-WATER SYSTEM CATEGORY	: Non-Municipal Year-Round Residential
OPERATING AUTHORITY	: Collingwood Public Utilities
PLANT LOCATION	: RR#1, Glen Huron, Part of Lot 7, Concession 11, Clearview Township

Section 1.1 Description of the Drinking Water System

Devil's Glen Communal Water Treatment Plant is an enhanced coagulation membrane filtration surface water treatment plant. Surface water is taken from the Mad River through a submerged 3mm screened inlet. Raw water flows by gravity into the raw water well in the Snowmaking Building. The raw water is then pumped by two (2) 25hp vertical turbine pumps (one duty one standby) through a 1.0 micron self cleaning strainer to remove large particulate matter. The raw water pumps generate a pressure of 1300kPa in order to discharge raw water at the treatment facility located at the top of the ski resort.

Raw water entering the treatment facility is dosed with pre-treatment chemicals, namely sulphuric acid for pH adjustment and Aluminum Chloride Hydroxide Sulphate (Sternpac) for coagulation. It should be noted that pH adjustment is necessary to optimize the coagulation process. Following the addition of the above noted chemicals the influent passes through a static mixer before discharging into a flocculation tank. The influent is then retained in the flocculation tank for approximately 15 minutes and mixed slowly to facilitate flocculation. This part of the process releases the dissolved organic matter that is in solution and changes it into a particulate which can be easily removed by the membrane filtration process.

The Zenon membrane filtration system consists eight (8) 500sq/ft modules, one (1) permeate pump, one (1) backpulse pump, one (1) backpulse tank and one (1) air blower. The membranes have a pore size of 0.035 micron and as such remove all particulate matter greater than this. The permeate pump creates a slight vacuum which sucks clean (permeate) water through the membrane leaving the particulate matter in the process tank.

The permeate water is then disinfected by the addition of sodium hypochlorite. The chlorinated permeate water then flows to the two (2) 140 m³ combination chlorine contact chambers/reservoirs. The finished water then flows into two (2) separate distribution systems. One system is fed by gravity and flows to the bottom of the hill to service the lodge and the homes within the resort. The second system is fed by high lift distribution pumps and services the condo corporations at the top of the hill.

The fouling of the membranes is controlled by a regular cleaning cycle that consists of reversing the flow of clean water stored in the backpulse tank back through the membranes under positive pressure. This process concentrates the raw water which in turn is rejected to waste. It should be noted that this reject water is discharged to a septic tank and weeping bed. Air is also used to prevent fouling of the membranes. This is achieved by injecting air at the bottom of the tank thus scouring the membranes with air bubbles as they rise to the surface. This air scouring process also assists in keeping the concentrated solids in suspension, prior to reject.

Devil's Glen Communal Water Treatment Plant is continually monitored 24 hours a day 365 days a year. The treated water parameters monitored are Turbidity, Flow, Pressure, Chlorine Residual, Temperature and pH. This is achieved through the SCADA (Supervisory Control And Data Acquisition) system.

Section 2 Compliance Statements

- Collingwood Public Utilities ensures compliance with the ODWS by establishing a sampling schedule based on O. Reg. 170/03. All sampling is performed in accordance with the Ministry of the Environment's "Guide to Collection and Submission of Samples for Laboratory Analysis". Compliance is also ensured by having all laboratory samples analyzed by a laboratory accredited by the Canadian Association for Environmental Analytical Laboratories (C.A.E.A.L.) of Canada.
- Collingwood Public Utilities ensures compliance is met with the requirements of the ODWS by operating the water treatment facility so that water intended for human consumption does not exceed the standards described in the ODWS. These standards are defined as Maximum Acceptable Concentration (MAC) standards, and Interim Maximum Acceptable Concentration (IMAC) standards. In the event that ODWS standards are exceeded, CPU will follow the requirements of O. Reg. 170/03 – in notifying the Medical Officer of Health, the MOE and the Owner, perform corrective actions as required, and if necessary, post a warning notice in a prominent location.
- Collingwood Public Utilities monitors the chemical parameters (non-health related) that may impair the taste, odour or colour of water or which may interfere with good water quality control practices which are reported as Aesthetic Objectives (AO).
- Collingwood Public Utilities ensures that the water leaving the treatment plant and entering the distribution system is disinfected to meet those requirements described in Ministry of the Environment (MOE) Procedure for Disinfecting Water in Ontario as amended from time to time.
- Collingwood Public Utilities ensures that all chemicals used in the treatment process and all materials contacting the water meet both the American Water Works Association (AWWA) quality criteria as set out in AWWA standards and the American National Standard Institute (ANSI) safety criteria as set out in ANSI standard NSF/60 or NSF/61.
- Collingwood Public Utilities ensures that the Overall Responsible Operator is an operator who holds a valid license that is applicable to Devil's Glen Treatment Plant in accordance with O Reg. 128/04 as amended from time to time.
- Collingwood Public Utilities exercises due diligence in ensuring that at all times, the works and related equipment and appurtenances used to achieve compliance are properly operated and maintained.

Section 3 Results of External Performance Audits

The following section discusses performance audits conducted by external agencies.

MOE inspection was completed in April 2009. The primary focus of the inspection was to confirm compliance with the Ministry of the Environment legislation and authorizing documents as well as evaluating conformance with Ministry drinking water- related policies and guidelines.

In brief the Water Treatment Plant Inspection was successful, no Orders were issued, CPU carry out significant water testing, maintenance practices and operating procedures that is required by Regulation.

There was one (1) recommendations made by the inspector with respect to best practices which involved the frequency of membrane integrity testing (MIT). CPU has reviewed the current MITs frequency and found it to be adequate at this time.

Section 4 Treatment Chemicals Used

The following section discusses the chemicals used in the treatment process.

- Sodium Hypochlorite 12% solution
- Aluminum Chloride Hydroxide Sulphate
- Sulphuric Acid 93% solution

The following table shows total chlorine used per month, average post filtration chlorine dosage and average free chlorine residual after contact time. In addition average raw water temperature has been shown

Month	Total Chlorine Used (kg)	Ave.(Free) treatment Residual	Ave. Post Chlorine Dose (mg/l)	Ave. Water Temp. °c
January	5.8	1.02	1.83	4.1
February	3.7	1.05	1.74	5.1
March	4.0	1.06	1.66	5.1
April	3.5	1.03	2.38	7.3
May	6.7	0.90	3.5	11.0
June	7.5	0.93	3.5	13.8
July	8.4	0.98	5.4	16.8
August	7.0	0.84	5.0	16.3
September	4.6	0.92	4.2	15.1
October	5.4	0.96	3.2	11.3
November	3.6	0.95	2.6	9.7
December	3.8	0.98	2.2	5.0
Total/ Ave	5.3	1.0	3.1	10.1
Max	8.4	1.06	5.4	16.8
Min	3.5	0.84	1.66	4.1

The following table shows total coagulant and sulphuric acid usage per month, average coagulant dosage, average raw water turbidity and average finished water turbidity.

Month	Aluminum Chloride Hydroxide Sulphate (kg)	Coagulant dosage mg/l	Ave. Raw Water Turbidity	Ave. Finished Water Turbidity	Sulphuric Acid 93% (litres)
January	267	71.8	1.9	0.05	262
February	210	69.3	5.1	0.06	199
March	213	27.7	2.3	0.07	231
April	164	90.5	2.1	0.10	136
May	217	71.5	3.7	0.07	116
June	234	70.9	NIS	0.05	135
July	184	66.8	NIS	0.08	161
August	141	69.5	NIS	0.07	98
September	142	72.1	NIS	0.07	135
October	171	70.6	NIS	0.07	148
November	125	68.9	NIS	0.05	111
December	220	75.8	NIS	0.05	150
Total/ Ave	191	68.8	3.0	0.07	157
Max	267	90.5	5.1	0.10	262
Min	125	27.7	1.9	0.05	98

Section 5 Required Reports to the Ministry of the Environment

Summary of reports made to Ministry under subsection 18 (1) of the Act or 16-4 of Schedule 16 for the period covered by this report.

Incident Date	Parameter	Result	Unit of Measurement	Corrective action	Corrective action date
None to report					
Note: Incident date is represented by the sample date : Corrective action date is represented by the date the incident was resolved by confirmation of laboratory results					

Section 5.1 Explanation of Treatment Reports

None required

Section 6 Summary of Results of the Required Tests

Microbiological Testing done under Schedule 10, 11 or 12 of Regulation 170/03 during the period covered by this annual report for 2009

	Number Of Samples	Range of E. Coli or Fecal Result (min #)-(max#)	Range of Total Coliform Results (min #)-(max#)	Range Of Background Counts (min #)-(max#)
Raw	52	0 (min) – 60 (max)	0 (min) – 80 (max)	
Treated	52	0 (max)	0 (max)	0 (max)

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this annual report for 2009

	Number of Samples	Range of Results
Turbidity NTU	Continuous analyzers	0.03 min 0.10max
Chlorine mg/l	Continuous analyzers	0.54 min 2.00 max

Summary of Chemical Sampling and Testing carried out during the period covered by this annual report.

	Date Of Samples				MAC
	Feb 2009	May 2009	Aug 2009	Dec 2009	mg/l
Nitrate + Nitrite (as N)	2.14	0.73	0.47	0.88	10.0
Nitrite	<0.05	<0.05	<0.05	<0.05	1.0
Nitrate	2.14	0.73	0.47	0.88	10.0

Operational testing carried out under Schedule 23 (Inorganics) of Regulation 170/03 during the period covered by this annual report for 2009.

None Tested

Note: non-municipal year round residential systems are only required to ensure at least one water sample is taken every 60 months and tested for every parameter set out in Schedule 23 listed in the table below. Last tested March 2007

	Date Of Samples	MAC
	March 2007	mg/l
Antimony	<0.001	0.006
Arsenic	<0.0006	0.025
Barium	<0.01	1.0
Boron	<0.008	5.0
Cadmium	<0.0005	0.005
Chromium	<0.0006	0.05
Fluoride	<0.05	1.5
Mercury	<0.0001	0.001
Selenium	<0.0008	0.01
Sodium	8.01	greater than 20.0
Uranium	0.0002	0.02

Operational testing carried out under Schedule 24(Organics) of Regulation 170/03 during the period covered by this annual report for 2009.

None tested.

Note: non-municipal year round residential systems are only required to ensure at least one water sample is taken every 60 months and tested for every parameter set out in Schedule 24 listed in the table below. Last tested March 2007

		MAC
	March 2007	mg/l
Alachlor	<0.0005	0.005
Aldicarb	<0.00015	0.009
Aldrin +Dieldrin	<0.00007	0.0007
Atrazine	<0.0005	0.005
Azinphos-methyl	<0.002	0.02
Bendiocarb	<0.002	0.04
Bromoxynil	<0.0005	0.005
Carbaryl	<0.005	0.09
Carbofuran	<0.005	0.09
Chlordane(Total)	<0.0007	0.007
Chlorpyrifos	<0.001	0.09
Cyanazine	<0.001	0.01
Diazinon	<0.001	0.02
Dicamba	<0.001	0.12
2,4-Dichlorophenol	<0.0005	0.9
DDT	<0.003	0.03
24-D	<0.001	0.1
Dicoflp-methyl	<0.0009	0.009
Dimethoate	<0.0025	0.02
Dinoseb	0.001	0.01
Diquat	<0.005	0.07
Diuron	<0.01	0.15
Glyphosate	<0.01	0.28
Heptachlor + heptachlor epoxide	<0.0003	0.003
Lindane (Total)	<0.0004	0.004
Malathion	<0.005	0.19
Methoxychlor	<0.09	0.9
Metolachlor	<0.00011	0.05
Metribuzin	<0.00025	0.08
Paraquat	<0.001	0.01
Parathion	<0.001	0.05
Pentachlorophenol	<0.0005	0.06
Phorate	<0.0005	0.002
Picloram	<0.05	0.19
PCB	<0.0002	0.003
Prometryne	<0.00025	0.001
Simazine	<0.001	0.01
Temephos	<0.007	0.28
Terbufos	<0.0007	0.001
2,3,4,6-Terachlorophenol	<0.0005	0.1
Triallate	<0.001	0.23
2,4,6,-Trichlorphenol	<0.0005	0.005
Trifluralin	<0.001	0.045
2,4,5-T	<0.001	0.28
Trichlorophenoxy acetic Acid	<0.0002	0.28
Benzo(a)pyrene	<0.00001	0.00001

Trihalomethanes quarterly sample results

Reported by Devils Glen Distribution Operating Staff

Section 7 Items of Significant Investment in the Water Treatment System in 2009

The following is a brief description of items of significant expenses and system investment incurred during the period covered by this annual report.

Description	Monetary Expenses Incurred Investment
On-Line Turbidimeter	\$3500.00
Permeate Magnetic Flow Meter	\$3000.00
Programmable Control Logic input, relay cards as shelved spares	\$4000.00

This completes the Devil's Glen Communal Water Treatment Plant 2009 Annual Compliance Report. It gives CPU great pleasure to provide this report and to reaffirm CPU's commitment to provide the resort with the cleanest, safest, most dependable supply of portable water for this year and for years to come. If you have any questions or comments about this report please do not hesitate to contact the following:

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Appendix 1

Summary of Plant Flows

Month	Raw Water Taking				Month	Total Plant Finished Water Supplied			
	Monthly Total (m ³)	Ave Day (m ³)	Max Day (m ³)	Min Day (m ³)		Monthly Total (m ³)	Ave Day (m ³)	Max Day (m ³)	Min Day (m ³)
January	3911	126	371	39	January	2713	87	162	44
February	3204	114	218	45	February	2163	77	142	41
March	3779	122	258	18	March	2346	76	125	22
April	2364	79	171	12	April	1472	49	67	36
May	3238	104	229	32	May	1902	61	79	49
June	3482	116	202	69	June	2178	73	130	39
July	2881	93	211	35	July	1809	58	149	16
August	2141	69	194	42	August	1279	41	77	27
September	2083	69	107	29	September	1368	46	72	27
October	2534	82	137	34	October	1677	54	107	34
November	1911	64	169	33	November	1450	48	112	23
December	2944	95	230	29	December	1867	60	151	21
Total/ Ave	34,472	94			Total/ Ave	22,224	61		
Max	3911		371		Max	2,713		162	
Min	1,911			12	Min	1279			16