

JAN 24 2011 PM 4:05

M09010

January 24, 2011

Mr. Troy Cameron, Assistant Public Works Manager
The Municipality of Northern Bruce Peninsula
56 Lindsay Road 5, RR#2
Lions Head, ON
N0H 1W0

Mr. Cory McNeil, Cluster Manager
Ontario Clean Water Agency
Anglesia Street North, P.O. Box 760
Southampton, ON
N0H 2L0

**Re: 2010 Annual Report for Lakewood Subdivision Sewage System
Municipality of Northern Bruce Peninsula**

Dear Mr. Cameron & Mr. McNeil,

Darryl M. Robins Consulting Inc. (DMRC) is pleased to provide the following Annual Report for 2010. The following report outlines key elements of the sewage system and provides a brief discussion of the Consultant's observations at the site inspection. Please find attached to this report the Annual Inspection Summary from October 19, 2010 and Table No.'s 1 and 2.

The Ontario Clean Water Agency (OCWA) is the responsible authority for operation, and maintenance duties of the sewage system under contract to the Municipality of Northern Bruce Peninsula (Municipality). OCWA began these duties on July 1, 2009.

Sewage System Capacity:

From the records provided by the Municipality and OCWA as of October 21, 2010, there are currently 36 dwellings connected to the Lakewood Subdivision Sewage System. The original Certificate of Approval specified that each dwelling would be allotted a daily sewage flow of 1,200L/day for a maximum of 48 lots; therefore, the ultimate design daily sewage flow for the sewage system is 57,600L/day. With 36 dwellings online at present, the calculated daily sewage flow should be 43,200L/day.

OCWA has been maintaining records of the readings on the elapsed hour meters of the sewage dosing pumps for the tile field (See Table 1).

During normal operation it appears that the pumps are dosing the tile field with a volume of approximately 4,699 L/day based on the respective pumping rates determined by the pumping tests conducted by the OCWA and DMRC at the site meeting. These pumping rates should be used by OCWA personnel in recording and evaluating flows at the facility. The results from the dosing pump records suggest that the actual sewage flows being received by the system are substantially less than the design and that the sewage system should have sufficient capacity for completion of Phases 1 and 2B of the subdivision. The average daily sewage flow for 2010 (4,699 L/day) is approximately 9.5% higher than that determined for 2009 (4,292 L/day).

Sampling Results:

OCWA took a sample of the sewage effluent during the 2010 annual inspection. The sample was analyzed by SGS Lakefield Research Limited and the results are shown on Table 2 (attached). The results of the Lakewood Subdivision sewage effluent sampling for the 2010 sampling event indicate that the sewage effluent is within typical values and that there are no adverse results within the parameters tested to suggest unsuitable treatment for discharge to the tile fields.

Physical Conditions of the Sewage System

DMRC's inspector walked around the tile field and septic tank area during the inspection. The tile field appeared to be in good condition with no concerning conditions observed, except for a few locations that had been disturbed (lack of vegetation), most likely due to lawnmowing operations. These areas were common at the corners around the top of the bank of the tile field. Applying more topsoil and seeding the respective areas in the spring is advised.

There was an occasional sewage odour around the access riser of the dosing tank and this odour became prominent upon opening the access riser lid of the dosing pump enclosure; however, the odour appeared to be from normal operation.

The pump control panel and the dosing chamber appeared to be in good working order. The autodialer system was not able to call-out during the inspection, but OCWA has subsequently reported to the writer that the autodialer required a replacement fuse and is currently functional.

The splitter valve chamber was inspected and although the chamber did contain some water, there appears to be no need for concern and the valves are above the water level.

OCWA has monitored the low pressure sanitary sewer collection system after the maintenance hole pump outs were completed in November 2009 and no malfunctions or leakage had been noted by OCWA personnel at the time of the annual inspection. OCWA has reported that there were no deficiencies reported during their fall 2010 inspection of the collection system. The maintenance hole structures did however contain the usual amounts of infiltrated water.

Annual Report Recommendations

1. The "Dosing Pump Elapsed Time Weekly Record Sheets" provided in the Operations and Maintenance Manual originally provided by Henderson Paddon & Associates for recording and collecting data on dosing pump operation should continue to be used by operations staff. The new pumping rates should be used for recording and evaluating sewage volumes for the facility. Operators should also continue to keep a project-specific journal of their site visits, alarm conditions, maintenance, repairs and observations.
2. Operations staff should continue to monitor the air relief valve at SANMH2.
3. OCWA and the Municipality should review the feasibility of implementing high-density polyethylene maintenance hole dish inserts in the low-pressure forcemain structures to reduce infiltration in the structures. The reduction of infiltration into the structures would increase the efficiency of monitoring and serviceability.
4. The Municipality should update the existing Operations and Maintenance Manual to accurately incorporate the upgraded dosing pump components.
5. Topsoiling and seeding should be undertaken on disturbed areas along the top of slopes and on disturbed areas of the tile field.

It is the writer's overall opinion that the system is in good working order, and that the housing development within Phases 1 and 2B of the subdivision should continue with regards to the available capacity of the subdivision's existing sewage system.

Should you have any questions or concerns with the above and enclosed, please do not hesitate to contact the writer.

Yours truly,

DARRYL M. ROBINS CONSULTING INC.



Darryl M. Robins, P.Eng.
Designated Consulting Engineer
Civil-Environmental Engineer

DMR/las
Encl.

Cc: Mr. Aaron Lemoing, CPHI, Public Health Inspector, Grey Bruce Health Unit
Mr. John Nichol, Lakewood Subdivision Ratepayer's Association
Ms. Lisa Benoit, OCWA

DARRYL M. ROBINS CONSULTING INC.
CIVIL & ENVIRONMENTAL ENGINEERING

INSPECTOR'S REPORT:

Project Title:	<u>Lakewood Subdivision</u>	Inspection Date:	<u>Oct.19, 2010</u>
Inspector:	<u>Darryl M. Robins, P.Eng</u>	Inspection Time:	<u>9:30 am</u>
Location:	<u>Lakewood Subdivision</u>	File No.:	<u>M09010</u>

- The writer met with Mr. Todd Davis (Cluster Manager, OCWA) and Mr. Richard Wright (Operations, OCWA) on October 19, 2010 at 9:30 am.
- Mr. Wright took samples of the sewage effluent from the dosing chamber at the facility for lab analysis. It was noticed that discharge from the septic tank to the dosing chamber seemed to be greater in duration than ever noticed at previous inspections. This is only a observation for record and does not require any special attention.
- The writer walked over the tile field looking for any signs of vandalism, rodent infestation, erosion or breakouts. No deficiencies at the tile field were noted. It may be useful to re-topsoil and seed disturbed areas where the lawnmower has churned up the sand of the tile field. This was typically observed on the corners at the "top of bank" on the tile field.
- The Municipality has informed that one (1) new residence has been connected to the collection system within the last year for a total of 36 dwellings currently serviced by the subject sewage system.
- There was a detectable septic odour encountered when the access riser lid and the dosing pump enclosure were opened. Prior to the opening of the lid, the area around the septic tank was relatively odour free; however, an occasional sewage odour could be detected.
- The discharge control valve stems (dosing chamber) that control discharge to the tile fields were operable.
- An inspection of the splitter valve chamber to the tile fields was conducted. There were no deficiencies noted. The chamber did contain some water; however, the valves were above the water level.
- The control panel, enclosure and associated equipment appeared to be in good condition and operating normally.
- The writer observed the elapsed time meters at Pump No. 1 and 2 in operation during trials of dosing cycles at the site meeting. The elapsed time meter readings were noted at:

Pump No. 1: 233.50 hr
Pump No. 2: 180.81 hr

- Pumping rate tests were conducted on the effluent pumps at this inspection. The resulting effluent pump rates were:

Pump No. 1:	137.0 L/min
Pump No. 2:	186.4 L/min
- OCWA was to arrange for the removal of the water from the forcemain collection structures after the site visit. Mr. Davis reported that OCWA had been monitoring the system and no malfunctions or leakage had been noted in the previous operating period. OCWA has subsequently reported that there were no deficiencies noted during the fall 2010 inspection of the collection system. OCWA provided inspection sheets from the fall 2010 inspection and these have been reviewed by the writer and placed in the project file.
- Digital photos of the existing conditions of the sewage system were taken and are saved under the project file number at DMRC.

A test on the high level alarm was conducted at the site meeting. The alarm beacon and high level alarm light on the control box appeared to be in satisfactory working condition. An alarm call out did not appear to be received on the designated phone numbers. A fuse appeared to be burned out in the autodialer system and OCWA has subsequently informed the writer that the autodialer has returned on-line after the replacement of the autodialer's fuse. The alarm autodialer system information (for the record) is as follows:

Station telephone number: 519-793-4434
 PIN 1234 (For User)
 777444 (For Installer)

Zone 1 – Pump No. 1 Fault
 Zone 2 – Pump No. 2 Fault
 Zone 3 – High Level Alarm
 Zone 4 – Power Failure

The current alarm call-out protocol is as follows:

1. OCWA operator on-call cell phone 519-372-3034
2. Cory McNeil cell phone (OCWA Operations Supervisor) 519-379-0431
3. Scott Haw cell phone (Mun. of Northern Bruce Peninsula) 519-477-1162
4. Cellular Phone for OCWA's Area Supervisor
5. Municipality of Northern Bruce Peninsula Supervisor

- It was reported by Mr. Davis that the septic tank at the facility had not been pumped this year.

Report finalized on January 24, 2011

DARRYL M. ROBINS CONSULTING INC.

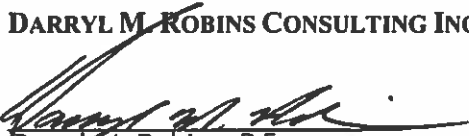

 Darryl M. Robins, P.Eng
 Designated Consulting Engineer
 Civil – Environmental Engineer

TABLE 1
DOSING PUMP RECORDS
(ELAPSED TIME METER READINGS)
LAKEWOOD SUBDIVISION
NOVEMBER 24, 2009 TO OCTOBER 19, 2010

DATE	TIME	PUMP NO. 1					PUMP NO. 2					COMBINED AVERAGE DAILY FLOW (L/d)	OPERATOR'S NOTES
		RECORDED RUN TIME (hrs)	ELAPSED PUMP TIME (hr)	VOLUME PUMPED (L)	ELAPSED TIME (days)	AVERAGE DAILY FLOW (L/d)	RECORDED RUN TIME (hrs)	ELAPSED PUMP TIME (hr)	VOLUME PUMPED (L)	ELAPSED TIME (days)	AVERAGE DAILY FLOW (L/d)		
24-Nov-09	09:15:00	141.76	2.38	19,568	9.95	1,967	110.97	1.82	20,351	9.95	2,046	4,013	OK
04-Dec-09	08:00:00	144.14	2.38	19,568	9.95	1,967	112.79	1.82	20,351	9.95	2,046	4,013	OK
09-Dec-09	08:30:00	145.19	1.05	8,633	5.02	1,719	113.51	0.72	8,051	5.02	1,603	3,323	OK
15-Dec-09	13:00:00	146.81	1.62	13,319	6.19	2,153	114.56	1.05	11,741	6.19	1,897	4,050	OK
22-Dec-09	08:45:00	148.46	1.65	13,566	6.82	1,988	115.83	1.27	14,201	6.82	2,081	4,070	OK
29-Dec-09	10:15:00	151.06	2.60	21,377	7.06	3,027	117.94	2.11	23,593	7.06	3,341	6,367	OK
06-Jan-10	10:00:00	153.29	2.23	18,335	7.99	2,295	119.44	1.50	16,772	7.99	2,099	4,394	OK
12-Jan-10	08:00:00	154.32	1.03	8,468	5.92	1,431	120.38	0.94	10,511	5.92	1,776	3,208	OK
19-Jan-10	07:15:00	155.47	1.15	9,455	6.97	1,357	121.45	1.07	11,964	6.97	1,717	3,074	OK
26-Jan-10	08:00:00	157.15	1.68	13,813	7.03	1,964	122.54	1.09	12,188	7.03	1,733	3,698	OK
05-Feb-10	05:35:00	159.09	1.94	15,950	9.90	1,611	124.03	1.49	16,661	9.90	1,683	3,294	OK
09-Feb-10	09:30:00	159.79	0.70	5,755	4.16	1,382	124.75	0.72	8,051	4.16	1,934	3,316	OK
17-Feb-10	06:50:00	161.16	1.37	11,264	7.89	1,428	125.82	1.07	11,964	7.89	1,517	2,944	OK
23-Feb-10	00:00:00	162.83	1.67	13,730	5.72	2,402	126.9	1.08	12,076	5.72	2,113	4,515	OK
02-Mar-10	06:50:00	163.78	0.95	7,811	7.28	1,072	127.63	0.73	8,163	7.28	1,121	2,193	OK
09-Mar-10	08:05:00	165.08	1.30	10,688	7.05	1,516	128.7	1.07	11,964	7.05	1,697	3,212	OK
16-Mar-10	09:15:00	166.76	1.68	13,813	7.05	1,960	129.97	1.27	14,201	7.05	2,015	3,974	OK
24-Mar-10	10:00:00	168.61	1.85	15,210	8.03	1,894	131.29	1.32	14,760	8.03	1,838	3,732	OK
31-Mar-10	08:00:00	170.36	1.75	14,388	6.92	2,080	132.57	1.28	14,312	6.92	2,069	4,149	OK
07-Apr-10	16:30:00	172.25	1.89	15,539	7.35	2,113	134.31	1.74	19,456	7.35	2,646	4,759	OK
14-Apr-10	07:10:00	173.35	1.10	9,044	6.61	1,368	135.41	1.10	12,300	6.61	1,860	3,228	OK
19-Apr-10	10:00:00	174.12	0.77	6,331	5.12	1,237	136.36	0.95	10,623	5.12	2,075	3,312	OK
27-Apr-10	07:15:00	175.82	1.70	13,977	7.89	1,773	137.58	1.22	13,642	7.89	1,730	3,502	OK
06-May-10	09:30:00	177.84	2.02	16,608	9.09	1,826	139.07	1.49	16,661	9.09	1,832	3,658	OK
12-May-10	11:40:00	179.68	1.84	15,128	6.09	2,484	140.47	1.40	15,654	6.09	2,570	5,054	OK
20-May-10	11:30:00	182.35	2.67	21,952	7.99	2,746	142.27	1.80	20,127	7.99	2,518	5,264	OK
29-May-10	13:20:00	185.47	3.12	25,652	9.08	2,826	145.08	2.81	31,420	9.08	3,462	6,288	OK
02-Jun-10	15:40:00	186.94	1.47	12,086	4.10	2,950	146.12	1.04	11,629	4.10	2,838	5,788	OK
11-Jun-10	07:30:00	190.12	3.18	26,145	8.66	3,019	148.32	2.20	24,600	8.66	2,841	5,860	OK
17-Jun-10	07:30:00	192.43	2.31	18,992	6.00	3,165	150.12	1.80	20,127	6.00	3,354	6,520	OK
24-Jun-10	08:30:00	194.35	1.92	15,786	7.04	2,242	151.51	1.39	15,542	7.04	2,207	4,449	OK
29-Jun-10	14:30:00	196.46	2.11	17,348	5.25	3,304	152.99	1.48	16,549	5.25	3,152	6,457	OK
06-Jul-10	09:30:00	199.61	3.15	25,899	6.79	3,813	155.55	2.56	28,625	6.79	4,215	8,028	OK
13-Jul-10	08:30:00	202.39	2.78	22,857	6.96	3,285	157.48	1.93	21,580	6.96	3,101	6,386	OK
20-Jul-10	14:00:00	205.72	3.33	27,379	7.23	3,787	159.81	2.33	26,053	7.23	3,604	7,391	OK
28-Jul-10	08:30:00	209.08	3.36	27,625	7.77	3,555	162.31	2.50	27,954	7.77	3,597	7,152	OK
05-Aug-10	08:45:00	211.45	2.37	19,486	8.01	2,433	164.07	1.76	19,680	8.01	2,457	4,889	OK
10-Aug-10	11:45:00	213.22	1.77	14,553	5.13	2,840	165.37	1.30	14,536	5.13	2,836	5,676	OK
18-Aug-10	10:00:00	215.75	2.53	20,801	7.93	2,624	167.2	1.83	20,462	7.93	2,581	5,205	OK
26-Aug-10	08:30:00	218.53	1.74	22,857	7.94	2,880	169.1	1.90	21,245	7.94	2,677	5,556	OK
31-Aug-10	12:45:00	220.27	1.74	14,306	5.18	2,763	170.62	1.52	16,996	5.18	3,283	6,046	OK
07-Sep-10	08:30:00	222.87	2.60	21,377	6.82	3,133	172.54	1.92	21,469	6.82	3,147	6,280	OK
15-Sep-10	15:20:00	223.55	0.68	5,591	8.28	675	173.1	0.56	6,262	8.28	756	1,431	OK
24-Sep-10	08:30:00	225.51	1.96	16,115	8.72	1,849	174.52	1.42	15,878	8.72	1,822	3,671	OK
29-Sep-10	08:30:00	226.97	1.46	12,004	5.00	2,401	175.79	1.27	14,201	5.00	2,840	5,241	OK
07-Oct-10	11:00:00	229.3	2.33	19,157	8.10	2,364	177.4	1.61	18,002	8.10	2,221	4,585	OK
15-Oct-10	16:30:00	232.33	3.03	24,912	8.23	3,027	179.78	2.38	26,612	8.23	3,234	6,261	OK
19-Oct-10	09:30:00	233.5	1.17	9,620	3.71	2,594	180.7	0.92	10,287	3.71	2,774	5,368	OK

PUMP 1
YEARLY AVERAGE DAILY FLOW:
MAX. DAILY FLOW RATE:

2,305 L/d
3,813 L/d

COMBINED AVERAGE DAILY FLOW RATE:
COMBINED MAXIMUM DAILY FLOW RATE:
ASSUMED ERRONEOUS READINGS EXCLUDED FROM CALCULATIONS

4,699 L/d
8,028 L/d

PUMP 2
YEARLY AVERAGE DAILY FLOW:
MAX. DAILY FLOW RATE:

2,394 L/d
4,215 L/d

PUMPING TEST FLOW RATES: (OCT. 19, 2010)
PUMP #1: 137.0 L/min
PUMP #2: 186.4 L/min

TABLE 2
 LAB ANALYSIS RESULTS OF SEPTIC TANK EFFLUENT
 LAKEWOOD SUBDIVISION SEWAGE SYSTEM
 2010 ANNUAL INSPECTION REPORT

Date	BOD mg/L	Total Suspended Solids mg/L	pH pH units	Nitrate mg/L	Ammonia (N) Total mg/L	Total Kjeldahl Nitrogen mg/L	Phosphorus Total mg/L
May 30/03	155	76	7.38	0.2	58.8	75.8	10.7
Sept. 7/04	82	22	7.35	0.1	62.4	70.9	9.88
Sept. 19/05	53	44	7.41	<0.1	63.9	75.5	10.6
Sept. 22/06	93	90	7.47	0.1	63.4	74.6	9.65
Nov. 26/07	64	18	7.7	<0.1	59.1	67.4	9.49
Nov. 18/08	81	32	8.12	0.1	68.5	71.1	9.6
Nov. 24/09	62	44	N/A	<0.05	74.5	73.9	9.59
Oct. 19/10	74	23	7.77	<0.06	69.9	66.3	10.1
Typical Concentration Range for Septic Effluent	140 to 200	50 to 100				40 to 100	5 to 15

- Typical concentration range for septic tank effluent were obtained from the USEPA On-Site Wastewater Treatment Systems Manual
- Lab Analysis Conducted by Caduceon Environmental Laboratories Inc (2003-2008)
- Lab Analysis Conducted by SGS Lakefield Research (2009-2010)

N/A - sample parameter result not provided