

PEMBROKE POLLUTION CONTROL CENTRE

2007 ANNUAL REPORT

February 2008

2007 Annual Report for the Pembroke Pollution Control Centre prepared by
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1. Background Information

Municipality	Corporation of the City of Pembroke
Plant	Pembroke Pollution Control Centre Secondary Treatment (SBR)
Classification	Level Three
Design Average Flow	16 000 m ³ /day
Design Secondary Effluent Peak Flow	43 200 m ³ /day
Plant Peak Wet Weather Flow	64 000 m ³ /day
Receiving Course	Ottawa River
Disinfection Standards	<200/100 mL e-coli based on Geometric Mean

2. Chemical Usage

Aluminum Sulphate (not used, however equipment is available if there is a requirement)

Polymer (Dewatering Centrifuge only)

3. Calibrations

Records are available for calibration of equipment and measuring devices for review.

4. Plant and Collection System Compliance with F-5-5

Event	Type of By-Pass	Total m³	Treatment	Reported
April 4/07	Secondary	1266	Chlorination	Yes
April 16/07	Secondary	668	Chlorination	Yes
May 30/07	Secondary	958	Chlorination	Yes

5. Operator Classification

Superintendent	Class 4
Chief Operator	Class 4
Operators (3)	Class 2
Operator (1)	OIT

6. Plant Activities in 2007

- a. Phase One and Two of the Environmental Assessment for a bio-solid storage facility completed.
- b. Sampling continues on a weekly basis on influent, effluent, dewatered sludge, post clarification and lift stations.
- c. Continuing investigating of high copper and zinc heavy metal results in de-watered sludge.

7. Anticipated Plant Activities for 2008

- a. Complete bio-solid storage facility project
- b. Review the policy for acceptance of sewage from other plants in Renfrew County
- c. Review the feasibility of the construction of a septic receiving station
- d. Continue with the implementation of the Land Utilization Program as per the NMA
- e. Continue the MISA Program (Municipal Industrial Strategy for Abatement) in the collection system
- f. Continue the Training Program for operators

PEMBROKE POLLUTION CONTROL CENTRE

2007 FLOWS

Month	Total Month Flow (m³)	Daily Average Flow (m³)	Maximum Daily Flow (m³)
JANUARY	472032	15227	21824
FEBRUARY	317677	11346	13470
MARCH	358264	11557	16920
APRIL	504835	16828	26716
MAY	396848	12802	15858
JUNE	455225	15174	22022
JULY	347480	11209	17267
AUGUST	316445	10208	13542
SEPTEMBER	319184	10640	13427
OCTOBER	308050	9937	10571
NOVEMBER	310301	10343	11223
DECEMBER	323178	10425	12932
YEAR TOTAL	4429519		
AVERAGE	369127	12141	

Table A: Pembroke Pollution Control; Centre Plant Flows 2007

Month	Sludge M3	Phos mg/l	% Sol	A+N mg/l	As mg/l	Cd mg/l	Co mg/l	Cr mg/l	Cu mg/l	Hg mg/l	Mo mg/l	Ni mg/l	Pb mg/l	Se mg/l	Zn mg/l	
Jan	20,547	321	13400	98	<0.5	0.01	0.014	0.17	4.17	<0.05	0.05	0.11	0.16	<0.05	3.93	
Feb	19606	490	12100	125	<0.05	0.006	0.009	0.112	2.22	<0.05	0.031	0.123	0.13	<0.05	2.9	
Mar	34416	779	22100	239	<0.05	0.02	0.033	0.47	10.1	<0.05	0.12	0.33	0.48	0.07	9.39	
Apr	22952	624	11600	216	<0.5	0.01	0.03	0.36	7.59	<0.05	0.08	0.37	0.34	0.05	6.09	
May	25194	451	16400	106	<0.05	<.01	0.024	0.27	6.54	<0.05	<0.05	0.25	0.31	<0.05	4.96	
Jun	29797	293	13600	133	<0.05	0.01	0.027	0.29	7.67	<0.05	0.08	0.26	0.35	<0.05	5.85	
Jul	26254	557	22900	161	<0.05	0.02	0.034	0.36	11.7	<0.05	0.11	0.33	0.47	0.06	7.71	
Aug	27958	923	15900	96	<0.05	0.01	0.02	0.21	7.02	<0.05	0.07	0.22	0.32	<0.05	6.45	
Sept	38899	877	14200	107	<0.05	0.02	0.026	0.3	8.09	<0.05	0.08	0.23	8.09	0.05	10.2	
Oct	35961	541	9140	78	<0.05	<.01	0.015	0.16	5.02	<0.05	0.05	0.13	0.25	<0.05	4.55	
Nov	27075	837	23300	246	<0.05	0.02	0.037	0.34	14.9	<0.05	0.15	0.3	14.9	0.08	11.5	
Dec	38309	503	14400	403	<0.05	0.03	0.037	0.35	9.58	<0.05	0.11	0.05	0.58	<0.05	8.81	
Total																
Ave	28914	599.6667	15753	167.333	0.125	0.0156	0.0255	0.2827	7.8833	0.05	0.0846	0.2253	2.1983	0.055	6.8617	
Ammonia + Nitrate Nitrogen to Metal Ratio																
Minimum Acceptable Ammonia + Nitrate-Nitrogen to Metal Ratio						167.3	Ammonia + Nitrate Nitrogen to Metal Ratio in Sludge									
	Metal									Exceedance						
	Arsenic		100				0.125	1338.7		NO						
	Cadmium		500				0.0156	10726.5		NO						
	Cobalt		50				0.0255	6562.1		NO						
	Chromium		6				0.2827	592.0		NO						
	Copper		10				7.8833	21.2		NO						
	Mercury		1500				0.05	3346.7		NO						
	Molybdenum		180				0.0846	1977.1		NO						
	Nickel		40				0.2253	742.9		NO						
	Lead		15				2.1983	76.1		NO						
	Selenium		500				0.055	3042.4		NO						
	Zinc		4				6.8617	24.4		NO						

Table B: Liquid Metal Ratios Pembroke Pollution Control Plant 2007

Dewatered Sludge Results (ug/g)

2007	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Zn	% Solids
January	5.08	2.3	2.75	28.75	584.5	1.93	7.5	14.25	42	3	543	19.8
February	5.45	2.2	3.50	32.50	559.5	2.2	9	16	37.5	3	523	21.25
March	5.55	2.43	3.25	30.75	609.75	1.73	8.5	15.25	43	3.75	540.25	19.3
April	5.25	2.43	3.00	33.25	579.2	2.13	8.75	17	47.75	2.75	502	19.6
May	5.2	2.28	3.20	32.40	580	2.24	8	17.4	47.6	3	549	20.5
June	3.88	2.05	3.00	28.50	564	1.53	7.25	15.5	43.25	3.25	517	19.9
July	3.9	2.3	3.60	29.60	618.4	1.56	7.4	17.8	43.4	3	583	20.4
August	4.08	2.3	3.00	27.00	583.2	1.68	6.5	14.5	43.7	2.75	594	21.2
September	4.73	1.88	2.00	24.00	625.7	1.33	8	12.75	35.2	2.75	543	19.6
October	3.86	2.08	2.00	23.60	560.8	1.38	5.08	13.8	39	2	552.4	17.5
November	4.68	2	2.00	23.00	593	1.15	6.5	12.5	39.75	3	572.75	19.48
December	4.7	1.93	2.00	21.00	607.33	1.37	7	11.33	33	3	563.67	19.13
Average	4.70	2.18	2.78	27.86	588.78	1.69	7.46	14.84	41.26	2.94	548.59	19.81

Metal values in bold highlighting exceed acceptable values for dewatered biosolids when expressed as mg/kg of solids

Table C: Dewatered Sludge Results Pembroke Pollution Control Centre 2007

2007	Final Treated Effluent				
Month	Suspended Solids (mg/L)	Total Phosphorous (mg/L)	CBOD (mg/L)	Ammonia (mg/L) 2007	E. Coli (cts/100mL)
January	16.10	0.49	2.20	1.02	356
February	9.30	0.55	22.75	2.96	520
March	13.90	0.65	8.50	6.55	2873
April	33.30	0.71	2.50	3.40	437.5
May	18.50	0.48	2.20	5.70	70
June	10.00	0.36	1.70	3.25	80
July	12.50	0.36	1.20	2.31	280
August	14.10	0.41	2.50	0.68	8087.5
September	11.60	0.38	8.60	5.03	1860
October	8.74	0.33	5.30	6.40	140
November	4.17	0.35	19.30	4.00	396.7
December	4.60	0.33	3.30	4.60	362.8

Effluent Objectives				
Effluent Parameter	Monthly Average Concentration Objective(mg/L)	Monthly Average Concentration Limit(mg/L)	Annual Monthly Average Concentration (mg/L)	Exceedance
CBOD5	15	25	6.67	NO
Suspended Solids	15	25	13.07	NO
Total Phosphorus	0.8	1.0	0.45	NO
Total Ammonia Nitrogen				
Nov-Apr	20	25	3.85	NO
May	15	20	5.70	NO
June & Oct	10	15	4.83	NO
July, Aug & Sept	5	10	2.67	NO

Table D: Effluent Objectives/Final Effluent for Pembroke Pollution Control Centre 2007