

The annualized average effluent loading is compared to the loading criteria for both the non-freezing and freezing period in the table below;

Effluent Parameter	Loading Kg/day	Loading Criteria kg/day @ freezing	Loading Criteria kg/day @ non-freezing
CBOD₅	0.14	108 annual	72 annual
Suspended Solids	10.65	108 annual	72 annual
Total Phosphorus	0.59	7.2 annual	3.6 annual
Ammonia	1.25	36 daily	21.6 daily

The annual average effluent loading for CBOD₅, Suspended Solids and Total Phosphorus achieved compliance with the Environmental Compliance Approval effluent loading criteria. The daily ammonia loading also achieved compliance with the Environmental Compliance Approval effluent loading criteria.

The E coli monthly average for May was 367.8 counts per 100 mL, exceeding 200 counts per 100 mL during the required disinfection period from March 15 to October 30. The pH level for the wastewater effluent averaged 7.67 and the dissolved oxygen averaged 7.47 mg/l for the year 2015.

The maximum monthly average un-ionized ammonia value for 2015 was 0.03 mg/L, The ECA requires un-ionized value to be less than 0.1 mg/L at all times.

2. Description of operating problems and corrective actions

Q1 2015: No operating problems

Q2 2015: Issues with the UV system caused a high E.coli average for May, cleaned and changed bulbs. Outside contractor replaced ballasts and sockets on UV system

Q3 2015: No operating problems

Q4 2015: No operating problems.

3. Summary of maintenance activities

Currently Outlook Task Manager is being used to schedule the maintenance activities at the treatment plant from January to December. The operator is able to generate preventive maintenance and corrective work orders; as well as document work performed and issue work order history reports.

A highlight of the major maintenance carried out for 2015 is outlined below:

- The raw sewage pumps at both the Hebert and James Pump Stations were inspected and maintained by the operators.
- The Herbert Street, James Street and Sewage plant diesel generators received their annual service in early 2015 and are inspected and ran monthly
- The RAS, WAS and influent flow meters were calibrated by an outside contractor;
- Annual greasing and oil changes were completed on all blowers, Vibration readings are taken annually;
- All submersible pumps were inspected.
- Number one and two aerobic digesters including headers and piping were cleaned, inspected and serviced by the operators in the spring and fall
- The air lift piping on all the filter air lifts were pulled and inspected
- The UV system was monitored daily by the operators in 2015 for proper intensity and the lenses cleaned monthly, the bulbs were replaced as needed
- Outside contractors inspected the gas detectors, diesel generators, and lab equipment.

4. Influent – Effluent Quality Assurance Measures

The influent sample is obtained by a 24hr composite sampler (Epic), located at the headwork's of the treatment plant after screen and grit removal. A 75 ml sample is collected every 15 minutes.

A 24hr-composite sampler (Epic), located downstream of the effluent UV channel obtains the effluent sample. A 75 ml sample is collected every 15 minutes.

The effluent and influent samples were sent to Maxxam Analytics Inc. in Mississauga, Ontario. Maxxam is responsible for performing the quality assurance and control checks. For quality assurance purposes, the operator will split samples with the analytical tests performed in-house and at the contract laboratory. The operator performs a comparison of the sample results.

5. Calibration methods/Maintenance procedures for monitoring equipment

Copies of the calibration reports for the return activated sludge, waste activated sludge, and filter backwash water and influent flow meters are filed at the sewage plant.

D.O. probes and meters are cleaned and calibrated as per the manufactures specifications, by the operators.

The pH meter is calibrated once a month, the meter is used on a daily basis and calibration is checked prior to usage, by the operators.

6. Efforts made and results achieved in meeting Effluent Objectives

The annual effluent CBOD₅ achieved the effluent objectives for the concentration criteria and loading criteria in both the freezing and non-freezing periods.

The annual effluent suspended solids did not achieve the effluent objectives for the concentration criteria and loading criteria in both the freezing and non-freezing periods. During the month of August, the limit was exceeded with a concentration of 13.4mg/l suspended solids past the limit of 10mg/l. A report was generated and submitted to the MOECC

The effluent ammonia results failed to achieve the effluent objectives in the month of June but did meet the objectives (concentration and loading) for both the freezing and non-freezing periods for the remainder of the year.

The effluent total phosphorus failed to achieve the effluent objectives in July and August but did meet the objective (concentration and loading) during both the freezing period and non-freezing periods for the remainder of the year.

7. Monthly Sewage quantities and characteristics from all sources

The plant received sewage from collection system connected sources this reporting period; the town of Mitchell proper, including residential and small business operations. Parmalat Canada dairy processing plant, Sofina Foods livestock processing plant.

While quantities from all sources are monitored independently, characteristics of the sewage from the Town, Parmalat and Great Lakes Specialty Meats are combined as they are not segregated in the collection system.

In adherence to the operating Environmental Compliance Approval; imported waste flows are monitored and samples are taken for outside analysis on a weekly basis when received.

Total monthly sewage quantities from all sources are tabulated in the following table. Note volumes followed by a * indicate final effluent wash water quantities.

Monthly Quantities from source	Town of Mitchell Million Liters	Parmalat Dairy Million Liters	Sofina Foods Million Liters	Imported waste Million Liters
January	91.562	64.931	0.576	0.228
February	65.906	61.256	0.576	0.142
March	129.416	68.651	0.655	0.334
April	145.711	62.928	0.630	0.092
May	85.105	65.190	0.570	0.432
June	110.685	62.206	0.599	0.909
July	86.286	47.784	0.587	0.300
August	74.562	43.170	0.493	3.760
September	71.538	35.726	0.361	0.00
October	76.999	25.504	0.093	0.029
November	100.286	23.831	0.276	0.00
December	114.804	26.059	1.442	0.00
Totals	1,152.860	587.236	6.858	6.226

The following chart is a comparison of anticipated monthly average daily flow versus, actual average daily flow from all sources.

Average daily flow Vs. anticipated daily flow M³	Town of Mitchell M³	Parmalat Dairy M³	Great lakes Specialty Meats M³	Imported Waste M³
<i>Anticipated</i>	4,755	2,000	350	95
January	2954	2095	19	7
February	2354	2188	21	5
March	4175	2215	21	11
April	4857	2098	21	3
May	2745	2103	18	14
June	3690	2074	20	30
July	2783	1541	19	10
August	2405	1393	16	121
September	2385	1191	12	0
October	2484	823	3	1
November	3343	794	9	0
December	3703	841	47	0

Monthly average Characteristics of sewage by source; this table shows the combined sewage from the Town of Mitchell, the Parmalat dairy and Great Lakes Specialty Meats.

Characteristics of combined sources	CBOD5 mg/l	TKN mg/l	Total Phosphorus mg/l	Total Suspended solids mg/l
January	205.0	32.5	5.3	165.5
February	607.5	40.5	9.2	336.3
March	212.8	24.6	8	186.1
April	177.5	20.0	4.3	143.4
May	250.0	25.8	6.0	226.2
June	222.0	21.2	5.3	177.8
July	325.0	28.0	8.5	199.5
August	340.0	38.2	10.6	199.5
September	315.0	30.0	7.6	208.5
October	305.0	28.0	6.5	272.1
November	255.0	19.8	5.8	171.5
December	247.5	23.8	5.2	176.8

❖ **Monthly average characteristics of the imported waste source.**

Imported waste products accounted for less than 1% of total annual plant flow. Imported waste products are slowly metered into the head works of treatment process where they mix with the influent from the pump stations. In accordance with the operating Environmental Compliance Approval, weekly samples of the imported waste are taken, where applicable; sampling has been primarily of the high strength sources. On those occasions where the carrier has not filled the designated sample containers, operators sampled directly from the receiving station and identified these samples as "Mixed".

Imported Waste Characteristics	CBOD₅ mg/l	TKN mg/l	Total Phosphorus mg/l	Total suspended solids mg/l
January	2800	140	16	1500
February	25900	760	243.5	4500
March	14658	425.6	139.1	4374.2
April	10285	23.35	216	2400
May	25650	337.5	226.5	2350
June	480	82	34	130
July	N/A	N/A	N/A	N/A
August	N/A	N/A	N/A	N/A
September	N/A	N/A	N/A	N/A
October	N/A	N/A	N/A	N/A
November	N/A	N/A	N/A	N/A
December	N/A	N/A	N/A	N/A

Annual average characteristics of imported waste by source

Imported Waste Quality	CBOD ₅ mg/l	TKN mg/l	Total Phosphorus Mg/l	Total suspended solids mg/l	Volume Received Million Liters
Mitchell Feed Mill	1405	88.38	23.3	1650.13	0.563
Rothsay	N/A	N/A	N/A	N/A	N/A
Cadbury	N/A	N/A	N/A	N/A	N/A
Kellogg's	N/A	N/A	N/A	N/A	N/A
Natrel	41000	823.68	475	2200	0.201
Maple Leaf	25000	590	31	20000	0.03

8. Sludge generation volume and disposal methods

The annual compliance summary provides a tabulation of sludge generation for 2015. In total, approximately 34,354m³ of sludge was wasted.

Based on current loadings, we expect a similar amount of sludge generation in 2016.

Digested sludge from the WWTP and from the sludge storage lagoon are removed by Ontario Greenways Inc.

Biosolids are applied to sites approved by the OMAFRA/MOECC for land application of biosolids. This year there was land application of biosolids.

The summary of the sludge applied during 2015 and the projections for the year 2016 are as follows:

YEAR	LAND APPLICATION SITE NUMBER	SLUDGE APPLIED TO LAND/ M3
2015	5-151369	9701
2016 Projection	11 Sites Available	

Sufficient capacity is available within the existing approved land application sites for 2016. The acquisition and submission of application site approval requests are currently conducted by the contracted and licensed Hauler / land application contractor.

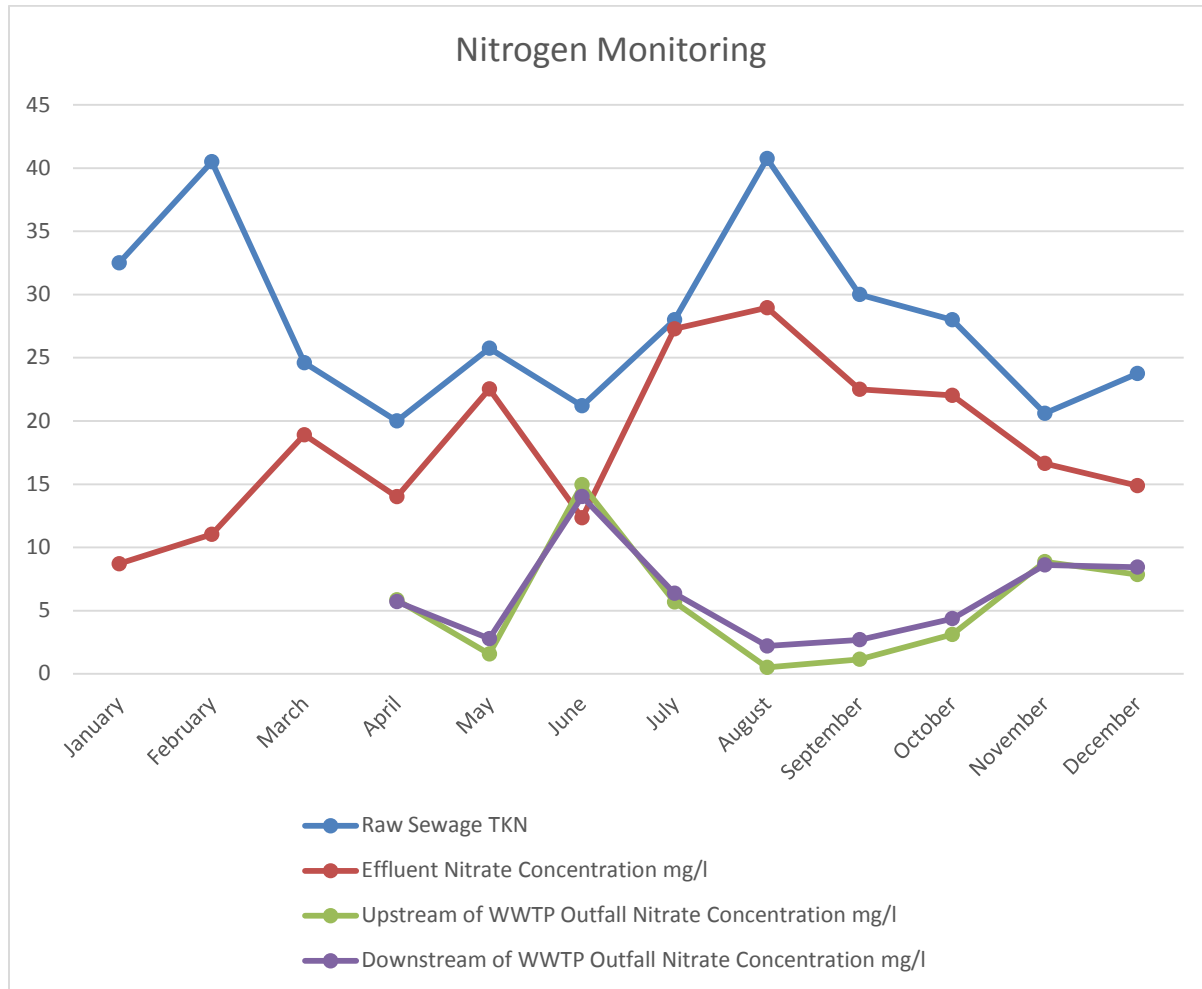
9. Summary of complaints and action taken to address complaints

No complaints were reported to operations staff in 2015.

10. Summary of all by-pass, spill or abnormal discharge events

As identified earlier in this report there were elevated solids in the final effluent and elevated E.coli also in the final effluent, both matters were promptly addressed and are being considered abnormal discharge events.

Nitrogen Monitoring Summary



Summary

Based on ongoing sampling results, the most significant increase of nitrate in the North Thames River occurs during the summer when stream flow is low and minimal effluent dilution is provided. Correspondingly, background nitrate levels in the North Thames River appear to reduce in the summer which in part offsets the impact of additional nitrate loadings from the wastewater treatment plant during this time period.

The work plan developed by West Perth to date does not include a component for ecological impacts, if any, from higher nitrate values in the North Thames River.



We understand that high nitrate values may be linked to impacts on amphibians during the egg stage of amphibian life cycle (spring). Results to date would indicate a minimal nitrate increase during the spring time, due to higher dilution and to some degree, higher background nitrate levels in the North Thames River during the spring season.

For 2016, the work plan will continue, sampling at the West Perth Line 29 location, and that likely the Line 29 location be used to assess the net increase of nitrate levels in the North Thames River.

Mitchell (West Perth)
Wastewater Treatment Facility



Annual Compliance Summary for 2015

2015	FLOWS			BIOCHEMICAL O2 DEMAND				SUSPENDED SOLIDS			PHOSPHORUS			AMMONIA		EFFLUENT			WASTE			
	Total	Avg. Day	Max Day	Avg. Raw	Avg. Load	Avg. Eff.	Avg. Load	Avg. Raw	Avg. Eff.	Avg. Load	Avg. Raw	Avg. Eff.	Avg. Load	Avg. Eff.	Avg. Load	Effluent	DO	pH	Temp	Volume	SS	
	Flow	Flow	Flow	BOD	BOD	BOD	BOD	SS	SS	SS	Phos.	Phos.	Phos.	Amm	Amm	E. Coli				m ³ /month	SS	
	ML	ML	ML	(mg/L)	(kg/day)	(mg/L)	(kg/day)	(mg/L)	(mg/L)	(kg/day)	(mg/L)	(mg/L)	(kg/day)	(mg/L)	(kg/day)	cnt/100ml	(mg/L)	(mg/l)	Deg C	m ³ /month	(mg/L)	
Jan	91.562	2.954	4.176	205.0	605	0.00	0.00	165.5	1.90	5.61	5.34	0.06	0.17	1.61	4.76	0.1	7.78	7.67	12.0	2,893.0	9,222	
Feb	65.906	2.354	2.764	607.5	1,430	0.00	0.00	336.3	3.76	8.86	9.24	0.10	0.24	1.93	4.54	216.7	7.69	7.41	11.3	2,594.0	8,807	
Mar	129.416	4.175	7.062	212.8	888	0.40	1.68	186.1	4.96	20.71	7.97	0.15	0.63	0.03	0.13	122.3	8.56	7.60	12.1	3,474.0	12,529	
Apr	145.711	4.857	8.573	177.5	862	0.01	0.03	143.4	2.63	12.77	4.33	0.25	1.21	0.11	0.53	101.3	8.25	7.67	13.5	3,186.0	10,511	
May	85.105	2.745	4.663	250.0	686	0.00	0.00	226.2	1.78	4.87	6.03	0.32	0.89	0.03	0.07	367.8	7.00	7.60	17.7	2,839.0	9,372	
Jun	110.685	3.690	6.794	222.0	819	0.00	0.00	177.8	2.05	7.56	5.33	0.20	0.72	1.19	4.38	0.2	6.32	7.69	15.1	3,293.0	10,993	
Jul	86.286	2.783	4.124	325.0	905	0.00	0.00	199.5	5.94	16.53	8.53	0.36	1.00	0.02	0.07	0.0	6.50	7.65	16.8	3,097.0	7,794	
Aug	74.562	2.405	6.042	340.0	818	0.00	0.00	199.5	13.40	32.23	10.61	0.37	0.89	0.05	0.12	0.1	6.40	7.65	16.6	2,666.0	5,661	
Sep	71.538	2.385	3.340	315.0	751	0.00	0.00	208.5	1.39	3.31	7.57	0.12	0.29	0.03	0.07	6.0	6.76	7.59	18.2	2,102.0	5,613	
Oct	76.999	2.484	4.293	305.0	758	0.00	0.00	272.1	1.76	4.38	6.52	0.14	0.34	0.08	0.19	17.0	7.50	7.88	14.4	2,436.0	10,752	
Nov	100.286	3.343	7.436	255.0	852	0.00	0.00	171.5	2.05	6.85	5.78	0.11	0.36	0.03	0.09	8.2	8.16	7.78	11.6	2,643.0	9,976	
Dec	114.804	3.703	7.017	247.5	917	0.00	0.00	176.8	1.13	4.17	5.22	0.08	0.31	0.02	0.08	0.1	8.54	7.86	10.8	3,131.0	8,918	
Total	1,152.860																				34,354.0	
Avg	96.072	3.156	5.524	289	858	0.03	0.14	205.2	3.56	10.65	6.87	0.19	0.59	0.43	1.25	70	7.45	7.67	14.17	2,862.8	9,179	
Max	145.711	4.857	8.573	608	1,430	0.40	1.68	336.3	13.40	32.23	10.61	0.37	1.21	1.93	4.76	368	8.56	7.88	18.24	3,474.0	12,529	
Criteria	T>5 C	5.800				< 10	58.10		< 10	58.10		< 0.5	2.90	< 3	17.40	200						
	T<5 C	5.800				< 15	87.20		< 20	116.30		< 1.0	5.80	< 5	29.00	none						
MEETS Concentration Criteria																						

Reasons for failure / Other Problems:

Remedial Actions:

1. _____
2. _____
- _____
- _____
- _____
- _____
- _____
- _____