

# Town of Petrolia Wastewater Treatment Plant

**2021 Annual Report of Operations**

**Managed, Operated, and Maintained by**

**Jacobs**

March 2022

Ontario Ministry of the Environment, Conservation and Parks  
1094 London Road,  
Sarnia, Ontario.

Dear MECP District Manager:

On behalf of the Corporation of the Town of Petrolia, in Lambton County, Jacobs (OMI) is pleased to submit to you the annual operating report for the Town of Petrolia, Wastewater Treatment Plant. Please feel free to contact the undersigned if you have any questions regarding this report.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Joe Bloomfield". The signature is fluid and cursive, written in a professional style.

Joe Bloomfield

**Jacobs** - Project Manager

cc: Mike Thompson, Manager of Operations, Town of Petrolia  
Cathy Culnan, Operator II, Jacobs  
Rick Marsh, Area Manager, Jacobs

## **Introduction**

The Town of Petrolia has constructed a new Wastewater Treatment Plant in 2016/2017. The WWTP is classified as a Class three (3) treatment with a Class two (2) collection system. OMI (Jacobs) is the Operating Authority for the treatment plant and the collection system pump stations, on behalf of The Town of Petrolia.

OMI (Jacobs) commenced operations of the new plant July/2017.

The system operates under ECA # 5159-AJFKCP, issued Aug 3, 2017.

The Total Influent flow to the plant for 2021 was approximately 635,698 m<sup>3</sup> which is an annual daily average of 1,742 m<sup>3</sup>/day or approximately 33% of capacity (2020 - 630,595 m<sup>3</sup>)

The plant's design capacity is an average daily flow of 5,263 m<sup>3</sup>/day and a peak flow rate capacity of 21,050 m<sup>3</sup>/day.

The WWTP has a back-up power generator on-site which operates the treatment plant and main pumping station during power fail emergencies.

The MECP performed an inspection of the WWTP on July 10<sup>th</sup>, 2019

Benthic sampling of Bear Creek was performed in June/2017, June/2018 and June/2019. After reviewing three (3) consecutive year results, the MECP had concluded the results show no additional water impairment and the monitoring requirement for Benthic sampling of Bear Creek has been terminated.

## **Plant processes:**

### **Headworks:**

Two (2) Mechanical Multi Rake Bar Screens, one (1) Manual Bar Screen, Washer/Compactor Conveyor, Influent Channel Aeration c/w PD Blower, Vortex Grit Separator, Grit pump, Grit classifier, Disposal bin, Partial Flume c/w Flow Meter

### **Secondary Treatment:**

Two (2) Aeration tanks c/w Fine Bubble Diffusers and Submersible Mixers (Anoxic zone only), two (2) Secondary Clarifiers c/w Chain and Flight Cross Collectors, three (3) Blowers, three (3) RAS/WAS pumps, one (1) Scum pump, two (2) Alum Dosing pumps

### **Tertiary Treatment:**

Two (2) Disk Filters, UV Disinfection System

**Digestion:**

Two (2) Aerobic Digesters in retrofitted existing Clarifier's c/w Fine Bubble Diffusers, Two (2) PD Blowers, Two (2) Sludge Transfer pumps, One (1) Supernatant pump

**Lagoon:**

Two (2) lagoons with a joint cross connection pumping station which returns supernatant back to the plant's headworks for further treatment. This pump station houses one (1) pump

**Leachate:**

The Corporation of the Town of Petrolia has entered into an agreement with Waste Management Canada to receive and treat leachate from the Petrolia Waste Management site located on Oil Heritage Road. The leachate enters the system through a forcemain which starts at the Waste Management site and continues north along Oil Heritage Road to Petrolia Line. It is then deposited into the collection system in the manhole, located at the corner of Petrolia Line and Oil Heritage Road.

The maximum volume of leachate accepted at the WWTP is limited to 100 m<sup>3</sup> per/day. The volume of leachate flow that enters the system is tracked through a flowmeter maintained by Waste Management. Each month OMI and the Town of Petrolia receives a flow volume report.

The total 2021 leachate flow that the WWTP received is 5,620 Liters. (2020: 8,967)

Grab samples of Leachate is collected quarterly: Jan 4<sup>th</sup>, April 12<sup>th</sup>, July 13<sup>th</sup>, Oct 5<sup>th</sup>

The sample is sent to SGS Laboratories and analyzed for the parameters: BOD5 and TKN

The Operator performs an on-site analysis of the: pH, Temperature and Reactive Phosphorous.

Operators collect the leachate samples at the receiving point in the collection system.

**RAW Influent:**

Main pump station receives all the raw sewage flow from the other pump stations and the gravity feed sewer system. It is then pumped directly to the WWTP.

A 24-hour composite sample of RAW sewage is collected weekly and analyzed for BOD5, TSS, TKN, Total Phosphorous and Alkalinity. The Operator performs the on-site analysis of the: pH and Temperature

Historically the Influent flow rates increase during storms/heavy rain events and during the spring melting/run-off. Also, there will be a slight increase due to the new residential and industrial builds within the Municipality. The WWTP adds Sodium Bicarbonate on an as needed basis to maintain pH levels within compliance parameters.

Phosphorous and solids removal is achieved by the addition of aluminum sulphate (alum) from two (2) metering pumps which deposits the alum directly into a combined receiving channel at the end of the aeration tank. The alum is stored indoors in a 20,000 Litre tank.

The total amount of Alum used for 2021 was 54, 416 Liters. (2020: 60,357)

**Final Effluent:**

The treated Effluent discharges through an outfall pipe into Bear Creek.

A 24-hour composite sample of the Final Effluent is collected weekly and analyzed for CBOD5, TSS, Total Phosphorous, Alkalinity, Nitrate, Nitrite, Ammonia and E-coli.

The Operator performs an on-site analysis of the: pH, Temperature and Reactive Phosphorous.

The new plant design does not include an Effluent flow meter. The Effluent flow data is interpreted by a virtual flow meter. This is comprised of taking the Influent flow minus any wasting that has occurred and then this result is to be the Final Effluent flow.

In the new ECA # 5159-AJFKCP, Section 7-1 (d) issued Aug/2017 it states the UV lights are to be operational year-round. In an email dated May 9<sup>th</sup>/2018, the MECP has approved the UV to be operated seasonally from April 1<sup>st</sup> to November 30<sup>th</sup>

Overall, as a Best Management Practice alum dosing is 10% in the winter and this rises to 12% throughout the warmer months, therefore increasing the efficiency of the Phosphorous removal in the treatment process before it becomes a Design Objective non-conformance. Also, phosphorus levels may increase slightly when Supernatant from Lagoon is decanted back to the WWTP

Parameter	Design Objective	Design Limit
CBOD5	5 mg/L (26.3 kg/d)	10 mg/L (52.6 kg/d)
TSS	5 mg/L (26.3 kg/d)	10 mg/L (52.6 kg/d)
Total Phos	0.37 mg/L (1.9 kg/d)	0.74 mg/L (3.9 kg/d)
TAN	2.0 mg/L (10.5 kg/d) (May 1 – Nov 30)	3.0 mg/L (15.8 kg/d) (May 1 – Nov 30)
TAN	4.0 mg/L (21.0 kg/d) (Dec 1 – April 30)	6.0 mg/L (31.6 kg/d) (Dec 1 – April 30)
pH	6.5 – 8.5 inclusive at all times	6.0 – 9.5 inclusive at all times
E-Coli	150 organisms per 100 mL	200 organisms per 100 mL

**Effluent Limit Parameters Non-Compliance:**

August 24<sup>th</sup> compliance sample for the parameter pH was 5.95. Flow was diverted to onsite lagoons. Sodium Bicarbonate was added, and pH monitored. Aug 30<sup>th</sup> the final effluent had returned to compliance levels and flow was diverted back through the plant processes. August had seen dry spells with well above average temperatures causing fluctuations in the pH. MECP was notified on both occasions.

**Effluent Design Objectives Non-Conformance:**

**July** – monthly average for Total Phosphorous was 0.58 mg/L –Design Objective of (0.37 mg/L) was not met due to the very hot and dry summer temperatures causing a larger amount of algae growth on the clarifier weirs, with operators cleaning weirs more frequently

**August** – monthly average for pH was 6.34, the Design Objective was not met due to the higher-than-normal summer temperatures. Sodium Bicarbonate was added to the influent flow at the vortex and Operators continue to monitor pH and add chemical when necessary.

**November** – monthly E-coli Geomean was 159.7 cfu/100 mL –Design Objective of (150 cfu/100 mL) was not met due to the automatic UV system improperly wiping at various times (didn't go all the way to the end of the bulb leaving a film)

### **Sampling & Monitoring data:**

All samples are collected and analyzed as per the requirements of the ECA. All microbiological and chemical sample analysis are conducted by SGS Laboratories. The pH, Temperature and Reactive Phosphorous analysis are conducted on site by the Operator. Lab analysis results and graphs are included in this report.

The reports submitted quarterly to the Water Supervisor at the Ontario Ministry of the Environment, Conservation and Parks (MECP) are the R1 and R2 Municipal Utility Monitoring Program reports for mechanical plants. Also submitted quarterly are the Bypass/Overflow reports.

A required quarterly Federal ERRIS (Effluent Regulatory Reporting Information System) report is submitted by OMI on behalf of The Town of Petrolia

OMI submits the WWTP's Influent flow totals to Bluewater Power for The Ministry of Energy on behalf of the Town of Petrolia

### **Maintenance and Repairs:**

OMI uses a computerized maintenance management system (CMMS) to track preventative and corrective maintenance activities. Preventive maintenance activities are carried out on a regularly scheduled basis to ensure optimal performance and readiness of all critical plant equipment during an emergency. Some repairs are listed below.

### **Repairs:**

Jan 8<sup>th</sup> – asbestos was removed from old generator piping at Barrett's Lane pump station  
Jan 12<sup>th</sup> – DMW installed new "main disconnect" at Garfield pump station  
Jan 13<sup>th</sup> – pulled pump at Garfield pump station for repair  
Feb 23<sup>rd</sup> – Barrett's Lane MCC panel was commissioned & Multismart system installed  
Feb 17<sup>th</sup> – install repaired pump at Garfield pump station  
Mar 2<sup>nd</sup> – Alberts Generator performed annual service on the WWTP generator  
Mar 4<sup>th</sup> – DMW replaced transducer in wet well at Barrett's Lane pump station  
April 20<sup>th</sup> – Sarnia Doors on site to repair storage facility doors  
April 28<sup>th</sup> – CT Environmental cleaning pump station wet wells: Garfield, Garden, Barrett's  
May 5<sup>th</sup> – Bluewater Power installed a new meter at Garden pump station  
May 10<sup>th</sup> – A1 Security installed a security system in the storage facility  
June 1<sup>st</sup> – DMW Electrical installing new relay at Garfield pump station  
June 24<sup>th</sup> – DMW Electrical installing repaired control panel on grit room overhead door  
July – KWS Electrical installing upgrades to Greenfield pump station - new MCC panel & posts  
Aug – Stewart Electrical installed lighting at the back of storage & theatre facilities  
Aug 26<sup>th</sup> – DMW Electrical install GFI receptacle at Digesters  
Sept 22<sup>nd</sup> – Hetek on site replaced H2S gas sensor

Oct - OMI performed oil inspections on equipment  
Nov – anoxic zone # 1, the mixer has been removed for repair  
Dec 14<sup>th</sup> – Tulsar setting up Multismart system at Greenfield pump station

Electrical Safety authority (ESA) performs annual inspections at the WWTP and pumping stations which was conducted on June 22<sup>nd</sup>

OMI performed diagnostics and alignments on various treatment plant equipment (pumps, filters, digester pumps)

OMI performs annually oil inspections on equipment (vortex, bar screens, pumps, grit classifier)

Disk filter screens are cleaned as necessary throughout the year with Sodium Percarbonate  
The Disk Filters had been out-of-service throughout the year due to numerous breakdowns of critical parts. Bearings and shafts were replaced.

### **Sludge Management:**

As per the ECA, one (1) sample of sludge is collected annually and analyzed for the required parameters.

Waste activated sludge (WAS) is stored in two (2) aerobic digesters, thickened & digested.  
It is estimated that 49, 007 m<sup>3</sup> of sludge was wasted from the treatment plant to the aerated digesters and it is then thickened by decanting the supernatant back to the WWTP for further treatment, then when no evidence of supernatant exists, the thickened sludge is transferred to the East Lagoon.  
(2020: 34,598 m<sup>3</sup> of sludge)

For the year 2022, it is anticipated that the volume of sludge produced will increase slightly. This is due to the ongoing construction of residential homes in various new subdivisions and new business development within the Municipality.

Also, more may be generated due to the additional treatment of Leachate from Waste Management.

East Lagoon had approximately 24, 408 m<sup>3</sup> of sludge removed in 2017/2018.  
West Lagoon – as to date no sludge has been removed

### **Calibrations:**

Flow meter calibrations are performed annually by Pierce Services, they were calibrated on July 8<sup>th</sup>  
In-house meters for pH analysis are calibrated and results documented by the Operators as per the manufacturer's recommendations.

Hetek performs semi-annual calibrations on the gas monitoring system (June 28<sup>th</sup> & Dec 13<sup>th</sup>)

### **By-Passes and Overflows:**

There were no By-passes/Overflows to report.

### **Pumping Stations & Collection system:**

The Petrolia collection system consists of twelve (12) pump stations.

The Pump Stations are checked on a weekly basis and have alarm monitoring capabilities 24 hours per day.

Pump run time hours are documented during the weekly checks.

Barrett's Lane pump station has a backup generator for emergency power outages. Operators exercise the generator monthly to ensure operations during a Power fail emergency

All other pump stations are equipped with a terminal plug and transfer switch in the event they require a portable generator.

Glenview, Ella, Progress, Barrett's Lane and Greenfield pump stations all are controlled by a Flyght Cloud Multi-Smart System which enables Operators to quickly log in remotely if an emergency should arise

### **Lagoons:**

Petrolia WWTP Works have two (2) on site lagoons.

- One (1) sludge stabilization lagoon (East) with a holding capacity of 88,200 m<sup>3</sup> used for storage and treatment of sludge from the aerobic digesters, equipped with an outfall structure and a gate valve discharging to Bear Creek
- One (1) sewage lagoon with a holding capacity of 126,540 m<sup>3</sup> used for storage and treatment of excess sewage flow diverted from the sewage treatment plant during an emergency, equipped with an outfall structure and a gate valve discharging to Bear Creek.

Discharge from either East or West lagoons shall be allowed only if monitoring results obtained under condition 8 (5) comply with the compliant limits, otherwise the supernatant from either lagoon will be conveyed back to the sewage treatment plant headworks for further treatment.

When the Discharge is out of compliance with the Design Objectives, the discharge valve will be closed, and the supernatant shall be pumped back to the plant for further treatment, therefore eliminating an issue before it becomes a non-compliance.

### **Complaints:**

- There were no complaints for 2021

# Chart

## 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

Petrolia W.P.C.P.  
 Operations # 110000579  
 Operating Authority: JACOBS (O.M.I. Canada Inc.)  
 Municipality: Town of Petrolia

MONTH: January

YEAR: 2021

Analyst : SGS & Inhouse

Test # Date	Aeration MLSS	RAW INFLUENT					FINAL EFFLUENT									
	mg/L	BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
<b>1</b> 5-Jan	A1 - 3420 A2 - 3360	122	81	46.8	2.96	354	2.0	5.0	0.25	89	0.030	24.5	0.10	1100	0.17	7.14
<b>2</b> 12-Jan	A1 - 3470 A2 - 3780	350	294	67.6	3.31	396	2.0	8.0	0.15	68	0.030	34.2	0.10	5200	0.14	6.79
<b>3</b> 19-Jan	A1 - 3280 A2 - 3740	149	63	70.8	3.48	389	2.0	2.0	0.16	59	0.030	33.8	0.10	8200	0.15	6.83
<b>4</b> 26-Jan	A1- 3450 A2 - 3690	237	86	42.4	4.68	273	2.0	3.0	0.24	47	0.030	35.5	0.10	7000	0.06	6.74
<b>5</b>	A1- A2 -															
<b>ECA Limits</b>							<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0- 9.5</b>
<b>Design Objectives</b>							<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
<b>Monthly Average:</b>		<b>214.5</b>	<b>131.0</b>	<b>56.9</b>	<b>3.6</b>	<b>353.0</b>	<b>2.0</b>	<b>4.5</b>	<b>0.20</b>	<b>65.8</b>	<b>0.03</b>	<b>32.0</b>	<b>0.10</b>	<b>4256.7</b>	<b>0.13</b>	<b>6.88</b>
<b>Monthly Min:</b>		122	63	42.4	3.0	273	2	2	0.15	47	0.03	24.5	0.10	1100	0.06	6.74
<b>Monthly Max:</b>		350	294	70.8	4.7	396	2	8	0.25	89	0.03	35.5	0.10	8200	0.17	7.14

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

NDOGN - No Data: Overgrown with Non-target Bacteria

NDOGEC - No Data: Overgrown with E-coli

## 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: February

Petrolia W.P.C.P.

Operations # 110000579

Operating Authority: JACOBS (O.M.I. Canada Inc.)

Municipality: Town of Petrolia

YEAR: 2021

Analyst : SGS & Inhouse

Test # Date	Aeration MLSS	RAW INFLUENT					FINAL EFFLUENT									
	mg/L	BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
<b>1</b> 2-Feb	A1 - 3800 A2 - 3950	167	74	52.2	4.75	380	2.0	4.0	0.14	42	0.030	33.2	0.10	9000	0.01	6.79
<b>2</b> 9-Feb	A1 - 3720 A2 - 3500	187	109	47.4	4.70	269	2.0	3.0	0.11	32	0.030	38.0	0.10	11400	0.04	6.65
<b>3</b> 17-Feb	A1 - 3100 A2 - 3520	180	99	44.3	4.35	259	2.0	2.0	0.14	30	0.030	35.5	0.20	3400	0.05	6.50
<b>4</b> 23-Feb	A1- 2770 A2 - 3880	178	76	42.2	4.35	271	3.0	5.0	0.16	36	0.040	34.6	0.20	8200	0.02	6.61
<b>5</b>	A1- A2 -															
<b>ECA Limits</b>							<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0-9.5</b>
<b>Design Objectives</b>							<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
<b>Monthly Average:</b>		<b>178.0</b>	<b>89.5</b>	<b>46.5</b>	<b>4.5</b>	<b>294.8</b>	<b>2.3</b>	<b>3.5</b>	<b>0.14</b>	<b>35.0</b>	<b>0.03</b>	<b>35.3</b>	<b>0.15</b>	<b>7313.2</b>	<b>0.03</b>	<b>6.64</b>
<b>Monthly Min:</b>		167	74	42.2	4.4	259	2	2	0.11	30	0.03	33.2	0.10	3400	0.01	6.50
<b>Monthly Max:</b>		187	109	52.2	4.8	380	3	5	0.16	42	0.04	38	0.20	11400	0.05	6.79

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

NDOGN - No Data: Overgrown with Non-target Bacteria

NDOGEC - No Data: Overgrown with E-coli

# 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: March

Petrolia W.P.C.P.

Operations # 110000579

Operating Authority: JACOBS (O.M.I. Canada Inc.)

Municipality: Town of Petrolia

YEAR: 2021

Analyst : SGS & Inhouse

Test # Date	Aeration MLSS mg/L	RAW INFLUENT					FINAL EFFLUENT									
		BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
<b>1</b> 2-Mar	A1 - 3950 A2 - 4100	133	56	29.8	3.28	255	2.0	6.0	0.14	66	0.030	28.0	0.10	9400	0.06	6.82
<b>2</b> 9-Mar	A1 - 3270 A2 - 3540	147	90	52.4	4.03	392	2.0	4.0	0.11	56	0.030	29.9	0.10	9000	0.06	6.82
<b>3</b> 16-Mar	A1 - 3650 A2 - 4050	205	73	42.5	4.39	294	2.0	3.0	0.11	64	0.030	27.8	0.10	68	0.02	7.03
<b>4</b> 23-Mar	A1- 3450 A2 - 3500	194	178	65.6	4.26	395	2.0	4.0	0.13	53	0.030	29.4	0.10	24	0.03	6.73
<b>5</b> 30-Mar	A1- 3580 A2 - 3730	99	64	45.9	3.16	383	2.0	5.0	0.12	98	0.030	19.5	0.10	26	0.06	6.92
<b>ECA Limits</b>							<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0-9.5</b>
<b>Design Objectives</b>							<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
<b>Monthly Average:</b>		<b>155.6</b>	<b>92.2</b>	<b>47.2</b>	<b>3.8</b>	<b>343.8</b>	<b>2.0</b>	<b>4.4</b>	<b>0.12</b>	<b>59.8</b>	<b>0.03</b>	<b>28.8</b>	<b>0.10</b>	<b>324.3</b>	<b>0.04</b>	<b>6.85</b>
<b>Monthly Min:</b>		99	56	29.8	3.2	255	2	3	0.11	53	0.03	19.5	0.10	24	0.02	6.73
<b>Monthly Max:</b>		205	178	65.6	4.4	395	2	6	0.14	98	0.03	29.9	0.10	9400	0.06	7.03

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

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NDOGEC - No Data: Overgrown with E-coli

# 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: April

Petrolia W.P.C.P.

Operations # 110000579

Operating Authority: JACOBS (O.M.I. Canada Inc.)

Municipality: Town of Petrolia

YEAR: 2021

Analyst : SGS & Inhouse

Test # Date	Aeration MLSS mg/L	RAW INFLUENT					FINAL EFFLUENT									
		BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
<b>1</b> 7-Apr	A1 - 3590 A2 - 3400	183	114	50.5	4.10	399	2.0	4.0	0.11	87	0.030	25.5	0.10	2	0.05	7.06
<b>2</b> 13-Apr	A1 - 2990 A2 - 3190	110	71	39.5	3.53	305	3.0	4.0	0.09	74	0.030	27.6	0.10	8	0.05	6.96
<b>3</b> 20-Apr	A1 - 3080 A2 - 3340	289	316	41.8	5.93	287	2.0	5.0	0.10	60	0.030	28.2	0.10	10	0.03	6.97
<b>4</b> 27-Apr	A1- 3630 A2 - 3380	191	137	90.9	4.77	600	2.0	3.0	0.08	53	0.030	29.3	0.10	16	0.04	6.89
<b>5</b>	A1- A2 -															
<b>ECA Limits</b>							<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0-9.5</b>
<b>Design Objectives</b>							<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
<b>Monthly Average:</b>		<b>193.3</b>	<b>159.5</b>	<b>55.7</b>	<b>4.6</b>	<b>397.8</b>	<b>2.3</b>	<b>4.0</b>	<b>0.10</b>	<b>68.5</b>	<b>0.03</b>	<b>27.7</b>	<b>0.10</b>	<b>7.1</b>	<b>0.04</b>	<b>6.97</b>
<b>Monthly Min:</b>		110	71	39.5	3.5	287	2	3	0.08	53	0.03	25.5	0.10	2	0.03	6.89
<b>Monthly Max:</b>		289	316	90.9	5.9	600	3	5	0.11	87	0.03	29.3	0.10	16	0.05	7.06

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

NDOGN - No Data: Overgrown with Non-target Bacteria

NDOGEC - No Data: Overgrown with E-coli

# 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

MONTH: May

Petrolia W.P.C.P.

Operations # 110000579

Operating Authority: JACOBS (O.M.I. Canada Inc.)

Municipality: Town of Petrolia

YEAR: 2021

Analyst : SGS & Inhouse

Test # Date	Aeration MLSS mg/L	RAW INFLUENT					FINAL EFFLUENT									
		BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
<b>1</b> 4-May	A1 - 2930 A2 - 2910	365	94	90.6	5.90	604	2.0	4.0	0.11	50	0.030	32.2	0.10	18	0.05	6.87
<b>2</b> 11-May	A1 - 3600 A2 - 3700	118	90	48.3	4.75	261	2.0	2.0	0.08	49	0.030	33.3	0.10	57	0.10	6.96
<b>3</b> 18-May	A1 - 2990 A2 - 3130	191	58	45.0	5.11	255	2.0	2.0	0.13	49	0.040	31.2	0.10	1	0.07	6.88
<b>4</b> 26-May	A1- 2320 A2 - 2400	467	86	40.5	4.69	266	2.0	3.0	0.14	59	0.130	26.3	0.10	6	0.11	7.01
<b>5</b>	A1- A2 -															
<b>ECA Limits</b>							<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0-9.5</b>
<b>Design Objectives</b>							<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>		<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>Monthly Average:</b>		<b>285.3</b>	<b>82.0</b>	<b>56.1</b>	<b>5.1</b>	<b>346.5</b>	<b>2.0</b>	<b>2.8</b>	<b>0.12</b>	<b>51.8</b>	<b>0.06</b>	<b>30.8</b>	<b>0.10</b>	<b>8.9</b>	<b>0.08</b>	<b>6.93</b>
<b>Monthly Min:</b>		118	58	40.5	4.7	255	2	2	0.08	49	0.03	26.3	0.10	1	0.05	6.87
<b>Monthly Max:</b>		467	94	90.6	5.9	604	2	4	0.14	59	0.13	33.3	0.10	57	0.11	7.01

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

NDOGN - No Data: Overgrown with Non-target Bacteria

NDOGEC - No Data: Overgrown with E-coli

## 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

Petrolia W.P.C.P.  
 Operations # 110000579  
 Operating Authority: JACOBS (O.M.I. Canada Inc.)  
 Municipality: Town of Petrolia

MONTH: June  
 YEAR: 2021  
 Analyst : SGS & Inhouse

Test # Date	Aeration MLSS mg/L	RAW INFLUENT					FINAL EFFLUENT									
		BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
<b>1</b> June 1st	A1 - 2440 A2 - 2040	206	40	42.2	4.83	302	2.0	3.0	0.12	68	0.030	24.9	0.10	1	0.10	7.13
<b>2</b> June 8th	A1 -2680 A2 - 2850	146	20	38.9	4.54	252	3.0	2.0	0.15	56	0.060	27.0	0.10	11	0.17	7.17
<b>3</b> June 15th	A1 - 2580 A2 - 2750	163	10	41.3	4.50	259	2.0	6.0	0.22	61	0.050	24.3	0.10	59	0.20	6.83
<b>4</b> 22-Jun	A1- 3000 A2 - 2660	259	140	33.2	4.16	251	2.0	5.0	0.28	62	0.030	23.3	0.10	8	0.28	7.04
<b>5</b> June 29th	A1- 2640 A2 - 2180	110	37	67.2	2.64	283	2.0	4.0	0.35	58	0.040	22.4	0.10	8	0.36	7.09
<b>ECA Limits</b>							<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0-9.5</b>
<b>Design Objectives</b>							<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>		<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>Monthly Average:</b>		<b>176.8</b>	<b>49.4</b>	<b>44.6</b>	<b>4.1</b>	<b>269.4</b>	<b>2.2</b>	<b>4.0</b>	<b>0.22</b>	<b>61.8</b>	<b>0.04</b>	<b>24.9</b>	<b>0.10</b>	<b>8.4</b>	<b>0.19</b>	<b>7.04</b>
<b>Monthly Min:</b>		110	10	33.2	2.6	251	2	2	0.12	56	0.03	22.4	0.10	1	0.1	6.83
<b>Monthly Max:</b>		259	140	67.2	4.8	302	3	6	0.35	68	0.06	27	0.10	59	0.36	7.17

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

NDOGN - No Data: Overgrown with Non-target Bacteria

NDOGEC - No Data: Overgrown with E-coli

## 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

Petrolia W.P.C.P.  
 Operations # 110000579  
 Operating Authority: JACOBS (O.M.I. Canada Inc.)  
 Municipality: Town of Petrolia

MONTH: July  
 YEAR: 2021  
 Analyst : SGS & Inhouse

Test # Date	Aeration MLSS		RAW INFLUENT					FINAL EFFLUENT									
	mg/L		BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
1 6-Jul	A1	2210	263	100	42.8	3.64	358	2.0	4.0	0.63	67	0.070	22.3	0.20	220	0.54	6.94
	A2	2690															
	RAS	5250															
2 13-Jul	A1	2840	118	40	37.7	4.16	257	2.0	4.0	0.56	50	0.040	28.0	0.10	6	0.59	7.03
	A2	2740															
	RAS	2640															
3 20-Jul	A1	2720	181	20	36.6	3.84	252	2.0	4.0	0.44	47	0.050	28.4	0.10	27	0.43	6.66
	A2	2370															
	RAS																
4 22-Jun	A1	2530	253	300	53.9	4.86	337	2.0	5.0	0.68	43	0.090	26.5	0.50	16	0.79	6.91
	A2	2370															
	RAS																
5	A1																
	A2																
	RAS																
<b>ECA Limits</b>								<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0-9.5</b>
<b>Design Objectives</b>								<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>			<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>Monthly Average:</b>			<b>203.8</b>	<b>115.0</b>	<b>42.8</b>	<b>4.1</b>	<b>301.0</b>	<b>2.0</b>	<b>4.3</b>	<b>0.58</b>	<b>51.8</b>	<b>0.06</b>	<b>26.3</b>	<b>0.23</b>	<b>27.5</b>	<b>0.59</b>	<b>6.89</b>
<b>Monthly Min:</b>			118	20	36.6	3.6	252	2	4	0.44	43	0.04	22.3	0.10	6	0.43	6.66
<b>Monthly Max:</b>			263	300	53.9	4.9	358	2	5	0.68	67	0.09	28.4	0.50	220	0.79	7.03

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

NDOGN - No Data: Overgrown with Non-target Bacteria

NDOGEC - No Data: Overgrown with E-coli

## 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

Petrolia W.P.C.P.  
 Operations # 110000579  
 Operating Authority: JACOBS (O.M.I. Canada Inc.)  
 Municipality: Town of Petrolia

MONTH: August  
 YEAR: 2021  
 Analyst : SGS & Inhouse

Test # Date	Aeration MLSS		RAW INFLUENT					FINAL EFFLUENT									
	mg/L		BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
1 4-Aug	A1	3200	136	60	57.6	4.82	237	2.0	2.0	0.27	33	0.030	29.4	0.10	6	0.27	7.00
	A2	3170															
	RAS																
2 10-Aug	A1	2990	139	130	52.1	3.48	381	2.0	2.0	0.35	15	0.070	36.9	0.10	240	0.38	6.23
	A2	2680															
	RAS																
3 17-Aug	A1	2880	194	190	38.3	4.18	258	2.0	5.0	0.39	11	0.060	37.2	0.10	56	0.30	6.17
	A2	3200															
	RAS																
4 14-Aug	A1	2480	237	170	53.5	4.40	339	2.0	3.0	0.31	6	0.070	42.1	0.10	60	0.24	5.95
	A2	2500															
	RAS																
5 31-Aug	A1	2330	219	280	33.4	4.38	253	2.0	3.0	0.29	28	0.060	33.7	0.10	840	0.33	6.47
	A2	2030															
	RAS																
<b>ECA Limits</b>								<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0-9.5</b>
<b>Design Objectives</b>								<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>			<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>Monthly Average:</b>			<b>185.0</b>	<b>166.0</b>	<b>47.0</b>	<b>4.3</b>	<b>293.6</b>	<b>2.0</b>	<b>3.0</b>	<b>0.32</b>	<b>16.3</b>	<b>0.06</b>	<b>36.4</b>	<b>0.10</b>	<b>83.5</b>	<b>0.30</b>	<b>6.34</b>
<b>Monthly Min:</b>			136	60	33.4	3.5	237	2	2	0.27	6	0.03	29.4	0.10	6	0.24	5.95
<b>Monthly Max:</b>			237	280	57.6	4.8	381	2	5	0.39	33	0.07	42.1	0.10	840	0.38	7.00

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

NDOGN - No Data: Overgrown with Non-target Bacteria

NDOGEC - No Data: Overgrown with E-coli

## 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

Petrolia W.P.C.P.  
 Operations # 110000579  
 Operating Authority: JACOBS (O.M.I. Canada Inc.)  
 Municipality: Town of Petrolia

MONTH: September  
 YEAR: 2021  
 Analyst : SGS & Inhouse

Test # Date	Aeration MLSS		RAW INFLUENT					FINAL EFFLUENT									
	mg/L		BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
1	A1	1810	117	170	32.6	2.59	234	2.0	4.0	0.18	23	0.080	32.4	0.20	8	0.19	6.40
	A2	2140															
	RAS																
2	A1	2080	143	190	30.5	2.53	226	2.0	4.0	0.19	38	0.600	27.0	0.10	1	0.23	7.00
	A2	2140															
	RAS																
3	A1	2820	87	60	34.3	3.51	263	2.0	2.0	0.16	39	0.050	26.9	0.10	1	0.20	6.74
	A2	2200															
	RAS																
4	A1	O.O.S	172	130	34.0	3.96	288	2.0	2.0	0.16	94	0.030	18.4	0.10	5	0.18	7.14
	A2	3180															
	RAS																
5	A1																
	A2																
	RAS																
<b>ECA Limits</b>								<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0-9.5</b>
<b>Design Objectives</b>								<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>			<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>Monthly Average:</b>			<b>129.8</b>	<b>137.5</b>	<b>32.9</b>	<b>3.1</b>	<b>252.8</b>	<b>2.0</b>	<b>3.0</b>	<b>0.17</b>	<b>48.5</b>	<b>0.19</b>	<b>26.2</b>	<b>0.13</b>	<b>2.5</b>	<b>0.20</b>	<b>6.82</b>
<b>Monthly Min:</b>			87	60	30.5	2.5	226	2	2	0.16	23	0.03	18.4	0.10	1	0.18	6.40
<b>Monthly Max:</b>			172	190	34.3	4.0	288	2	4	0.19	94	0.6	32.4	0.20	8	0.23	7.14

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

NDOGN - No Data: Overgrown with Non-target Bacteria

NDOGEC - No Data: Overgrown with E-coli

## 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

Petrolia W.P.C.P.  
 Operations # 110000579  
 Operating Authority: JACOBS (O.M.I. Canada Inc.)  
 Municipality: Town of Petrolia

MONTH: October  
 YEAR: 2021  
 Analyst : SGS & Inhouse

Test # Date	Aeration MLSS		RAW INFLUENT					FINAL EFFLUENT									
	mg/L		BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
1	A1	O.O.S	134	110	36.8	3.28	306	2.0	3.0	0.19	105	0.030	14.2	0.10	206	0.25	7.12
	A2	3150															
	RAS																
2	A1	O.O.S	87	40	29.3	2.43	293	2.0	3.0	0.18	88	0.050	24.0	0.10	7	0.19	7.25
	A2	2270															
	RAS																
3	A1	O.O.S	154	90	37.8	3.58	349	3.0	3.0	0.21	101	0.050	20.7	0.10	137	0.22	7.16
	A2	2660															
	RAS																
4	A1	O.O.S	67	30	26.1	2.18	283	4.0	5.0	0.29	108	0.230	18.3	0.60	960	0.21	7.02
	A2	2310															
	RAS																
5	A1																
	A2																
	RAS																
<b>ECA Limits</b>								<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0-9.5</b>
<b>Design Objectives</b>								<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>			<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>Monthly Average:</b>			<b>110.5</b>	<b>67.5</b>	<b>32.5</b>	<b>2.9</b>	<b>307.8</b>	<b>2.8</b>	<b>3.5</b>	<b>0.22</b>	<b>100.5</b>	<b>0.09</b>	<b>19.3</b>	<b>0.23</b>	<b>117.4</b>	<b>0.22</b>	<b>7.14</b>
<b>Monthly Min:</b>			67	30	26.1	2.2	283	2	3	0.18	88	0.03	14.2	0.10	7	0.19	7.02
<b>Monthly Max:</b>			154	110	37.8	3.6	349	4	5	0.29	108	0.23	24	0.60	960	0.25	7.25

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L  
 Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

NDOGN - No Data: Overgrown with Non-target Bacteria  
 NDOGEC - No Data: Overgrown with E-coli

## 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

Petrolia W.P.C.P.

Operations #

110000579

Operating Authority: JACOBS (O.M.I. Canada Inc.)

Municipality: Town of Petrolia

MONTH: November

YEAR: 2021

Analyst : SGS & Inhouse

Test # Date	Aeration MLSS		RAW INFLUENT					FINAL EFFLUENT									
		mg/L	BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
1	A1	O.O.S															
	A2	2960	69	40	23.5	2.42	284	2.0	4.0	0.19	129	0.060	19.9	0.20	340	0.17	7.12
	RAS																
2	A1	O.O.S															
	A2	3210	116	40	29.1	3.29	269	2.0	5.0	0.22	88	0.060	22.3	0.10	5	0.17	7.12
	RAS																
3	A1	O.O.S															
	A2	3460	177	40	36.7	3.90	317	2.0	2.0	0.25	90	0.070	20.0	0.10	480	0.21	6.98
	RAS																
4	A1	O.O.S															
	A2	2570	158	60	31.5	3.63	257	2.0	3.0	0.28	93	0.040	20.9	0.10	187	0.27	6.95
	RAS																
5	A1	O.O.S															
	A2	2880	282	260	40.3	4.13	316	4.0	5.0	0.29	103	0.050	20.4	0.10	680	0.27	7.01
	RAS																
<b>ECA Limits</b>								<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0-9.5</b>
<b>Design Objectives</b>								<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>			<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>Monthly Average:</b>			<b>160.4</b>	<b>88.0</b>	<b>32.2</b>	<b>3.5</b>	<b>288.6</b>	<b>2.4</b>	<b>3.8</b>	<b>0.25</b>	<b>100.0</b>	<b>0.06</b>	<b>20.8</b>	<b>0.13</b>	<b>159.7</b>	<b>0.21</b>	<b>7.04</b>
<b>Monthly Min:</b>			69	40	23.5	2.4	257	2	2	0.19	88	0.04	19.9	0.10	5	0.17	6.95
<b>Monthly Max:</b>			282	260	40.3	4.1	317	4	5	0.29	129	0.07	22.3	0.20	680	0.27	7.12

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

NDOGN - No Data: Overgrown with Non-target Bacteria

NDOGEC - No Data: Overgrown with E-coli

## 2021 WEEKLY ANALYTICAL and MONTHLY AVERAGE RESULTS

Petrolia W.P.C.P.

Operations #

110000579

Operating Authority: JACOBS (O.M.I. Canada Inc.)

Municipality: Town of Petrolia

MONTH: December

YEAR: 2021

Analyst : SGS & Inhouse

Test # Date	Aeration MLSS		RAW INFLUENT					FINAL EFFLUENT									
		mg/L	BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	E-Coli Per 100ml	Reactive P mg/L	pH
1	A1	O.O.S															
	A2	2800	58	120	24.2	2.58	175	2.0	8.0	0.27	127	0.030	16.1	0.10	1300	0.22	7.16
	RAS																
2	A1	O.O.S															
	A2	2680	118	100	39.8	2.99	336	2.0	5.0	0.26	136	0.030	14.0	0.10	1500	0.25	7.20
	RAS																
3	A1	O.O.S															
	A2	2640	120	40	33.2	3.73	322	2.0	2.0	0.29	111	0.040	17.5	0.10	1180	0.27	7.19
	RAS																
4	A1	O.O.S															
	A2	2960	130	90	37.4	3.16	357	2.0	4.0	0.32	135	0.090	13.1	1.40	7800	0.29	7.70
	RAS																
5	A1																
	A2																
	RAS																
<b>ECA Limits</b>								<b>10</b>	<b>10</b>	<b>0.74</b>				<b>see below</b>	<b>200-Geo</b>		<b>6.0-9.5</b>
<b>Design Objectives</b>								<b>5</b>	<b>5</b>	<b>0.37</b>				<b>see below</b>	<b>150-Geo</b>		<b>6.5-8.5</b>
<b>Number of Tests</b>			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
<b>Monthly Average:</b>			<b>106.5</b>	<b>87.5</b>	<b>33.7</b>	<b>3.1</b>	<b>297.5</b>	<b>2.0</b>	<b>4.8</b>	<b>0.29</b>	<b>127.3</b>	<b>0.05</b>	<b>15.2</b>	<b>0.43</b>	<b>2058.3</b>	<b>0.26</b>	<b>7.31</b>
<b>Monthly Min:</b>			58	40	24.2	2.6	175	2	2	0.26	111	0.03	13.1	0.10	1180	0.22	7.16
<b>Monthly Max:</b>			130	120	39.8	3.7	357	2	8	0.32	136	0.09	17.5	1.40	7800	0.29	7.70

Dec 1st UV Lights are shut "off" for season - back "on" March 31/2021

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L - Objective is 2.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L - Objective is 4.0 mg/L

NDOGN - No Data: Overgrown with Non-target Bacteria

NDOGEC - No Data: Overgrown with E-coli

### 2021 Sludge Summary

<b>MONTH</b>	<b>Sludge Wasted to Digesters (m3)</b>
<b>Jan</b>	<b>3085</b>
<b>Feb</b>	<b>2430</b>
<b>Mar</b>	<b>2570</b>
<b>Apr</b>	<b>3360</b>
<b>May</b>	<b>5536</b>
<b>June</b>	<b>4573</b>
<b>July</b>	<b>3161</b>
<b>Aug</b>	<b>5728</b>
<b>Sept</b>	<b>3147</b>
<b>Oct</b>	<b>5488</b>
<b>Nov</b>	<b>5187</b>
<b>Dec</b>	<b>4742</b>
<b>TOTAL m3</b>	<b>49007</b>

**Sludge is thickened in the digesters by decanting the digester supernatant back to the plant for further treatment and then the thickened sludge is sent to East storage lagoon**

**2021 AVERAGE MONTHLY ANALYTICAL RESULTS**

Petrolia WWTP

Operations Number: 110000579

Operating Authority: JACOBS O.M.I. Canada Inc.

Municipality: Town of Petrolia

Month	FLOWS		RAW INFLUENT Monthly Average					FINAL EFFLUENT Monthly Average								Geomean Avg
	Influent Flow m3	Avg. Flows m3/Day	BOD5 mg/L	S. S. mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	CBOD5 mg/L	S. S. mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia NH3 mg/L	pH	E-Coli Per 100ml
January	52,579	1,696	214.5	131.0	56.9	3.6	353	2.0	4.5	0.20	65.8	0.030	32	0.10	6.88	4256.7
February	45,462	1,624	178	89.5	46.5	4.5	294.8	2.3	3.5	0.14	35.0	0.030	35.3	0.15	6.64	7313.2
March	59,023	1,904	155.6	92.2	47.2	3.8	343.8	2.0	4.4	0.12	59.8	0.030	28.8	0.10	6.85	324.3
April	49,394	1,646	193.3	159.5	55.7	4.6	397.8	2.3	4.0	0.10	68.5	0.030	27.7	0.10	6.97	7.1
May	46,543	1,501	285.3	82.0	56.1	5.1	346.5	2.0	2.8	0.12	51.8	0.060	30.8	0.10	6.93	8.9
June	48,153	1,605	176.8	49.4	67.2	2.6	283	2.0	4.0	0.22	61.8	0.040	24.9	0.10	7.04	8.4
July	49,488	1,596	203.8	115.0	42.8	4.1	301	2.0	4.3	0.58	51.8	0.060	26.3	0.23	6.89	27.5
August	44,959	1,450	185	166.0	47.0	4.3	293.6	2.0	3.0	0.32	16.3	0.060	36.1	0.10	6.34	83.5
September	55,321	1,844	129.8	137.5	32.9	3.1	252.8	2.0	3.0	0.17	48.5	0.060	26.2	0.13	6.82	2.5
October	66,578	2,148	110.5	67.5	32.5	2.9	307.8	2.8	3.5	0.22	100.5	0.090	19.3	0.23	7.14	117.4
November	53,544	1,785	160.4	88.0	32.2	3.5	288.6	2.4	3.8	0.25	100.0	0.060	20.8	0.13	7.06	159.7
December	64,654	2,089	106.5	87.5	33.7	3.1	297.5	2.0	4.8	0.29	127.3	0.050	15.2	0.43	7.31	2058.3
<b>Annual Total</b>	635,698	1,741														
<b>ECA Limits</b>								<b>10.0</b>	<b>10.0</b>	<b>0.74</b>				<b>see below</b>	<b>6.0-9.5</b>	<b>200-Geo</b>

**Dec 1st - UV lights are shut "OFF" for the season - put back in service the following March 31st**

Total Ammonia Nitrogen (May 1st - Nov 30th) Limit is 3.0 mg/L

Total Ammonia Nitrogen (Dec 1st - April 30th) Limit is 6.0 mg/L

**PETROLIA WWTP EFFLUENT LOADINGS 2021**

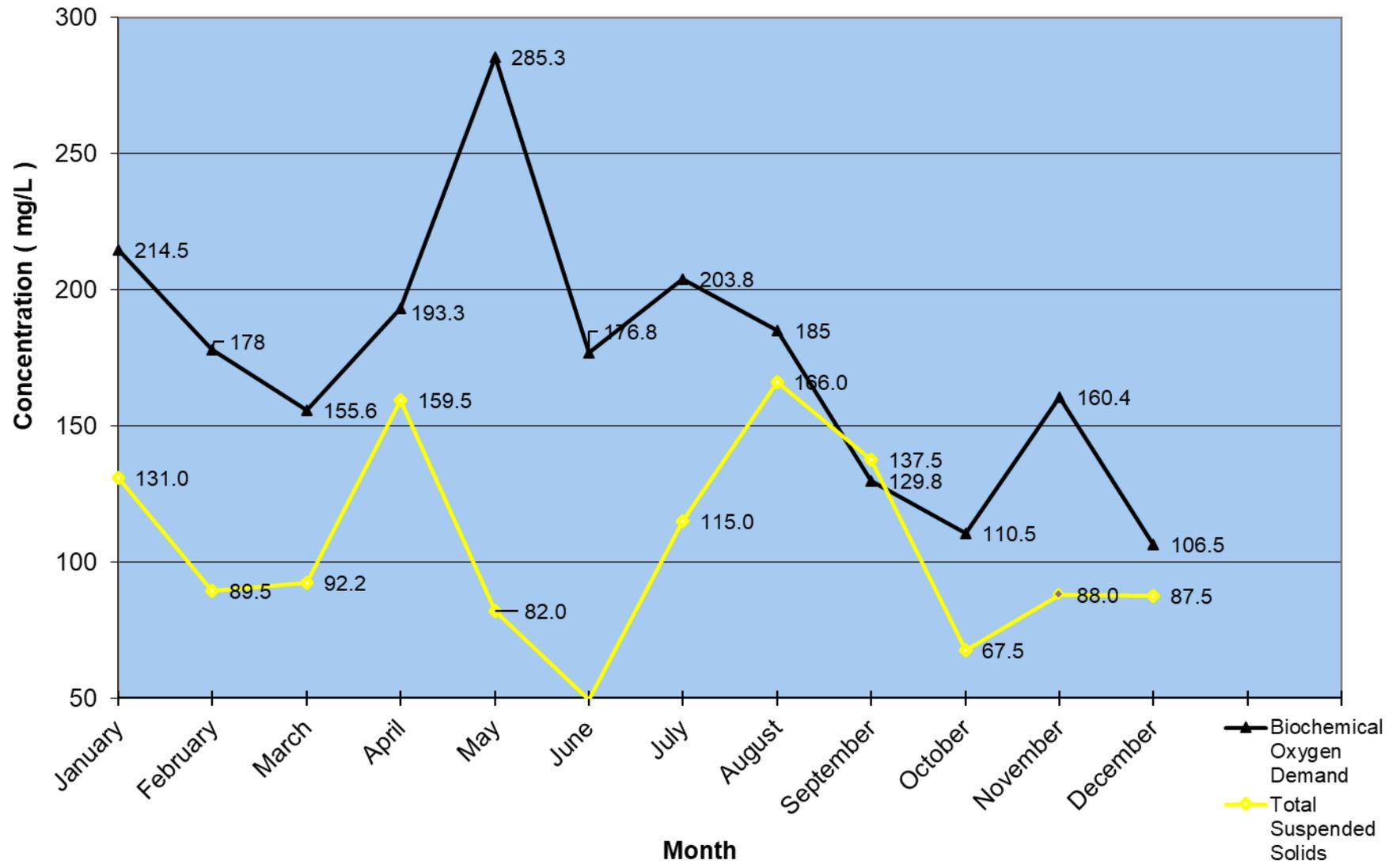
PARAMETER	AVERAGE EFFLUENT MONTHLY LOADING (Kg/d)				AVG Influent Flow Per MECP	AVERAGE EFFLUENT MONTHLY CONCENTRATION (mg/L)			
	SUSPENDED SOLIDS	BOD5	TOTAL "P"	AMMONIA		SUSPENDED SOLIDS	CBOD5	TOTAL "P"	AMMONIA
<b>ECA Limits</b>	<b>52.6</b>	<b>52.6</b>	<b>3.9</b>	<b>15.8 / 31.6</b>		<b>10</b>	<b>10</b>	<b>0.74</b>	<b>3.0 / 6.0</b>
JAN.	7.63	3.39	0.34	0.17	1696	4.5	2.0	0.20	0.10
FEB.	5.68	3.74	0.23	0.24	1624	3.5	2.3	0.14	0.15
MARCH	8.38	3.81	0.23	0.19	1904	4.4	2.0	0.12	0.10
APRIL	6.58	3.79	0.16	0.16	1646	4.0	2.3	0.10	0.10
MAY	4.20	3.00	0.18	0.15	1501	2.8	2.0	0.12	0.10
JUNE	6.42	3.53	0.35	0.16	1605	4.0	2.2	0.22	0.10
JULY	6.86	3.19	0.93	0.37	1596	4.3	2.0	0.58	0.23
AUGUST	4.35	2.90	0.42	0.15	1450	3.0	2.0	0.29	0.10
SEPT	5.53	3.69	0.31	0.24	1844	3.0	2.0	0.17	0.13
OCT	7.52	6.01	0.47	0.49	2148	3.5	2.8	0.22	0.23
NOV	6.78	4.28	0.45	0.23	1785	3.8	2.4	0.25	0.13
DEC	10.01	4.17	0.60	0.90	2086	4.8	2.0	0.29	0.43

Average monthly concentration X average monthly flow / 1000 = Average monthly loading

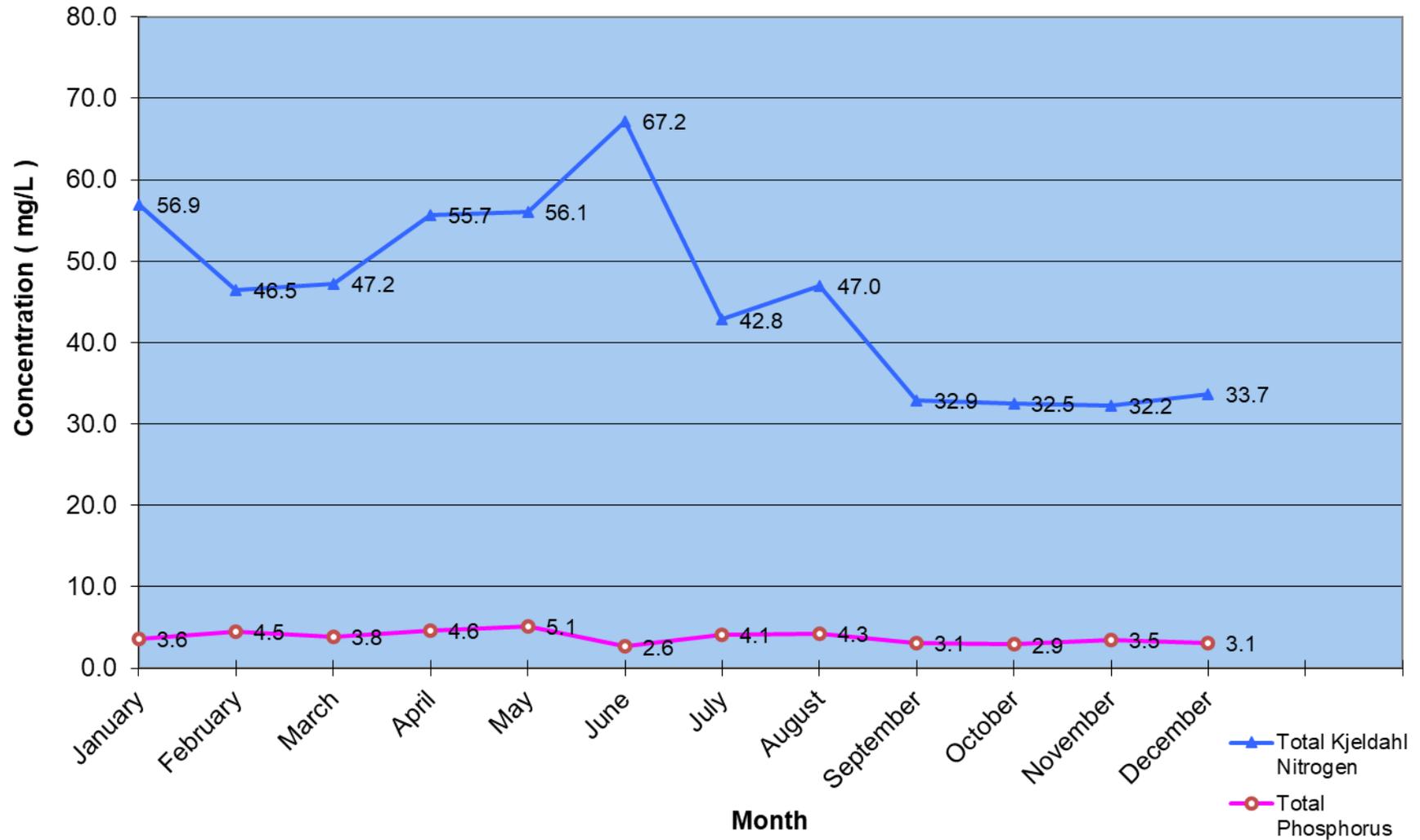
Commissioned Plant July 11th - Final Flow is calculated using Virtual Flow meter: Influent flow minus Wasting flow

Average flow is now the "Average Influent" flow as per MECP starting Nov/2017, due to no Effluent flow meter, measured virtually

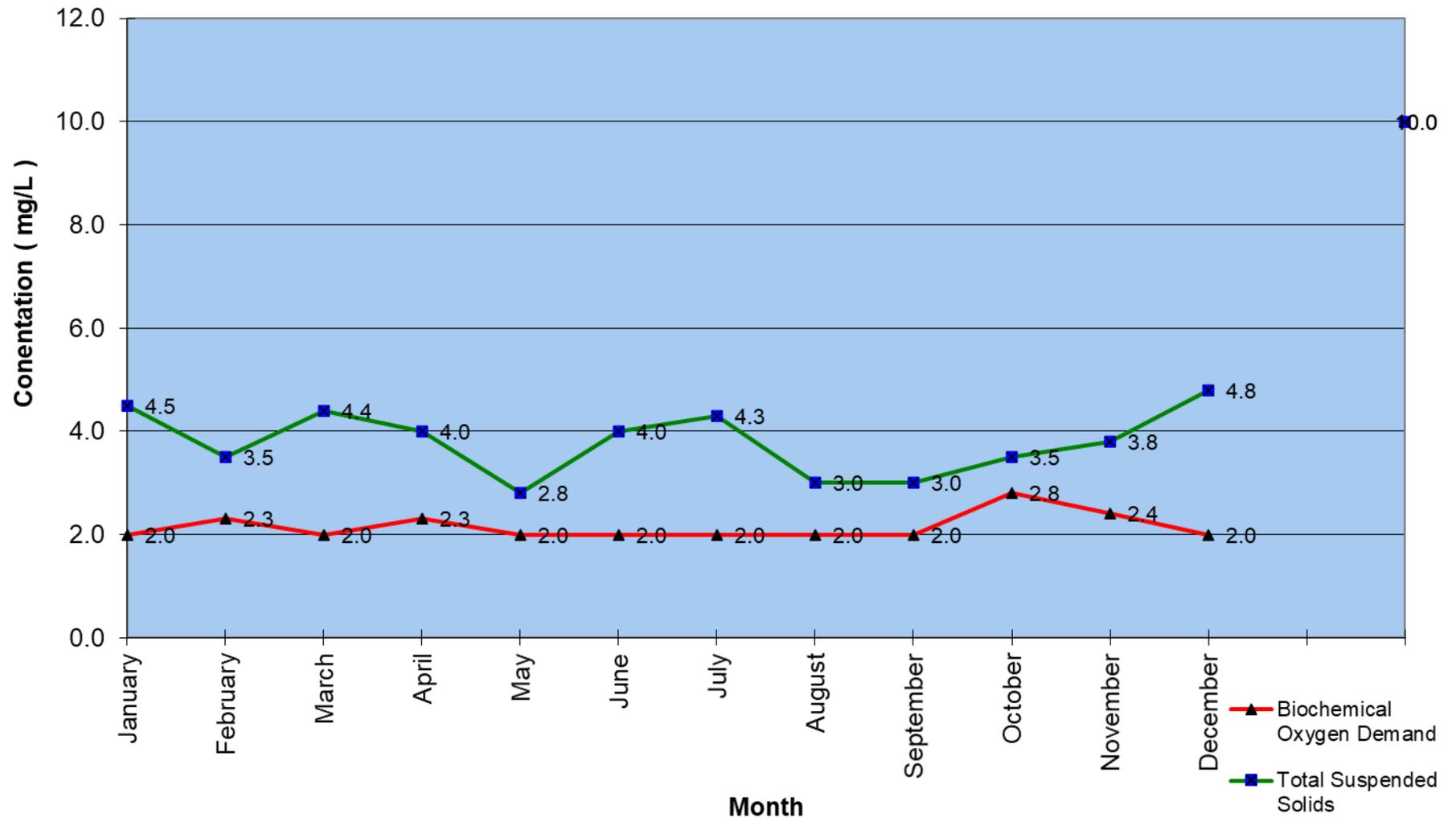
# Petrolia W.P.C.P. 2021 Influent BOD and T.S.S.



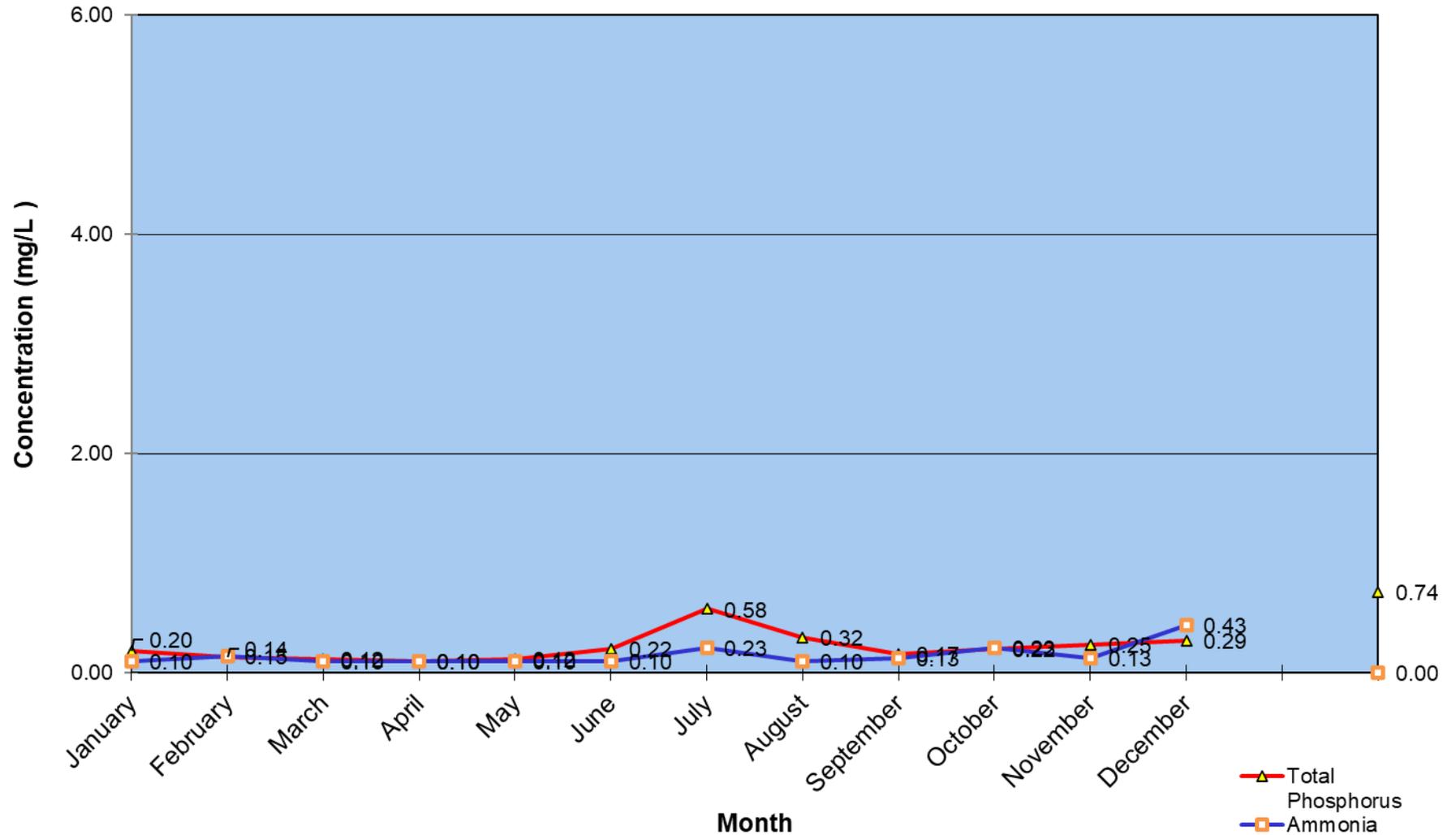
# Petrolia W.P.C.P. 2021 Influent TKN and Total P



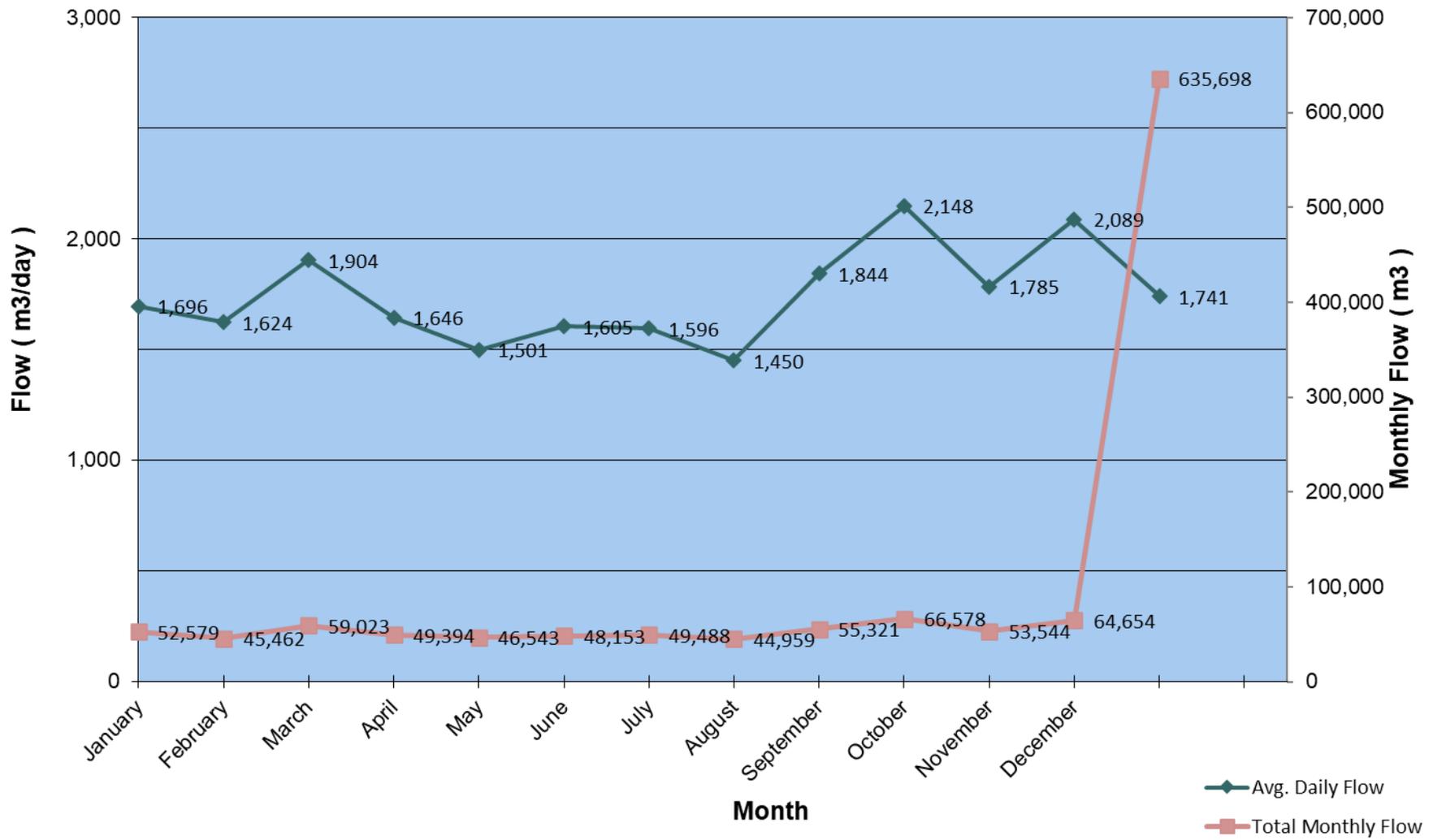
# Petrolia W.P.C.P. 2021 Effluent BOD and TSS



# Petrolia W.P.C.P. 2021 Effluent Total P & Ammonia



# Petrolia W.P.C.P. 2021 Influent Flows



**Petrolia WWTP Effluent Flow Totals ( m3) - 2021**

<b>Date</b>	<b>Jan.</b>	<b>Feb.</b>	<b>Mar.</b>	<b>Apr.</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>	<b>Sept.</b>	<b>Oct.</b>	<b>Nov.</b>	<b>Dec.</b>
<b>1</b>	1864	1296	2319	1501	1537	1275	1731	1392	1167	1237	1582	1783
<b>2</b>	2260	1406	1965	1786	1589	1289	1516	1423	1223	1554	1434	2536
<b>3</b>	2180	1427	1817	1752	1398	1233	1572	1205	1266	3580	1709	1946
<b>4</b>	1829	1285	1671	1786	1348	1331	1630	1144	1406	2300	1579	1998
<b>5</b>	1512	1370	1650	1716	1470	1451	1323	1413	1360	1575	1451	2666
<b>6</b>	1737	1575	1787	1465	884	1481	1572	1262	1510	1241	1714	2665
<b>7</b>	1620	1610	1729	1421	1138	1228	1967	1440	1423	1324	1786	1857
<b>8</b>	1666	1369	1461	1544	1565	1264	1989	1491	1613	1493	1399	1540
<b>9</b>	1751	1533	1618	1818	1539	1436	1304	1449	1302	1766	1384	1839
<b>10</b>	1750	1310	1690	1769	1282	1341	1541	1490	1153	2573	1320	1636
<b>11</b>	1530	1377	1554	1926	1323	1244	1850	1433	1436	2154	1846	4467
<b>12</b>	1443	1374	1553	1492	1151	1456	1432	1727	2222	1312	1588	2316
<b>13</b>	1384	1525	1728	1599	1440	1496	1629	896	2531	1557	1712	1534
<b>14</b>	1428	1512	1680	1539	1309	1157	1264	1425	1630	1498	1871	1653
<b>15</b>	1461	1505	1491	1441	1489	1184	1533	1405	1376	1833	1417	1672
<b>16</b>	1698	1292	1476	1550	1504	1393	1418	1479	1522	2470	1373	1585
<b>17</b>	1695	1365	1495	1661	1188	1000	1646	1291	1561	1983	1441	1685
<b>18</b>	1433	1481	1416	1658	1054	1251	1545	1065	1574	1451	1484	1907
<b>19</b>	1378	1343	1407	1441	1116	1456	1370	986	1581	1667	1527	1873
<b>20</b>	1399	1588	1610	1400	1209	1452	1351	779	1543	1113	1762	1286
<b>21</b>	1445	1596	1621	1462	1196	2010	1136	1470	1202	1463	1796	1283
<b>22</b>	1406	1430	1424	1169	1591	1288	1016	1544	6068	1746	1255	1465
<b>23</b>	1618	1832	1433	1440	1414	1475	1328	1172	3067	1674	1288	1276
<b>24</b>	1633	1801	1472	1623	1447	1137	1720	lagoon	1829	1789	1174	1807
<b>25</b>	1470	1757	1346	1604	687	1720	1593	lagoon	1974	4533	2051	2304
<b>26</b>	1400	1493	4731	1313	1085	1943	1199	lagoon	1847	2909	1743	1953
<b>27</b>	1425	2243	2450	1423	985	1630	1429	lagoon	1739	2232	1949	1916
<b>28</b>	1431	2376	3479	1297	1758	1674	1380	lagoon	1289	2100	1913	1914
<b>29</b>	1489		2231	1397	1583	2301	1488	lagoon	1410	2208	1707	2023
<b>30</b>	1614		1884	1299	1542	1786	1417	531	1350	2625	2101	1445
<b>31</b>	1619		1646		1138		1438	1326		2129		1629
<b>Total</b>	<b>49568</b>	<b>43071</b>	<b>56834</b>	<b>46292</b>	<b>40959</b>	<b>43382</b>	<b>46327</b>	<b>32238</b>	<b>52174</b>	<b>61089</b>	<b>48356</b>	<b>59459</b>
<b>Min.</b>	<b>1378</b>	<b>1285</b>	<b>1346</b>	<b>1169</b>	<b>687</b>	<b>1000</b>	<b>1016</b>	<b>531</b>	<b>1153</b>	<b>1113</b>	<b>1174</b>	<b>1276</b>
<b>Max</b>	<b>2260</b>	<b>2376</b>	<b>4731</b>	<b>1926</b>	<b>1758</b>	<b>2301</b>	<b>1989</b>	<b>1727</b>	<b>6068</b>	<b>4533</b>	<b>2101</b>	<b>4467</b>
<b>Avg.</b>	<b>1599</b>	<b>1538</b>	<b>1833</b>	<b>1543</b>	<b>1321</b>	<b>1446</b>	<b>1494</b>	<b>1290</b>	<b>1739</b>	<b>1971</b>	<b>1612</b>	<b>1918</b>
<b>2021 Yearly Flow m3</b>			<b>579749</b>									
<b>2021 Annual Daily Average m3</b>			<b>1588</b>									

**Calibration Reports**



Pierce Services  
& Solutions Inc.

PO Box 26027  
Guelph, ON N1E 6W1

Phone: 519.820.4853  
Fax: 519.824.9402

**Flowmeter Report**

Verification:  X Calibration:

Client: Jacobs Location: Petrolia WPCP  
 Description: Parshall Flume Date: 09-Jul-21  
 Manufacturer: Pulsar Checked By: Greg Pierce  
 Model: Ultra 3 Serial No.: PBD/H9260190

Tag No.: FIT 101 Range: 0 - 405 l/s

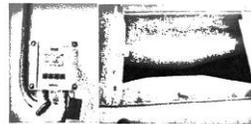
Input %	Theoretical	As Found	As Left	P/F
0%	0 l/s	0 l/s	0 l/s	Pass
25%	6.99 l/s	6.94 l/s	6.94 l/s	Pass
50%	39.33 l/s	39.27 l/s	39.27 l/s	Pass
75%	108.25 l/s	108.22 l/s	108.22 l/s	Pass
100%	222.2 l/s	222.16 l/s	222.16 l/s	Pass

Confirmed Run Mode: X Returned to service: \_\_\_\_\_

Service Comments:

Flowmeter Information

Flow Unit: l/s  
 Flume Size: 60°  
 Constant: 2.5  
 Pipe Thickness: \_\_\_\_\_



Comments:

No Errors  
Confirmed with Isco Open Channe Flow Measurement Handbook  
 \_\_\_\_\_  
 \_\_\_\_\_

Signature:   
 Greg Pierce, CCST



Pierce Services  
& Solutions Inc.

PO Box 26027  
Guelph, ON N1E 6W1

Phone: 519.820.4853  
Fax: 519.824.9402

### Flowmeter Report

Verification:	<input checked="" type="checkbox"/>	Calibration:	<input type="checkbox"/>
Client:	Jacobs	Location:	Petrolia WPCP
Description:	Mag Meter	Date:	09-Jul-21
Manufacturer:	Endress Hauser	Checked By:	Greg Pierce
Model:	5L4C2F-4CR4/1	Serial No.:	M100E91600

Tag No.: FIT 102      Range: 0 - 50 l/s

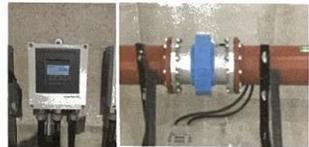
Input %	Input	As Found	As Left	P/F
0%	0.00 l/s	0.00 l/s	0.00 l/s	Pass
50%	25.00 l/s	25.01 l/s	24.96 l/s	Pass
100%	50.00 l/s	50.00 l/s	50.00 l/s	Pass
	27.93 l/s	27.89 l/s	27.89 l/s	Pass

Confirmed Run Mode: X      Returned to service: \_\_\_\_\_

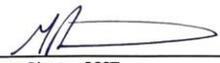
Service Comments:

Flowmeter Information

Flow Unit: l/s  
 Meter Size: 8"  
 Pipe Material: Cast  
 Pipe Thickness: \_\_\_\_\_



Comments:  
No Errors  
WAS Meter  
 \_\_\_\_\_  
 \_\_\_\_\_

Signature:   
 Greg Pierce, CCST

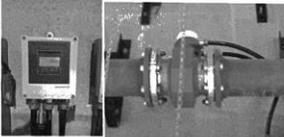


Pierce Services  
& Solutions Inc.

PO Box 26027  
Guelph, ON N1E 6W1

Phone: 519.820.4853  
Fax: 519.824.9402

### Flowmeter Report

Verification: <input checked="" type="checkbox"/>		Calibration: <input type="checkbox"/>		
Client: <u>Jacobs</u>		Location: <u>Petrolia WPCP</u>		
Description: <u>Mag Meter</u>		Date: <u>09-Jul-21</u>		
Manufacturer: <u>Endress Hauser</u>		Checked By: <u>Greg Pierce</u>		
Model: <u>5L4C1F-77R0/0</u>		Serial No.: <u>M1006C16000</u>		
Tag No.: <u>FIT 103</u>		Range: <u>0 - 50 l/s</u>		
Input %	Input	As Found	As Left	P/F
0%	0.00 l/s	0.00 l/s	0.00 l/s	Pass
50%	25.00 l/s	25.09 l/s	25.09 l/s	Pass
100%	50.00 l/s	50.00 l/s	50.00 l/s	Pass
	8.79 l/s	9.01 l/s	9.01 l/s	Pass
Confirmed Run Mode: <u>X</u>		Returned to service: _____		
Service Comments:				
Flowmeter Information				
Flow Unit:	<u>l/s</u>			
Meter Size:	<u>6"</u>			
Pipe Material:	<u>Cast</u>			
Pipe Thickness:	_____			
Comments:				
<u>No Errors</u>				
<u>RAS Meter</u>				
_____				
_____				
Signature: 				
Greg Pierce, CCST				

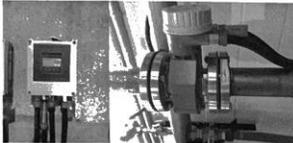


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Fax: 519.824.9402

### Flowmeter Report

Verification: <input checked="" type="checkbox"/>		Calibration: <input type="checkbox"/>		
Client: <u>Jacobs</u>		Location: <u>Petrolia WPCP</u>		
Description: <u>Mag Meter</u>		Date: <u>09-Jul-21</u>		
Manufacturer: <u>Endress Hauser</u>		Checked By: <u>Greg Pierce</u>		
Model: <u>5L4C80-50W8/0</u>		Serial No.: <u>M100D916000</u>		
Tag No.: <u>FIT 104</u>		Range: <u>0 - 25 l/s</u>		
Input %	Input	As Found	As Left	P/F
0%	0.00 l/s	0.00 l/s	0.00 l/s	Pass
50%	12.50 l/s	12.61 l/s	12.61 l/s	Pass
100%	25.00 l/s	25.00 l/s	25.00 l/s	Pass
	3.98 l/s	3.95 l/s	3.95 l/s	Pass
Confirmed Run Mode: <u>X</u>		Returned to service: _____		
Service Comments:				
<p style="text-align: center;"><u>Flowmeter Information</u></p> <p>Flow Unit: <u>l/s</u></p> <p>Meter Size: <u>3"</u></p> <p>Pipe Material: <u>Stainless Steel</u></p> <p>Pipe Thickness: _____</p>				
				
<p>Comments:</p> <p><u>No Errors</u></p> <p><u>Reject Meter</u></p> <p>_____</p> <p>_____</p>				
<p>Signature: </p> <p>Greg Pierce, CCST</p>				



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& Solutions Inc.

PO Box 26027  
Guelph, ON N1E 6W1

Phone: 519.820.4853  
Fax: 519.824.9402

### Flowmeter Report

Verification:  X

Calibration:

Client: Jacobs

Location: Petrolia WPCP

Description: Mag Meter

Date: 09-Jul-21

Manufacturer: Endress Hauser

Checked By: Greg Pierce

Model: 5L4C80-5DN8/0

Serial No.: M100DA16000

Tag No.: FIT 105 Range: 0 - 25 l/s

Input %	Input	As Found	As Left	P/F
0%	0.00 l/s	0.00 l/s	0.00 l/s	Pass
50%	12.50 l/s	12.32 l/s	12.32 l/s	Pass
100%	25.00 l/s	25.00 l/s	25.00 l/s	Pass
	7.69 l/s	7.68 l/s	7.68 l/s	Pass

Confirmed Run Mode: X Returned to service: \_\_\_\_\_

Service Comments:

Flowmeter Information

Flow Unit: l/s

Meter Size: 3"

Pipe Material: Stainless Steel

Pipe Thickness: \_\_\_\_\_



Comments:

No Errors

Effluent Meter

\_\_\_\_\_

\_\_\_\_\_

Signature:   
Greg Pierce, CCST



Pierce Services & Solutions Inc.

TEST REPORT  
Reduced Pressure Principle Backflow  
Prevention Assembly

Address Location <b>Petrolia WPCP</b>				Postal Code <b>N0N 1R0</b>			
Occupant <b>Jacobs</b>			Emergency Contact <b>Randy Clendenning</b>			Telephone <b>519-882-3137</b>	
Owner <b>Town of Petrolia</b>				Telephone <b>519-882-2350</b>			
Address of Owner <b>411 Greenfield St. Petrolia, ON</b>				Postal Code <b>N0N 1R0</b>			
Name of Certified Tester <b>Greg Pierce</b>		Tester Certification Number <b>01437</b>		Telephone <b>519-820-4853</b>			
Business Name <b>Pierce Services</b>				Business Address <b>P.O. Box 26027 Guelph, Ont.</b>		Postal Code <b>N1E 6W1</b>	
Make of Test Kit <b>Conbraco</b>		Model Number <b>40-200TK5</b>		Serial Number <b>04030197</b>		Date of Last Calibration <b>May 27, 2021</b>	
Make of Assembly <b>Wilks-Zurn</b>		Model Number <b>375 XL</b>		Serial Number <b>37486</b>		Size <b>4"</b>	
Install Date	YY	MM	DD	Location of Assembly (ie. Building, room number, tag number)			
	U/K			Plant			
Premise	Source	Zone	X	Device Tagged	Antifreeze solution test meets the requirements of NFPA-13, 1994, Section 3-5.2.1? Yes No <b>N/A</b>		Water Works Valve Lock Removed? Yes No <b>N/A</b>
				Yes X No			
Type of Test	Date of Test	YY	MM	DD	Shut off Valve No. 2		Line Pressure at time of test 60 psi ___ kPa
Initial	Annual X Other	2021	07	09	Leaked Closed Tight X		
Test	Differential Pressure Relief Valve		Check Valve No. 1		Check Valve No. 2		Test Results
	Failed to Open Opened at 2 psi ___ kPa		Leaked Closed Tight X Pressure differential across first check valve 8 psi ___ kPa		Leaked Closed Tight X Pressure differential across second check valve 3 psi ___ kPa		Passed X Failed

IF THE ASSEMBLY FAILS THE INITIAL TEST FOR ANY REASON, COMPLETE THIS SECTION AND NOTE REPAIR BELOW:

Reason for Failure (if apparent)

Repairs	Differential Pressure Relief Valve	Check Valve No. 1	Check Valve No. 2	Shut off Valve No. 2
	Cleaned Replaced	Cleaned Replaced	Cleaned Replaced	Cleaned Replaced
	Disc Upper	Disc	Disc	Disc
	Disc Lower	Spring	Spring	Seat
	Spring	Guide	Guide	Other (describe)
	Diaphragm Large	Pin Retainer	Pin Retainer	
	Upper	Hinged Pin	Hinged Pin	
	Lower	Seat	Seat	
	Diaphragm Small	Diaphragm	Diaphragm	
	Upper	Other (describe)	Other (describe)	
	Lower			
	Spacer Lower			Date of re-test Year Month Day / /
Seat				
Other (describe)				
Re-test	Failed to Open Opened at ___psi ___kPa	Leaked Closed Tight Pressure differential across first check valve ___psi ___kPa	Leaked Closed Tight Pressure differential across second check valve ___psi ___kPa	Re-test Results Passed Failed
Remarks:				
				
I certify that I have tested the above assembly in accordance with CAN/CSA B64.10-94 Signature:  Date: <u>July 9<sup>th</sup>, 2021</u>				



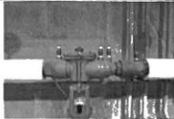
Pierce Services  
& Solutions Inc.

TEST REPORT  
Reduced Pressure Principle Backflow  
Prevention Assembly

Address Location <b>Petrolia WPCP</b>				Postal Code <b>N0N 1R0</b>			
Occupant <b>Jacobs</b>				Emergency Contact <b>Randy Clendenning</b>			
Owner <b>Town of Petrolia</b>				Telephone <b>519-882-3137</b>			
Address of Owner <b>411 Greenfield St. Petrolia, ON</b>				Telephone <b>519-882-2350</b>			
Name of Certified Tester <b>Greg Pierce</b>				Postal Code <b>N0N 1R0</b>			
Tester Certification Number <b>01437</b>				Telephone <b>519-820-4853</b>			
Business Name <b>Pierce Services</b>				Business Address <b>P.O. Box 26027 Guelph, Ont.</b>			
Postal Code <b>N1E 6W1</b>				Date of Last Calibration <b>May 27, 2021</b>			
Make of Test Kit <b>Conbraco</b>				Model Number <b>40-200TK5</b>			
Serial Number <b>04030197</b>				Size <b>2"</b>			
Make of Assembly <b>Watts</b>				Model Number <b>009</b>			
Serial Number <b>278087</b>				Location of Assembly (ie. Building, room number, tag number)			
Install Date		YY	MM	DD	Plant		
U/K							
Premise Source Zone X			Device Tagged Yes X No		Antifreeze solution test meets the requirements of NFPA-13, 1994, Section 3-5.2.1? Yes No N/A		Water Works Valve Lock Removed? Yes No N/A
Type of Test		Date of Test	YY	MM	DD	Shut off Valve No. 2	
Initial Annual X Other			2021	07	9	Leaked Closed Tight X	
						Line Pressure at time of test 60 psi ___ kPa	
		Differential Pressure Relief Valve		Check Valve No. 1		Check Valve No. 2	
		Failed to Open		Leaked Closed Tight X		Leaked Closed Tight X	
		Opened at 2 psi ___ kPa		Pressure differential across first check valve		Pressure differential across second check valve 2 psi ___ kPa	
				7 psi ___ kPa			
						Test Results	
						Passed X	
						Failed	

IF THE ASSEMBLY FAILS THE INITIAL TEST FOR ANY REASON, COMPLETE THIS SECTION AND NOTE REPAIR BELOW:

Reason for Failure (if apparent)

Repairs	Differential Pressure Relief Valve		Check Valve No. 1		Check Valve No. 2		Shut off Valve No. 2	
	Cleaned	Replaced	Cleaned	Replaced	Cleaned	Replaced	Cleaned	Replaced
	Disc Upper		Disc		Disc		Disc	
	Disc Lower		Spring		Spring		Seat	
	Spring		Guide		Guide		Other (describe)	
	Diaphragm Large		Pin Retainer		Pin Retainer			
	Upper		Hinged Pin		Hinged Pin			
	Lower		Seat		Seat			
	Diaphragm Small		Diaphragm		Diaphragm			
	Upper		Other (describe)		Other (describe)			
	Lower							
	Spacer Lower						Date of re-test	
Seat						Year Month Day		
Other (describe)						/ /		
Re-test	Failed to Open		Leaked Closed Tight		Leaked Closed Tight		Re-test Results	
	Opened at ___psi ___kPa		Pressure differential across first check valve ___psi ___kPa		Pressure differential across second check valve ___psi ___kPa		Passed Failed	
Remarks:								
								
I certify that I have tested the above assembly in accordance with CAN/CSA B64.10-94 Signature: <u>[Signature]</u> Date: <u>July 9<sup>th</sup>, 2021</u>								



**TEST REPORT**  
Double Check Valve Assembly/  
Pressure Vacuum Breaker

Address Location <b>Petrolia WPCP</b>			Postal Code <b>NON 1R0</b>		
Occupant <b>Jacobs</b>			Emergency Contact <b>Randy Clendenning</b>		
Owner <b>Town of Petrolia</b>			Telephone <b>519-882-3137</b>		
Address of Owner <b>411 Greenfield St., Petrolia, ON</b>			Telephone <b>519-882-2350</b>		
Name of Certified Tester <b>Greg Pierce</b>			Tester Certification Number <b>01437</b>		
Business Name <b>Pierce Services</b>			Business Address <b>P.O. Box 26027 Guelph, Ont.</b>		
Make of Test Kit <b>Wilkins</b>			Date of Last Calibration <b>MAY 27/2021</b>		
Model Number <b>BFTG-5</b>			Serial Number <b>07020073</b>		
Make of Assembly <b>Wilks-Zurn</b>			Model Number <b>850XL</b>		
Serial Number <b>3871267</b>			Size <b>1 1/2"</b>		
DCVA <input checked="" type="checkbox"/> PVB <input type="checkbox"/>			Location of Assembly Plant		
Install Date	YY	MM	DD		
Premise Source Zone			Device Tagged	Antifreeze solution test meets the requirements of NFPA-13, 1994, Section 3-5.2.1? Yes No	Water Works Valve Lock Removed? Yes No
			Yes	No	
Type of Test	Date of Test	YY	MM	DD	Line Pressure at time of test
Initial Annual Other		<b>2021</b>	<b>07</b>	<b>9</b>	<b>60</b> psi <input type="checkbox"/> kPa
Test	Check Valve No. 1		Check Valve No. 2		Pressure Vacuum Breaker
	With Flow Leaked	Against Flow Leaked	With Flow Leaked	Against Flow Leaked	Air Inlet valve Failed to open
	Closed Tight	Closed Tight	Closed Tight	Closed Tight	opened at ___psi ___kPa
	Pressure drop across check	Pressure drop across check	Pressure drop across check	Pressure drop across check	2 Check Valve
	psi ___kPa	psi ___kPa	psi ___kPa	psi ___kPa	Leaked Closed tight
					Pressure drop across valve ___psi ___kPa

IF THE ASSEMBLY FAILS THE INITIAL TEST FOR ANY REASON, COMPLETE THIS SECTION AND NOTE REPAIR BELOW:

Reason for Failure (if apparent) \_\_\_\_\_

	Double Check Valve Assembly						Pressure Vacuum Breaker
	Check Valve No. 1		Check Valve No. 2				
Repairs	Cleaned	Replaced	Cleaned	Replaced	Cleaned	Replaced	
	Disc		Disc		Vent Disc		
	Spring		Spring		Vent Spring		
	Guide		Guide		Poppet		
	Pin Retainer		Pin Retainer		Retainer		
	Hinged Pin		Hinged Pin		Spring		
	Seat		Seat		Disc		
	Diaphragm		Diaphragm		Guide		
	Other (describe)		Other (describe)		Other (describe)		
Re-test	With Flow Leaked	Against Flow Leaked	With Flow Leaked	Against Flow Leaked	Date of re-test		
	Closed Tight	Closed Tight	Closed Tight	Closed Tight	Year	Month	Day
	Pressure drop across check	Pressure drop across check	Pressure drop across check	Pressure drop across check	Air Inlet valve - Failed to open		
	psi ___kPa	psi ___kPa	psi ___kPa	psi ___kPa	opened at ___psi ___kPa		
					Check Valve - Leaked Closed tight		
					Pressure drop across valve		
					psi ___kPa		



I certify that I have tested the above assembly in accordance with CAN/CSA B64.10-94  
Signature: [Signature] Date: July 9<sup>th</sup> 2021



**TEST REPORT**  
Reduced Pressure Principle Backflow  
Prevention Assembly

Address Location <b>Petrolia WPCP</b>				Postal Code <b>N0N 1R0</b>			
Occupant <b>Jacobs</b>			Emergency Contact <b>Randy Clendenning</b>			Telephone <b>519-882-3137</b>	
Owner <b>Town of Petrolia</b>				Telephone <b>519-882-2350</b>			
Address of Owner <b>411 Greenfield St. Petrolia, ON</b>				Postal Code <b>N0N 1R0</b>			
Name of Certified Tester <b>Greg Pierce</b>			Tester Certification Number <b>01437</b>			Telephone <b>519-820-4853</b>	
Business Name <b>Pierce Services</b>				Business Address <b>P.O. Box 26027 Guelph, Ont.</b>			
Make of Test Kit <b>Conbraco</b>				Model Number <b>40-200TK5</b>		Serial Number <b>04030197</b>	
Date of Last Calibration <b>May 27/2021</b>				Size <b>1 1/2"</b>			
Install Date		YY	MM	DD	Location of Assembly (ie. Building, room number, tag number)		
		U/K			<b>Plant</b>		
Premise Source Zone X			Device Tagged Yes X No		Antifreeze solution test meets the requirements of NFPA-13, 1994, Section 3-5.2.1? Yes No N/A		Water Works Valve Lock Removed? Yes No N/A
Type of Test		Date of Test	YY	MM	DD	Shut off Valve No. 2	
Initial Annual X Other			<b>2021</b>	<b>07</b>	<b>9</b>	Leaked Closed Tight X	
Line Pressure at time of test <b>60 psi</b> ___ kPa		Differential Pressure Relief Valve		Check Valve No. 1		Check Valve No. 2	
Test		Failed to Open Opened at <b>2 psi</b> ___ kPa		Leaked Closed Tight X Pressure differential across first check valve <b>8 psi</b> ___ kPa		Leaked Closed Tight X Pressure differential across second check valve <b>3 psi</b> ___ kPa	
						Test Results Passed X Failed	

IF THE ASSEMBLY FAILS THE INITIAL TEST FOR ANY REASON, COMPLETE THIS SECTION AND NOTE REPAIR BELOW:  
Reason for Failure (if apparent)

Repairs	Differential Pressure Relief Valve	Check Valve No. 1	Check Valve No. 2	Shut off Valve No. 2
	Cleaned	Cleaned	Cleaned	Cleaned
	Replaced	Replaced	Replaced	Replaced
	Disc Upper	Disc	Disc	Disc
	Disc Lower	Spring	Spring	Seat
	Spring	Guide	Guide	Other (describe)
	Diaphragm Large	Pin Retainer	Pin Retainer	
	Upper	Hinged Pin	Hinged Pin	
	Lower	Seat	Seat	
	Diaphragm Small	Diaphragm	Diaphragm	
	Upper	Other (describe)	Other (describe)	
	Lower			
	Spacer Lower			
Seat				
Other (describe)				
Re-test	Failed to Open Opened at ___ psi ___ kPa	Leaked Closed Tight Pressure differential across first check valve ___ psi ___ kPa	Leaked Closed Tight Pressure differential across second check valve ___ psi ___ kPa	Re-test Results Passed Failed
Remarks:				
				
I certify that I have tested the above assembly in accordance with CAN/CSA B64.10-94 Signature:  Date: <u>July 24, 2021</u>				



Pierce Services  
& Solutions Inc.

TEST REPORT  
Reduced Pressure Principle Backflow  
Prevention Assembly

Address Location <b>Petrolia WPCP</b>				Postal Code <b>N0N 1R0</b>			
Occupant <b>Jacobs</b>				Emergency Contact <b>Randy Clendenning</b>			
Owner <b>Town of Petrolia</b>				Telephone <b>519-882-3137</b>			
Address of Owner <b>411 Greenfield St. Petrolia, ON</b>				Telephone <b>519-882-2350</b>			
Name of Certified Tester <b>Greg Pierce</b>				Tester Certification Number <b>01437</b>			
Business Name <b>Pierce Services</b>				Business Address <b>P.O. Box 26027 Guelph, Ont.</b>			
Make of Test Kit <b>Conbraco</b>				Model Number <b>40-200TK5</b> Serial Number <b>04030197</b>			
Make of Assembly <b>Wilks-Zurn</b>				Model Number <b>975 XL</b> Serial Number <b>4172808</b> Size <b>3/4"</b>			
Install Date		YY	MM	DD	Location of Assembly (ie. Building, room number, tag number)		
		U/K			Plant		
Premise Source Zone X			Device Tagged Yes X No		Antifreeze solution test meets the requirements of NFPA-13, 1994, Section 3-5.2.1? Yes No N/A		Water Works Valve Lock Removed? Yes No N/A
Type of Test	Date of Test	YY	MM	DD	Shut off Valve No. 2 Leaked Closed Tight X		Line Pressure at time of test 60 psi ___ kPa
Initial Annual X Other		2021	07	9			
Differential Pressure Relief Valve		Check Valve No. 1		Check Valve No. 2		Test Results	
Failed to Open Opened at 2 psi ___ kPa		Leaked Closed Tight X Pressure differential across first check valve 7 psi ___ kPa		Leaked Closed Tight X Pressure differential across second check valve 2 psi ___ kPa		Passed X Failed	

IF THE ASSEMBLY FAILS THE INITIAL TEST FOR ANY REASON, COMPLETE THIS SECTION AND NOTE REPAIR BELOW:

Reason for Failure (if apparent) \_\_\_\_\_

Repairs	Differential Pressure Relief Valve	Check Valve No. 1	Check Valve No. 2	Shut off Valve No. 2
	Cleaned Replaced	Cleaned Replaced	Cleaned Replaced	Cleaned Replaced
	Disc Upper	Disc	Disc	Disc
	Disc Lower	Spring	Spring	Seat
	Spring	Guide	Guide	Other (describe)
	Diaphragm Large	Pin Retainer	Pin Retainer	
	Upper	Hinged Pin	Hinged Pin	
	Lower	Seat	Seat	
	Diaphragm Small	Diaphragm	Diaphragm	
	Upper	Other (describe)	Other (describe)	
	Lower			
	Spacer Lower			
Seat				
Other (describe)				
Re-test	Failed to Open Opened at ___psi ___kPa	Leaked Closed Tight Pressure differential across first check valve ___psi ___kPa	Leaked Closed Tight Pressure differential across second check valve ___psi ___kPa	Re-test Results Passed Failed
Remarks: _____				
				
I certify that I have tested the above assembly in accordance with CAN/CSA B64.10-94 Signature:  Date: <u>July 9<sup>th</sup> 2021</u>				