



# PARK LANE WATER WORKS

2019 Water Quality Summary Report



Environmental Services

March 31, 2020

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# 1 INTRODUCTION

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The Park Lane Water Works (Water Works) serves the Park Lane subdivision, consisting of 19 lots located on Lot 25, Concession L. A total of 19 lots were connected in 2019, serving an estimated population of 49 residents (based on the Township of Ramara's average population of 2.6 people per dwelling).

This report provides a description of the Water Works and summarizes the monitoring program, water quality, water consumption, chemical usage, system repairs, and maintenance completed in 2019.

This report also summarizes the Water Works compliance status with the Safe Drinking Water Act (SDWA), the Ministry of the Environment, Conservation and Parks (MECP) Drinking Water Works Permit (DWWP) and the MECP Municipal Drinking Water License (MDWL). This annual report summary was prepared for presentation to the Township of Ramara Council as required by Ontario Regulation 170/03 - Drinking Water Systems (O. Reg. 170/03), Schedule 22.

## 2 APPROVALS

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The Water Works is approved under DWWP No. 147-202, Issue No. 3 dated July 18, 2019 and MDWL No. 147-102, Issue No. 2 dated July 20, 2016.

Table 1 summarizes all approvals issued since 1975. The system does not require a Permit to Take Water.

Table 1: Summary of Approvals

Date Issued	Approval Number	Description
July 18, 2019	147-202 Issue No. 3	Updated Process Flow Diagram
July 20, 2016	147-102 Issue No. 2	Municipal Drinking Water License renewal
July 20, 2016	147-202 Issue No. 2	Drinking Water Works Permit renewal
October 15, 2015	147-202	Schedule C Amendment to DWWP for new standpipe and high lift pumps.
August 4, 2011	147-102 Issue No. 1	MDWL. Revokes and replaces # 5386-6JSMWS.
August 3, 2011	147-202 Issue No. 1	DWWP. Revokes and replaces # 5386-6JSMWS.
December 14, 2005	5386-6JSMWS	Amendment to approve treatment process optimization. Revokes and replaces # 1563-6EVNAS.
August 11, 2005	1563-6EVNAS	Amendment for as-construction operation. Revokes and replaces # 1218-5S5RTP.
November 21, 2003	1218-5S5RTP	Issued under SDWA. Approval of treatment upgrades. Extends deadline for upgrades. Revokes and replaces # 5159-5J8SHU.
February 7, 2003	5159-5J8SHU	Extends deadline for upgrades. Revokes and replaces # 9142-547KE7.
February 13, 2002	9142-547KE7	Consolidated C of A. Revokes and replaces #7-0422-74-756.
July 30, 1975	7-0422-74-756	Approval for well, Water Works and watermains.

## 3 DESCRIPTION OF WATER WORKS

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The following sections describe the facilities as they operated in 2019.

### 3.1 WATER SOURCE

The Park Lane Water Works utilizes two wells:

- Well No. 1 is located inside the old Water Works building 35 m east of the new Water Works building. A 68 L/min (18 USgpm) 1.5 hp Goulds submersible pump is installed in the well at a depth of 45.7 m. The well is 61 m deep and sleeved with a 178 mm diameter steel casing to a depth of 3.1 m. The pump was last replaced on July 24, 2006.
- Well No. 2 is located 5 m north of the new Water Works building. A 66 L/min (17 USgpm)  $\frac{3}{4}$  hp Goulds submersible pump is installed in the well at a depth of 20.0 m. The well is 75.4 m deep and is sleeved with a 150 mm steel casing to a depth of 12 m.

### 3.2 WATER TREATMENT

Raw water is injected with sodium hypochlorite for iron oxidation and with potassium permanganate for iron and manganese oxidation. Greensand filters are utilized to filter the oxidized iron and manganese. Sodium hypochlorite is injected into the filtered water for primary disinfection. The standpipe provides the necessary contact time for adequate disinfection.

The main components of the treatment process are described below:

1. Each well line is fitted with a magnetic flow meter to monitor the total daily flow and the peak instantaneous flow taken from each well. Each flowmeter provides a 4-20 mA signal for flow pacing the pre-chlorine injection for iron oxidation.  
  
A combined raw water magnetic flow meter provides a 4-20 mA signal for both flow pacing the primary disinfection chlorination and potassium permanganate injection and for recording flows on the paperless chart recorder. The paperless chart recorder records the total raw water daily average flow rate, the total daily flow and the peak instantaneous flow rate.
2. The well pump control panel allows the operators to select the duty and stand-by wells. Each well can be run individually or with one another. Each well pump has an hour meter to log the number of hours it operates.
3. The well pump starts and stops are controlled by the level in the standpipe. When water reaches the "Well Pump On" level, the motorized valve opens, reducing pressure at pressure switch 1 (PS-1), which will turn the well pump on

through the well pump control panel. When water reaches the “Well Pump Off” level, the motorized valve closes, increasing pressure at pressure switch 1 (PS-1), which will turn the well pump off through the well pump control panel.

4. Two 453 L pressure tanks are utilized to maintain pressure in the piping when the well pumps are off.
5. Two sodium hypochlorite chemical feed pumps, one for each well supply line are used for oxidizing the iron in the raw water. A separate chemical solution tank with secondary containment is used. In case of emergency, a spare chemical feed pump is located within the Water Works.
6. A potassium permanganate chemical feed system is used to oxidize the iron and manganese in the raw water. It consists of two injection points, two chemical feed pumps, one duty and one stand-by with automatic switchover in case of duty pump failure, and one chemical solution tank complete with mixer and secondary containment.
7. A 50 mm  $\varnothing$  static in-line mixer in the raw water header pipe ensures potassium permanganate is mixed thoroughly with raw water in order to maximize the oxidation of iron and manganese.
8. Two greensand filters remove the oxidized (particulate) iron and manganese. Each filter is capable of treating the entire design flow. The second unit is provided to allow treatment to continue while one unit is in backwash mode and/or shut down for maintenance purposes. The backwash cycle consists of a flush cycle that pushes water through the filter from the bottom up, a rest cycle that allows the filter media to settle down, and a rinse cycle that filters water to waste. Each filter has two diaphragm valves and one solenoid valve to control the water supply to the filter during a backwash cycle.
9. Two 25-1  $\mu\text{m}$  cartridge filters, installed in parallel, further remove any residual iron and manganese prior to the standpipe.
10. A sodium hypochlorite chemical feed system is used for primary disinfection. It consists of two injection points, two chemical feed pumps, one duty and one standby with automatic switchover in case of duty pump failure and one chemical solution tank with secondary containment.
11. One 63 m<sup>3</sup> glass-fused-to-steel water storage standpipe, 4.26 m diameter by 4.69 m high, provides equalization, chlorine contact, and filter backwash supply storage. The standpipe is equipped with an ultrasonic level transducer for well pump control and standpipe level monitoring.

12. Two 1.5 HP 3600 RPM high lift pumps rated at 1.0 L/s at 50 m (70 psi) TDH supply water to the distribution system.
13. A 5.7 L/s backwash pump draws water from the standpipe to the filters via the backwash water supply line. The backwash water supply line is fitted with a pressure relief valve to ensure the pump does not dead head during the filters' rest cycle in the backwash process.
14. Continuous water quality in-line analysers monitor the free chlorine residual, pH and turbidity of the treated water before it enters the distribution system. The analysers are logged by the paperless chart recorder and have alarm set points to notify the operators of adverse water quality results.
15. A distribution water magnetic flow meter provides a 4-20 mA signal for recording the daily average flow rate, the total daily flow and the peak instantaneous flow rate entering the distribution system on the paperless chart recorder.

### 3.3 WASTEWATER TREATMENT AND DISPOSAL

Two wastewater treatment and disposal systems are provided: the filter backwash wastewater system and the grey water from the sample sink disposal system. Their components are described below.

#### 3.3.1 Filter Backwash Wastewater System

The components of the filter backwash wastewater system are:

1. A 13,500 L precast concrete settling tank with float controls and effluent pump. It is located below grade in the yard south of the Water Works building. Backwash wastewater is held for 12 hours to settle out the solids. The supernatant is pumped to the ditch.
2. A ¼ HP effluent pump is used to pump supernatant from the settling tank. The pump is set at 0.3 m above the tank floor. Solids accumulating at the bottom are removed as required for disposal.
3. Discharge piping, 4 m of 100 mm diameter, outlets to the ditch, east of the Water Works building.

#### 3.3.2 Grey Water Disposal System

Grey water from the sample sink is disposed in an infiltration trench. The system consists of a 900 mm by 900 mm by 900 mm precast concrete tank and 12 m of distribution piping located at the south west corner of the Water Works building adjacent to driveway and the backwash effluent settling tank.



### 3.4 EMERGENCY GENERATOR

A 20 kW propane powered generator is located in a fenced enclosure on the north side of the Water Works building, to supply power during hydro supply power outages. The generator has sufficient capacity to run the well pumps, chemical feed systems, high lift pumps, analyzer equipment, building lighting and heating in the event of a power outage. There is insufficient power to start a filter backwash process automatically on generator power. A backwash can be started manually on generator power by an operator if power consumption is reduced by turning off other equipment.

The generator can operate for 5 days at maximum capacity when its propane tank is full.

### 3.5 WATER DISTRIBUTION SYSTEM

The distribution system consists of approximately 360 m of 50 mm diameter polyethylene watermain to service 19 residential lots. The watermain extends approximately 66 m east and approximately 294 m west of the Water Works.

Two blow-offs and three sample stations are installed for flushing and testing purposes at each end of the distribution system.

## 4 WATER QUALITY MONITORING

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### 4.1 BACTERIOLOGICAL SAMPLING AND RESULTS

The Water Works must be operated in such a manner as to meet the treatment requirements specified in Ontario Regulation 170/03 and Ontario Regulation 169/03.

Appendix A summarizes the sampling and testing requirements in accordance with O. Reg. 170/03.

The sampling locations are as follows:

- Raw water: from each well as it enters the Water Works building
- Treated water: after treatment, just before the water leaves the water works building
- Distribution: at a point in the distribution system that is the furthest from the treatment system. THMs, HAAs and lead are to be sampled at a location that is likely to have an elevated concentration.

Five water samples are taken on a weekly basis for bacteriological testing: one from each well (raw), one from the treated water at the Water Works (treated), and two at various locations in the distribution system (distribution).

Raw water samples are tested for Total Coliforms, Escherichia coli (E. coli) and background colonies.

Treated and distribution water samples are tested for Total Coliforms, E. coli, Heterotrophic Plate Count (HPC), and background colonies.

All bacteriological tests were performed by the accredited laboratory SGS Lakefield Research Limited.

The results of the water samples are reviewed by the Overall Responsible Operator and kept on file at the Township office. If a treated water or distribution water sample contains Total Coliforms or E. coli, the Spills Action Centre and the Simcoe Muskoka District Health Unit are notified immediately, verbally and in writing. The site is also re-sampled.

All treated water bacteriological test results met Ontario Regulation 169/03 – Ontario Drinking Water Quality Standards (O. Reg. 169), Schedule 1, Microbiological Standards. Copies of the laboratory results are available upon request.

## 4.2 FREE CHLORINE RESIDUAL MONITORING AND RESULTS

In order to provide the required primary disinfection in accordance with the MECP's Procedure for Disinfection of Drinking Water in Ontario, an adequate CT value must be maintained. The CT value is the effective disinfectant contact time (T) multiplied by the free chlorine residual (C).

A CT value of 6 is needed to provide 2-log inactivation of viruses, based on a pH range of 6-9 and a water temperature of 0.5 °C. The available contact time is determined from the available contact volume and the rated capacity of the Water Works. A baffle factor of 0.5 is used to determine the effective contact time. Under regular operating conditions, maintaining a free chlorine residual above 0.4 mg/L in the treated water leaving the Water Works will ensure that a CT of 6 has been maintained.

Free chlorine residuals at the Water Works building are monitored using a continuous analyzer, to verify the free chlorine residual is maintained within the operation limits of 0.4 mg/L to 4.0 mg/L. In 2019, free chlorine residuals measured by the continuous analyzer ranged between 0.0 mg/L and 3.24 mg/L. When the continuous analyzer measured a free chlorine residual outside of the operation limits, the on-duty operator compared the results with those of a hand-held analyzer. The on-duty operator also confirmed all Water Works equipment was operating normally at the time, to verify the triggered alarm was a non-reportable event. All measurements recorded outside of the operation limits in 2019 were caused by testing of alarm set-points, a short-term power failure, regular maintenance or cleaning. The continuous analyzer was re-calibrated as required. Hand-held measurements of free chlorine residuals ranged between 0.70 mg/L and 2.11 mg/L. Free chlorine residuals were therefore maintained above 0.4 mg/L at all times and a CT of 6 was achieved.

Free chlorine residuals in the distribution system were tested in accordance with O. Reg. 170/03, Schedule 7. The operator used a portable Hach Chlorine Residual Meter to verify that the free chlorine residuals were maintained within the operational limits of 0.2 mg/L to 4.0 mg/L. Free chlorine residuals in the distribution system ranged between 0.22 mg/L and 2.04 mg/L.

Free chlorine residual monitoring results are summarized in Table 2.

Table 2: Park Lane - 2019 Free Chlorine Residuals

Free Chlorine Residuals (ppm)						
Month	Water Works				Distribution System	
	Continuous Analyser		Hand-held Instrument (Daily)			
	Min*	Max	Min	Max	Min	Max
January	0.00	1.76	0.70	1.60	0.72	1.24
February	0.17	1.74	1.17	1.60	0.86	1.25
March	0.50	1.51	0.98	1.43	0.69	1.22
April	0.01	1.39	0.97	1.28	0.83	1.41
May	0.02	2.62	0.92	1.98	0.79	2.04
June	0.07	1.65	0.85	1.46	0.39	1.30
July	0.34	1.85	0.70	1.41	0.22	1.40
August	0.00	3.24	0.87	2.11	0.84	1.08
September	0.00	2.91	0.75	1.27	0.69	1.09
October	0.33	1.79	0.85	1.48	0.85	1.08
November	0.05	1.42	0.89	1.18	0.49	1.12
December	0.00	1.60	0.79	1.38	0.68	1.40

\*Low chlorine alarm test or non-reportable event

## 4.3 PHYSICAL/CHEMICAL TESTING RESULTS

### 4.3.1 Raw Water

A quarterly raw water sampling program was initiated in 2006 to test for major ions, nitrite and nitrate from each well. The intent of the program is to permit trend analysis of the results by a hydrogeologist for future studies pertaining to source water protection for the municipal water supply wells.

The raw water was sampled from Well No. 1 and Well No. 2 and tested in February, May, August, and November in 2019 by SGS. A full characterization of the physical/chemical quality of raw water was last completed for Well No. 1 in 2001 and for Well No. 2 in 2003. Raw water quality laboratory results for 2019 are summarized in Appendix B.

The aesthetic objectives specified in Table 4 of the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines (June 2003) (ODWS) were exceeded for:

- Colour: August sample from Well No. 1 and February, August and November samples from Well No. 2.
- Hardness (CaCO<sub>3</sub>), iron and manganese: all samples from Wells No. 1 and 2.

All samples from Wells No. 1 and 2 had concentrations of sodium above 20 mg/L.

Hand-held measurements of turbidity for Well No. 1 ranged from 0.69 NTU to 8.83 NTU. For Well No. 2 results ranged from 0.27 NTU to 4.1 NTU.

#### 4.3.2 Treated Water

SGS tested treated water quality in February, May, August and November 2019. Treated water was tested for nitrate, nitrite, colour, iron and manganese; and distribution water was tested for trihalomethanes (THMs), haloacetic acids (HAAs) and lead.

Treated water quality laboratory results for 2019 are summarized in Table 3.

Treated water quality met the standards in O. Reg. 169/03, Schedule 2, and the AO/OG in the ODWS.

##### 4.3.2.1 Turbidity

The continuous analyzer monitored treated water turbidity. Measurements ranged from 0.0 NTU to 2.04 NTU. Turbidity readings that were outside the operating range of 0.0 NTU to 1.0 NTU occurred during routine maintenance (continuous analyzer cleaning and calibration) or were caused by air bubbles within the treated water, or failure of the turbidimeter wiper.

Table 3: Park Lane - 2019 Treated Water Quality Results

Parameter	Feb	May	Aug	Nov	MAC	AO/OG
Colour (TCU)	<3	<3	<3	<3	-	5
Nitrite (mg/L)	<0.003	<0.003	<0.003	<0.003	1	-
Nitrate (mg/L)	<0.006	<0.006	<0.006	<0.006	10	-
Nitrate + Nitrite (mg/L)	<0.006	<0.006	<0.006	<0.006	10	-
Iron (µg/L)	11	13	105	27	-	300
Manganese (µg/L)	1.68	1.51	15.1	2.33	-	50
Lead (Distribution) (µg/L)	-	-	.21		10	-
THM (total) (Distribution) (µg/L)	80.5	80.19	65.38	65.38	-	-
THM (Distribution) (µg/L)*	80.5	80.2	66.7	65.4	100	-
HAA (total) (Distribution) (µg/L)	69.0	64.3	57.6	57.6	-	-
HAA (Distribution) (µg/L)*	74.1	70.575	56.35	56.35	-	-

\*Four quarter Running Average

AO/OG – Aesthetic Objective/Operational Guideline

MAC – Maximum Acceptable Concentration

##### 4.3.2.2 Lead

In accordance with the lead testing requirements of O. Reg.170, Schedule 15.1-5 (10), treated water in the distribution system was tested for lead, alkalinity and pH in March and August 2019. All parameters were within the OG and MAC of the ODWS. The laboratory results are summarized in Table 4.

Table 4: Park Lane – 2019 Lead Testing Results

Date	Location	pH	Alkalinity (mg/L)	Lead (ug/L)
March 11, 2019	Sample Station #2	6.81	188	0.61
August 21, 2019	Sample Station #3	6.89	169	0.21

Maximum Acceptable Concentration for Lead: 10 ug/L  
 Operational Guideline for Alkalinity: 30-500 mg/L  
 Operational Guideline for pH: 6.5-8.5

#### 4.3.3 Waste Water Sampling

The MDWL specifies that the annual average concentration of quarterly samples of effluent discharged from the backwash wastewater facilities cannot exceed 15 mg/L for total suspended solids (TSS).

The 2019 annual average concentration of TSS was 3.5 mg/L. Backwash wastewater was also tested for iron and manganese. The annual average concentration of iron was 1.361 mg/L and 0.17 mg/L for manganese.

#### 4.4 WELL LEVEL MONITORING

The static water levels in Well No. 1 and Well No. 2 were taken monthly with the exception of April. The recorded water levels, measured from the top of the well casing, are summarized in Table 5. These results will be reviewed by a hydrogeologist to evaluate the condition of the wells and the aquifer prior to any future relevant applications for approval.

Table 5: Park Lane - 2019 Supply Wells Static Water Levels

Static Water Level (m)					
Month	Well No. 1	Well No. 2	Month	Well No. 1	Well No. 2
January	1.88	2	October	6.2	3.55
February	1.86	1.92	November	1.86	2.12
March	3.01	3.43	December	2.13	3.89
April	-	-			
May	3.23	3.42			
June	1.85	2.15			
July	1.8	1.99			
August	2.53	2.24			
September	2.6	2.1			

## 5 WATER USAGE

### 5.1 WATER CONSUMPTION AND CHEMICAL USAGE

The average daily water consumption in Park Lane during 2019 was 12.2 m<sup>3</sup>/day, as shown in Table 6. This corresponds to an estimated per capita average water consumption of 246 L/p/day. A maximum daily demand of 45 m<sup>3</sup>/day was measured in April, which corresponds to 90% of the system's rated capacity of 50 m<sup>3</sup>/day. Sodium hypochlorite usage for pre-and post-chlorination and potassium permanganate usage for 2019 are also summarized in Table 6.

The total annual water consumption in 2019 was 47% higher than in 2018. Higher annual consumption because of multiple system leaks located and repaired throughout the year. A summary of the average daily demand (ADD), maximum daily demand (MDD) and the three-year (2017 to 2019) historical averages and maximums are presented in Table 7.

Table 6: Park Lane - 2019 Water Consumption and Chemical Usage

Month	Water Consumption				Sodium Hypochlorite Usage* (L)	Potassium Permanganate Usage (kg)
	Flow	Average Daily (m <sup>3</sup> )	Maximum Daily (m <sup>3</sup> )	Minimum Daily (m <sup>3</sup> )		
	Total (m <sup>3</sup> )					
January	343	11.1	17	8	35.01	0.18
February	258	9.2	12	8	24.74	0.13
March	381	12.3	21	7	36.30	0.19
April	325	10.8	45	6	30.89	0.16
May	287	9.3	17	6	29.16	0.14
June	400	13.3	26	8	38.64	0.19
July	641	20.7	32	16	59.36	0.28
August	594	19.2	25	17	59.90	0.30
September	368	12.3	20	7	37.11	0.19
October	299	9.6	15	8	31.86	0.16
November	287	9.6	12	7	26.86	0.14
December	294	9.5	11	8	28.13	0.14
<b>Total</b>	<b>4,477</b>				<b>437.96</b>	<b>2.19</b>
<b>Average</b>		<b>12.2</b>				
<b>Min. / Max.</b>			<b>45</b>	<b>6</b>		

Includes Leaks.

Treated water flow meter recalibrated in January 2019

\* Total volume of Sodium Hypochlorite for pre-chlorination and post-chlorination

Table 7: Park Lane Water Works Historical Treated Water Demand

Year	No. of Connections	ADD (m <sup>3</sup> /day)	MDD (m <sup>3</sup> /day)	Rated Capacity (m <sup>3</sup> /day)	Per Capita Consumption (L/p/day)	
					Average	Maximum
2009	17	11	24	50	249	543
2010	17	10	23	50	222	520
2011	17	11	28	50	258	629
2012	17	10	34	50	228	760
2013	17	8	27	50	173	614
2014	17	11	26	50	239	588
2015	17	8	16	50	190	362
2016	17	8	33	50	193	747
2017	18	7.5	20	50	160	425
2018	19	8.3	16	50	168	324
2019	19	12.2	45	50	246	911
<b>3 Yr Avg / Max</b>		<b>9.3</b>	<b>45</b>	<b>50</b>	<b>191.3</b>	<b>911</b>

## 5.2 LAWN WATERING BAN

No owner of occupant within Park Lane is permitted to use water from the Water Works for the purpose of watering lawns or gardens or for any other non-domestic use, as per municipal Bylaw No. 2005.72.

## 5.3 SYSTEM RESERVE CAPACITY

In accordance with MECP Procedure D-5-1, the reserve capacity is calculated by the following formula:

$$\text{Reserve Capacity} = \text{Design Flow} - \text{Committed Flow}$$

Design flow is the maximum permissible flow approved by the MDWL and/or PTTW. Park Lane Water Works' maximum day rated capacity is 50 m<sup>3</sup>/day.

The committed flow is the total expected water demand from the existing and proposed connections based on the previous three years of data. The committed number of service connections is 19. The three-year (2017-2019) maximum day per capita water consumption was 911 L/p/day. At this water consumption rate, the committed flow is 45 m<sup>3</sup>/day.

Therefore, the calculated reserve capacity is 5 m<sup>3</sup>/day.



## 6 OPERATION AND MAINTENANCE

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### 6.1 SYSTEM INSPECTION

The water system is inspected annually by the Ministry of Environment, Conservation and Parks (MECP) to confirm compliance with MECP legislation and authorizing documents (the DWWP and MDWL), as well as evaluating conformance with Ministry drinking water-related policies and guidelines. The physical inspection took place on April 25, 2019 with the inspection review period of May 16, 2018 – April 25, 2019.

There was one issue of non-compliance with regulatory requirements identified during the inspection review period. Details of the inspection are in [Section 8: Compliance Status](#).

### 6.2 SUMMARY OF MAINTENANCE AND REPAIRS

Throughout the year, regular maintenance was completed at the Water Works such as calibrating the chlorine and turbidity analyzers, cleaning the chlorine pumps, injectors and lines, backwashing and changing filters, and responding to AC power failures.

All flow meters were checked for calibration by a qualified technician in January 2019.

Repairs and regular maintenance were as follows during 2019:

- Replace curb stop box and rod (\$2500)
- Replace well #2 pump (\$2300)
- Replace flow control valves filter #1 (\$1000)
- Replace multi-function valve well #1 chlorine pump (\$500)
- Water service repair 19/09/11

### 6.3 SUMMARY OF UPGRADES AND IMPROVEMENTS

No new equipment was installed.

### 6.4 PUBLIC COMPLAINTS

No complaints were received in 2019.

## 7 WATER WORKS AND OPERATOR LICENSES

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The MECP Water Works number is 220007132. The Water Works is categorized as a Small Municipal Residential system.

A summary of the facility operators in 2019 and their level of certification is listed in Table 8.

Table 8: Certified Operators

<b>Operator</b>	<b>Water Treatment Class</b>	<b>License No./ Expiry Date</b>	<b>Water Dist. Class</b>	<b>License No./ Expiry Date</b>
Dave Readman	Class II	12460 / July 31.21	Class II	13530 / July 31.21
Donald O'Connell	Class II	53308 / Feb 28.23	N/A	N/A
Rob Smith	Class III	53310 / Feb 28.23	Class III	96079 / Feb 28.23
Nicholas Leroux	Class III	68579 / July 31.21	Class III	83999 / Mar 31.23
Joe Foley	Class II	87270 / Aug 31.21	N/A	N/A
Kyle Readman	Class I	102762 / Oct 31.21	N/A	N/A

The Operators attended workshops, seminars and training throughout the year to ensure they maintain and enhance their knowledge pertaining to the operation of drinking water systems and remain knowledgeable on current trends in the industry.

Each operator is mandated by Ontario Regulation 128/04 under the Safe Drinking Water Act, 2002 to complete the applicable number of required training hours over a 3-year period in order to renew their licence.

## 8 COMPLIANCE STATUS

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The MECP conducted an inspection of the Water Works on April 25, 2019. One issue of non-compliance was identified in the inspection. No Provincial Officer's Orders were issued in conjunction with this inspection.

The secondary disinfectant residual was not measured as required for the distribution system. During the inspection review period, at least two samples were tested each week for free chlorine residual in the distribution system as required. During two of the weeks, there was less than 48 hours in between the two samples as required under O. Reg. 170/03. A corrective action was issued and has been resolved.

The Park Lane Water Works operated in accordance with the DWWP and MDWL during 2019. Based on the 2019 treated water quality test results, at no time were the residents of Park Lane at any health risk. All treated water samples tested below the maximum acceptable concentrations for all microbiological and chemical parameters, as specified in O. Reg. 169/03, Schedule 1 and 2.

A summary of the minimum sampling and testing frequencies is included in Appendix A.

The annual report required by O. Reg. 170/03, Section 11 was made available to the public on the Township of Ramara website on February 28, 2020. A copy of the report is included in Appendix C.

APPENDIX A:  
Schedule for required sampling

## Schedule for required sampling

Frequency	Location		
	Raw Water	Treated water	Distribution
Continuous		<b>Free Chlorine Residual</b> Turbidity	
Daily	Turbidity	Free Chlorine Residual (achieved by Continuous)	
Weekly		Total Coliforms E. Coli HPC or Background	<b>Free Chlorine Residual</b> <b>(2/week)</b>
Every 2 weeks			<b>Total Coliforms</b> <b>E. Coli</b> <b>HPC</b>
Monthly	<b>Total Coliforms</b> <b>E. Coli</b>		
Every Calendar Quarter			<b>THMs</b> <b>HAAs</b> <i>(starting January 1, 2017)</i>
Every 3 Months	Major Ions Nitrate Nitrite Colour	<b>Nitrite</b> <b>Nitrate</b> Colour Iron Manganese	
Twice per year			<b>Alkalinity*</b> <b>pH</b>
Every 36 Months (2 periods)			<b>Lead</b> (Schedule 15.1, Reduced Sampling of distribution system)
Every 60 Months		<b>Inorganics</b> (Schedule 23) <b>Organics</b> (Schedule 24) <b>Sodium</b> <b>Fluoride</b>	

### Notes:

- **Bold** text items are O. Reg. 170/03 testing requirements.
- Normal text items are recommended to monitor system performance.
- Major Ions: Alkalinity (as CaCO<sub>3</sub>), Calcium Chloride, Conductivity, Fluoride, Hardness (as CaCO<sub>3</sub>), Iron, Magnesium, Manganese, pH, Potassium, Sodium, and Sulphate.

APPENDIX B:  
Raw water quality summary

Park Lane Wells No.1, 2  
Raw Water Quality - 2019  
Laboratory Results

Parameter	Treated Water		27-Feb-19		28-May-19		21-Aug-19		27-Nov-19	
	MAC	AO/OG	Well		Well		Well		Well	
			No. 1	No. 2	No. 1	No. 2	No. 1	No. 2	No. 1	No. 2
Alkalinity (as CaCO <sub>3</sub> ), mg/L		30 - 500	193	187	160	181	157	175	178	184
Calcium, mg/L			152	75.3	157	69.9	269	117	192	98
Chloride, mg/L		250	74	65	72	54	62	83	73	72
Colour, TCU		5	5	10	4	5	157	175	7	12
Conductivity, uS/cm			1000	650	1080	616	1630	939	1090	638
Fluoride, mg/L	1.5		0.29	0.21	0.31	0.22	0.4	0.22	0.35	0.21
Hardness (as CaCO <sub>3</sub> ), mg/L		80 - 100	470	267	485	254	788	397	583	341
Iron, ug/L		300	3110	4510	3060	4410	2670	5980	3790	5680
Magnesium, mg/L			21.8	19.1	23	19.3	28.3	25.5	25.4	23.5
Manganese, ug/L		50	737	741	835	787	877	1100	836	864
Nitrate, mg/L	10		<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Nitrite, mg/L	1.0		<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Nitrate + Nitrite, mg/L			<0.006	<0.006	<0.006	<0.006	<0.003	<0.003	<0.006	<0.006
pH		6.5 - 8.5	7	6.86	7.87	7.68	7.77	7.57	7.28	7.1
Potassium, mg/L			2.29	1.87	2.25	1.73	2.67	2	2.56	2.1
Sodium, mg/L	20	200	56.3	22	58.8	20.8	101	36.8	68.2	27.9
Sulphate, mg/L		500	260	57	310	59	700	200	350	67

MAC - Maximum Acceptable Concentration in Treated Water  
AO - Aesthetic Objective  
OG - Operational Guideline

APPENDIX C:  
Annual Report



**Part III Form 2**
**Section 11. ANNUAL REPORT.**

<b>Drinking-Water System Number:</b>	220007132
<b>Drinking-Water System Name:</b>	Park Lane Well Supply
<b>Drinking-Water System Owner:</b>	The Corporation of the Township of Ramara
<b>Drinking-Water System Category:</b>	Small Municipal Residential
<b>Period being reported:</b>	January 1, 2019 to December 31, 2019

<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;">                 Township of Ramara Municipal Office                  2297 Highway 12                  Brechin, ON L0K 1B0             </div>	<p><b><u>Complete for all other Categories.</u></b></p> <p>Number of Designated Facilities served:  <div style="border: 1px solid black; padding: 2px; width: 100px; text-align: center;">N/A</div> </p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]</p> <p>Number of Interested Authorities you report to:  <div style="border: 1px solid black; padding: 2px; width: 100px; text-align: center;">N/A</div> </p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]</p>
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**Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report**

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes [ ] No [ ]  
 \*Not applicable

Indicate how you notified system users that your annual report is available, and is free of charge.

- Public access/notice via the web**
- Public access/notice via Government Office**
- Public access/notice via a newspaper**
- Public access/notice via Public Request**
- Public access/notice via a Public Library**
- Public access/notice via other method**

**Describe your Drinking-Water System**

The source water for Park Lane Subdivision Drinking Water System is groundwater, which is withdrawn either from Well No. 1 or Well No. 2. The duty well is manually selected by the operators. Water is pumped from the wells to the water works building. Raw water is treated with sodium hypochlorite and potassium permanganate for iron and manganese oxidation. Two Greensand filters are utilized to filter oxidized iron and manganese. The filter effluent is injected with sodium hypochlorite for primary disinfection. Treated water is stored in a 61 m<sup>3</sup> standpipe. Two high lift pumps pump water into the distribution system.

Continuous water quality on-line analyzers monitor the free chlorine residual, pH and turbidity of the treated water before it enters the distribution system. The analyzers are logged continuously by the paperless chart recorder and have alarm set points to notify the operators of adverse water quality results.

The water works is equipped with a 20 kW propane emergency generator. The generator has sufficient capacity to run the entire Water Works. The generator can operate for 5 days at maximum capacity when its propane tank is full.

**List all water treatment chemicals used over this reporting period**

Sodium Hypochlorite  
Potassium Permanganate

**Were any significant expenses incurred to?**

- Install required equipment
- Repair required equipment
- Replace required equipment

**Please provide a brief description and a breakdown of monetary expenses incurred**

- Replace curb stop box and rod (\$2500)
- Replace well #2 pump (\$2300)
- Replace flow control valves filter #1 (\$1000)
- Replace multi-function valve well #1 chlorine pump (\$500)

# Drinking-Water Systems Regulation O. Reg. 170/03

**Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre**

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date

**Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.**

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	104	0	0 - 3	0	0
Treated	52	0	0	52	0 - 120
Distribution	104	0	0	104	0 - 2

**Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.**

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity	8760	0 – 2.04 NTU
Chlorine	8760	0 – 3.24 mg/L
Fluoride (If the DWS provides fluoridation)		N/A

*NOTE: For continuous monitors use 8760 as the number of samples.*

**NOTE:**  
 When free chlorine residual was measured to be outside of the operating range of **0.4 mg/L to 4.0 mg/L**, the results were confirmed by operators as non-reportable events by use of a hand held analyzer. All results obtained outside the operating range were attributed to testing of alarm set-points, short term power failure, regular maintenance or cleaning.

When a turbidity value was recorded to exceed the limit of **1.0 NTU**, the results were checked by operators by use of a hand held analyzer. All results obtained outside the objective range were attributed to testing of alarm set-points, short term power failure, regular maintenance or cleaning.

**Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.**

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure	Compliance Requirement	Exceedance
July 20, 2016 MDWL No. 147-102 Issue Number 2	Suspended solids in backwash effluent	February, May, August and November	3.5	mg/L (Annual average)	15 mg/L (Annual Average)	No

**Summary of Inorganic parameters tested during this reporting period or the most recent sample results**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	21-Aug-19	<0.09	µg/L	
Arsenic	21-Aug-19	<0.2	µg/L	
Barium	21-Aug-19	129	µg/L	
Boron	21-Aug-19	152	µg/L	
Cadmium	21-Aug-19	<0.003	µg/L	
Chromium	21-Aug-19	0.18	µg/L	
Lead (Distribution)	21-Aug-19	0.21	µg/L	
Mercury	21-Aug-19	<0.01	µg/L	
Selenium	21-Aug-19	<0.04	µg/L	
Sodium	02-Sept-15	67.8	mg/L	
Uranium	21-Aug-19	0.766	µg/L	
Fluoride	15-Aug-17	0.24	mg/L	
Nitrite	27-Feb-19	<0.003	mg/L	
Nitrite	28-May-19	<0.003	mg/L	
Nitrite	21-Aug-19	<0.003	mg/L	
Nitrite	27-Nov-19	<0.003	mg/L	
Nitrate	27-Feb-19	<0.006	mg/L	
Nitrate	28-May-19	<0.006	mg/L	
Nitrate	21-Aug-19	<0.006	mg/L	
Nitrate	27-Nov-19	<0.006	mg/L	

**Summary of lead testing under Schedule 15.1 during this reporting period**

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Plumbing				
Distribution	2	0.21-0.61	µg/L	0

**Summary of Organic parameters sampled during this reporting period or the most recent sample results**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	21-Aug-19	<0.02	µg/L	
Atrazine + N-dealkylated metabolites	21-Aug-19	<0.01	µg/L	
Azinphos-methyl	21-Aug-19	<0.02	µg/L	
Benzene	21-Aug-19	<0.32	µg/L	
Benzo(a)pyrene	21-Aug-19	<0.004	µg/L	
Bromoxynil	21-Aug-19	<0.33	µg/L	
Carbaryl	21-Aug-19	<0.01	µg/L	
Carbofuran	21-Aug-19	<0.01	µg/L	
Carbon Tetrachloride	21-Aug-19	<0.16	µg/L	
Chlorpyrifos	21-Aug-19	<0.02	µg/L	
Diazinon	21-Aug-19	<0.02	µg/L	
Dicamba	21-Aug-19	<0.20	µg/L	
1,2-Dichlorobenzene	21-Aug-19	<0.41	µg/L	
1,4-Dichlorobenzene	21-Aug-19	<0.36	µg/L	
1,2-Dichloroethane	21-Aug-19	<0.35	µg/L	
1,1-Dichloroethylene (vinylidene chloride)	21-Aug-19	<0.33	µg/L	
Dichloromethane	21-Aug-19	<0.35	µg/L	
2,4 Dichlorophenol	21-Aug-19	<0.15	µg/L	
2,4-Dichlorophenoxy acetic acid (2,4-D)	21-Aug-19	<0.19	µg/L	
Diclofop-methyl	21-Aug-19	<0.40	µg/L	
Dimethoate	21-Aug-19	<0.03	µg/L	
Diquat	21-Aug-19	<1.0	µg/L	
Diuron	21-Aug-19	<0.03	µg/L	
Glyphosate	21-Aug-19	<1.0	µg/L	
Malathion	21-Aug-19	<0.02	µg/L	
Metolachlor	21-Aug-19	<0.01	µg/L	
Metribuzin	21-Aug-19	<0.02	µg/L	
Monochlorobenzene	21-Aug-19	<0.30	µg/L	
Paraquat	21-Aug-19	<1.0	µg/L	
Pentachlorophenol	21-Aug-19	<0.15	µg/L	
Phorate	21-Aug-19	<0.01	µg/L	
Picloram	21-Aug-19	<1.0	µg/L	
Polychlorinated Biphenyls(PCB)	21-Aug-19	<0.04	µg/L	
Prometryne	21-Aug-19	<0.03	µg/L	
Simazine	21-Aug-19	<0.01	µg/L	
THM - Quarterly Average (NOTE: Latest annual average)	Feb-Nov 19	65.4	µg/L	
Terbufos	21-Aug-19	<0.01	µg/L	
Tetrachloroethylene	21-Aug-19	<0.35	µg/L	
2,3,4,6-Tetrachlorophenol	21-Aug-19	<0.14	µg/L	
Triallate	21-Aug-19	<0.01	µg/L	
Trichloroethylene	21-Aug-19	<0.44	µg/L	

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
2,4,6-Trichlorophenol	21-Aug-19	<0.25	µg/L	
2-Methyl-4-chlorophenoxy acetic acid	21-Aug-19	<0.00012	µg/L	
Trifluralin	21-Aug-19	<0.02	µg/L	
Vinyl Chloride	21-Aug-19	<0.17	µg/L	

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
THM - Quarterly Average	65.4	µg/L	Quarterly Average 27-Feb-19 to 27-Nov-19

**(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential)**

Notes on Additional Sampling

None.