

Township of
Langley



Est. 1873

Parks Water Quality Report 2016

Prepared by:
Carolyn Stewart, ASCT | BBA
Engineering Technologist II
Utility Operations
Township of Langley

CONTENTS

1.0 Executive Summary	iii
2.0 Introduction	1
3.0 System Description	1
Figure 3.0.1 Location of Brown, Ponder and Williams Parks	2
Table 3.0.1 Municipal Well Data	2
3.1 Staff Training and Operation Level	3
3.2 System Maintenance	3
3.3 Emergency Response and Contingency Plan	3
4.0 Water Sampling and Testing Program	3
Table 4.0.1 Water Sampling and Testing Schedule	3
Figure 4.0.1 Well Location indicating Weekly Water Sampling Site Location Map – Williams Park	4
Figure 4.0.2 Well Locations indicating Weekly Water Distribution Test Site Location Map – Brown Park	5
Figure 4.0.3 Well Locations indicating Weekly Water Distribution Test Site Location Map – Ponder Park	6
Table 4.0.2 Monthly Microbial Analysis for Brown and Williams Park	7
Table 4.0.3 Schedule A of the B.C. Drinking Water Protection Regulation	7
4.1 Microbial Results for 2015	8
Figure 4.1.1 Number of Samples per Month Positive for Total Coliform Bacteria	8
5.0 Project Updates	9
5.1 2016 Projects	9
5.2 2017 Projects	9
6.0 Conclusion	9

1.0 Executive Summary

Two municipal parks in the Township have wells which supply drinking water to fountains or a concession for public consumption. A third private well supplies only the caretaker's residence and sanitation to a shelter. Each park is an isolated system and is not connected to the Township's distribution system. The BC Drinking Water Protection Regulation (Section 11) requires monitoring of water quality from all public drinking sources as well as an annual report on water quality that must be made available to the public.

Source water quality from Brown met regulatory requirements in 2016. Three consecutive Total Coliforms positive samples from Williams Park were addressed by system maintenance upgrades. Water from wells in Brown and Williams Park was tested weekly for colour, *E. coli*, Heterotrophic Plate Count, total coliforms, turbidity, and pH; and on a quarterly basis for arsenic. Source water from Ponder Park Well was sampled quarterly for microbiological and annually for chemical parameters and met regulatory requirements for all but the aesthetic parameter of Manganese.

All sources met the requirements of the British Columbia Drinking Water Protection Regulation and the Guidelines for Canadian Drinking Water Quality. Specifically, there were no confirmed positive *E.coli* test results from any of the Township Park sources.

2.0 Introduction

The BC Drinking Water Protection Regulation (Section 11) requires all water suppliers to produce an annual report on water quality for all sources and must ensure that the information is made public. This report provides an overview of the water system in the three Township Parks, and documents the results of the Township's monitoring program of source well water quality.

3.0 System Description

Williams Park and Brown Park are located in the centre of the Township of Langley in an area called the Salmon River Uplands. Williams Park is 36.5 acres bounded to the east by 238 Street and to the south by 64 Avenue. Brown Park is located off of 240 Street, south of 51 Avenue and is 12.9 acres in size. Ponder Park is located at the west end of 76 Ave at 25199 76 Ave. The 80 acres park is surrounded by private properties. Park locations are show in Figure 3.0.1.

No connection to the municipal water system exists for the three parks. Williams Park receives potable water from one well which supplies water to restrooms, drinking fountains, and a caretaker residence within the park. The treatment system for William's park includes a greensand filter, a filter to remove arsenic, a five micron filter and NSF UV Sterilization. Brown Park has two wells; a shallow one in the northwest corner of the property (Well 1), and a deeper one, in the southwest corner (Well 2). Well 1 is exclusively for irrigation purposes and has no treatment, whereas Well 2 supplies drinking water to the park for restrooms, a concession, drinking fountains, and a caretaker residence. The treatment system for Brown Park (Well 2) includes a water softener, a sediment filter and NSF UV Sterilization.

Solely the Ponder Park Caretaker and the shelter received source water from Ponder Park well. The Harry Irving Shelter is supplied source water for sanitation purposes only.

Well depths and rated capacity are shown in Table 3.0.1.

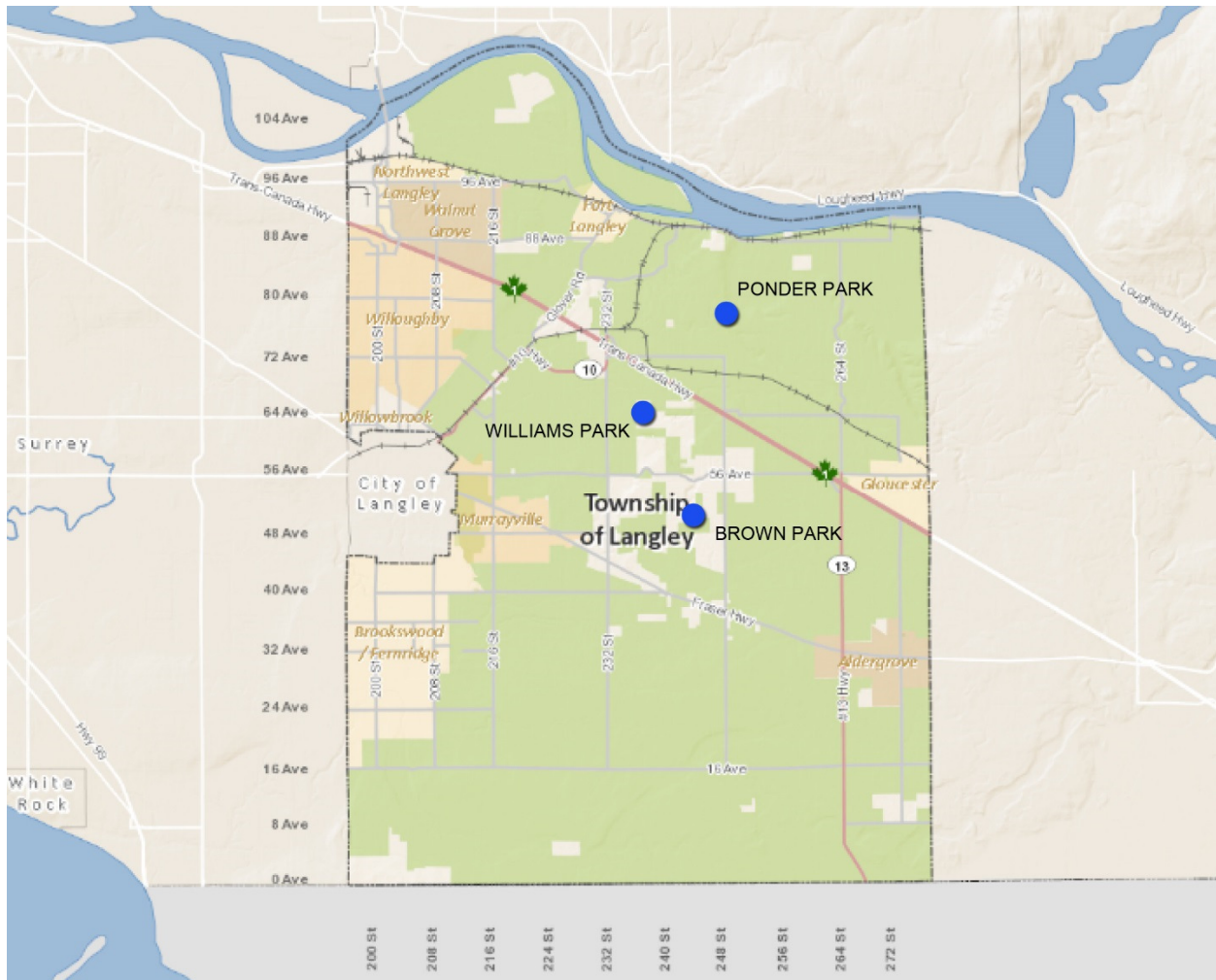


Figure 3.0.1 Location of Brown, Ponder and Williams Parks

Table 3.0.1 Municipal Well Data

Well Name	EMS #	Year Drilled	Rated Capacity (l/s)	Depth (m)
Williams Park Well	Unknown			55
Brown Park Well 1	E49289	1981	1.58	19
Brown Park Well 2	E104834	2007	1.89	68
Ponder Park Well	Unknown	1981		

3.1 Staff Training and Operation Level

The Environmental Operators Certification Program (EOCP) has not yet rated the water systems in Williams and Brown Parks.

Water quality sampling in Township Parks is undertaken by utilities staff, and the operation and maintenance is overseen by the Superintendent of Parks who is an EOCP-certified Small Water Systems Operator.

3.2 System Maintenance

To maintain water quality in the parks water systems, the Township services the treatment systems bi-annually, UV bulbs are replaced annually, salt is added to our softener as needed and water samples are collected and tested weekly. These two systems are also inspected annually by the Fraser Health Authority.

3.3 Emergency Response and Contingency Plan

In the event of a positive test for contaminated water, or in the case of field evidence indicating that the water quality from a park system may be compromised, the Township stops usage of water from the contaminated source and then advises Fraser Health of the situation. “Non-potable” signage will be posted on all taps in the parks. All necessary steps are taken by staff to determine cause and to rectify the problem. It is the responsibility of the Township to notify the public if any advisory is issued and the Medical Health Officer (MHO) determines when an advisory can be lifted.

4.0 Water Sampling and Testing Program

The Township utilizes a regular sampling and testing program in order to maintain delivery of safe, high quality drinking water to its park users. Weekly testing is performed at both Brown and Williams Park locations as shown in Figure 4.0.1 and Figure 4.0.2. For the residential uses at Ponder Park, quarterly microbial tests and annually chemical analysis is performed by a CAEL certified lab.

Water sampling and testing, as described in Table 4.0.1, meets regulatory requirements as set by the Guidelines for Canadian Drinking Water Quality.

Table 4.0.1 Water Sampling and Testing Schedule

Parameter	Frequency Williams & Brown Parks	Frequency Ponder Park
E.coli, Total Coliforms, HPC	Weekly	Quarterly
Free Chlorine		
Turbidity		
pH, Temperature		
Arsenic	Quarterly	
Chemical Analysis		Annually

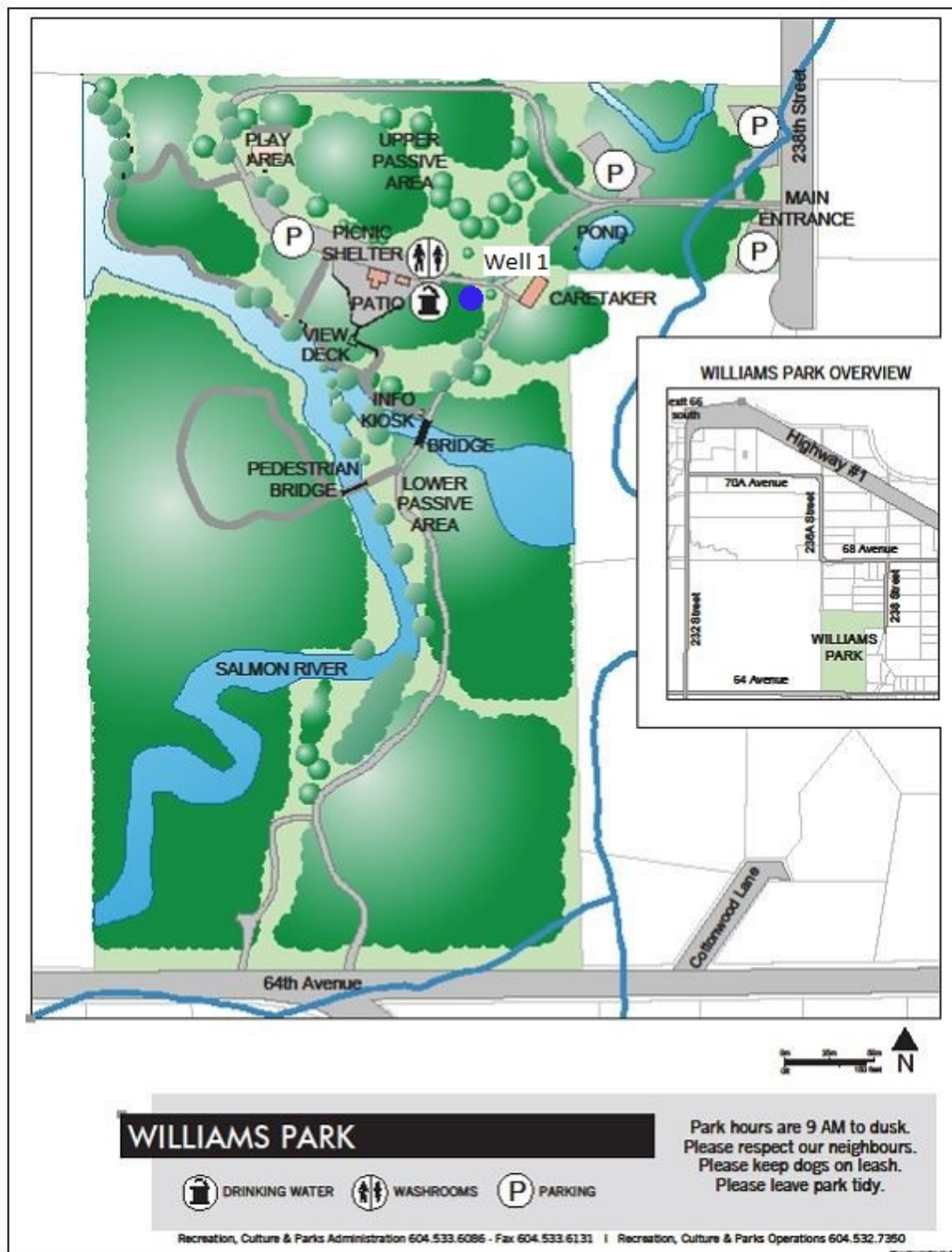


Figure 4.0.1 Well Location indicating Weekly Water Sampling Site Location Map - Williams Park

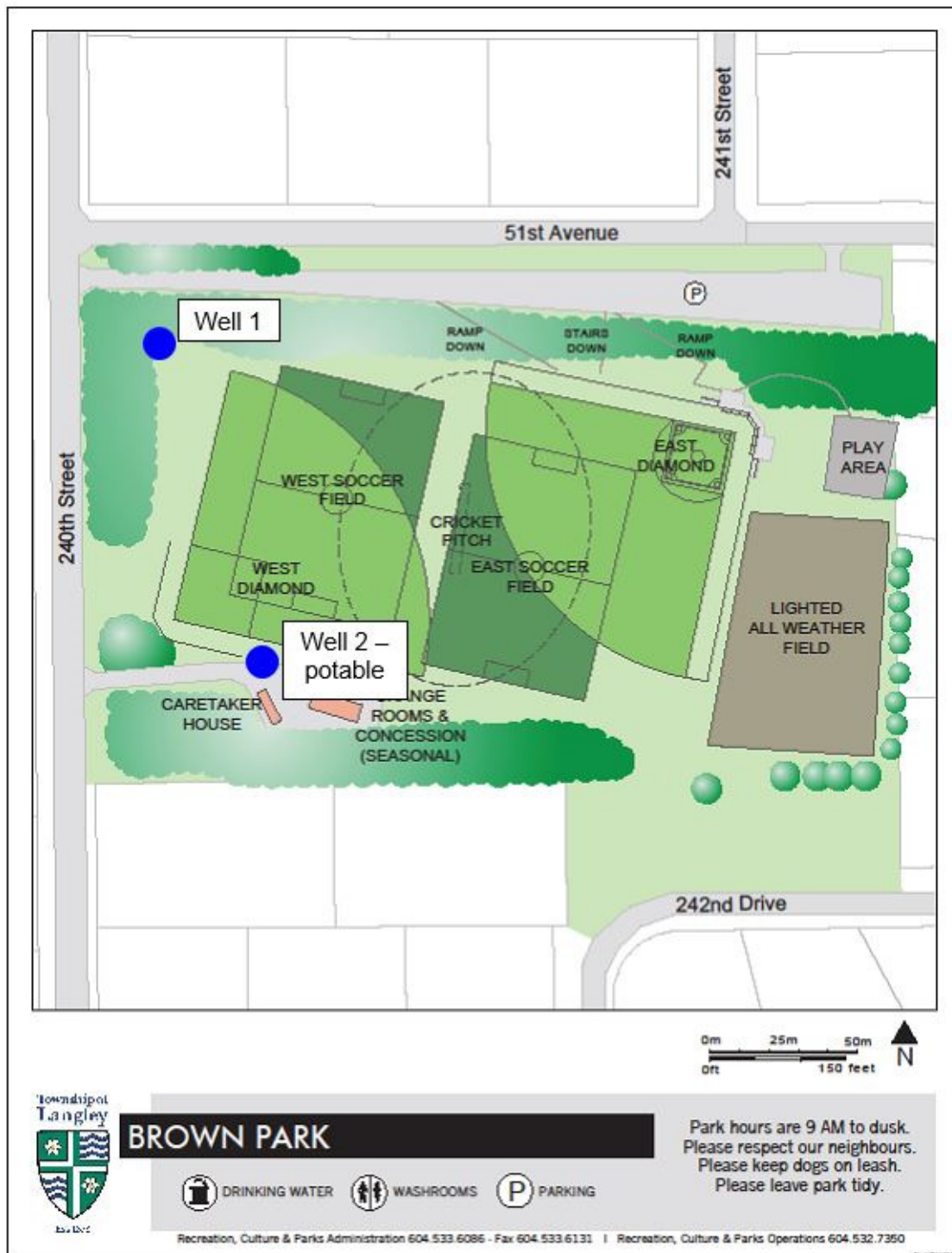


Figure 4.0.2 Well Locations indicating Weekly Water Distribution Test Site Location Map - Brown Park

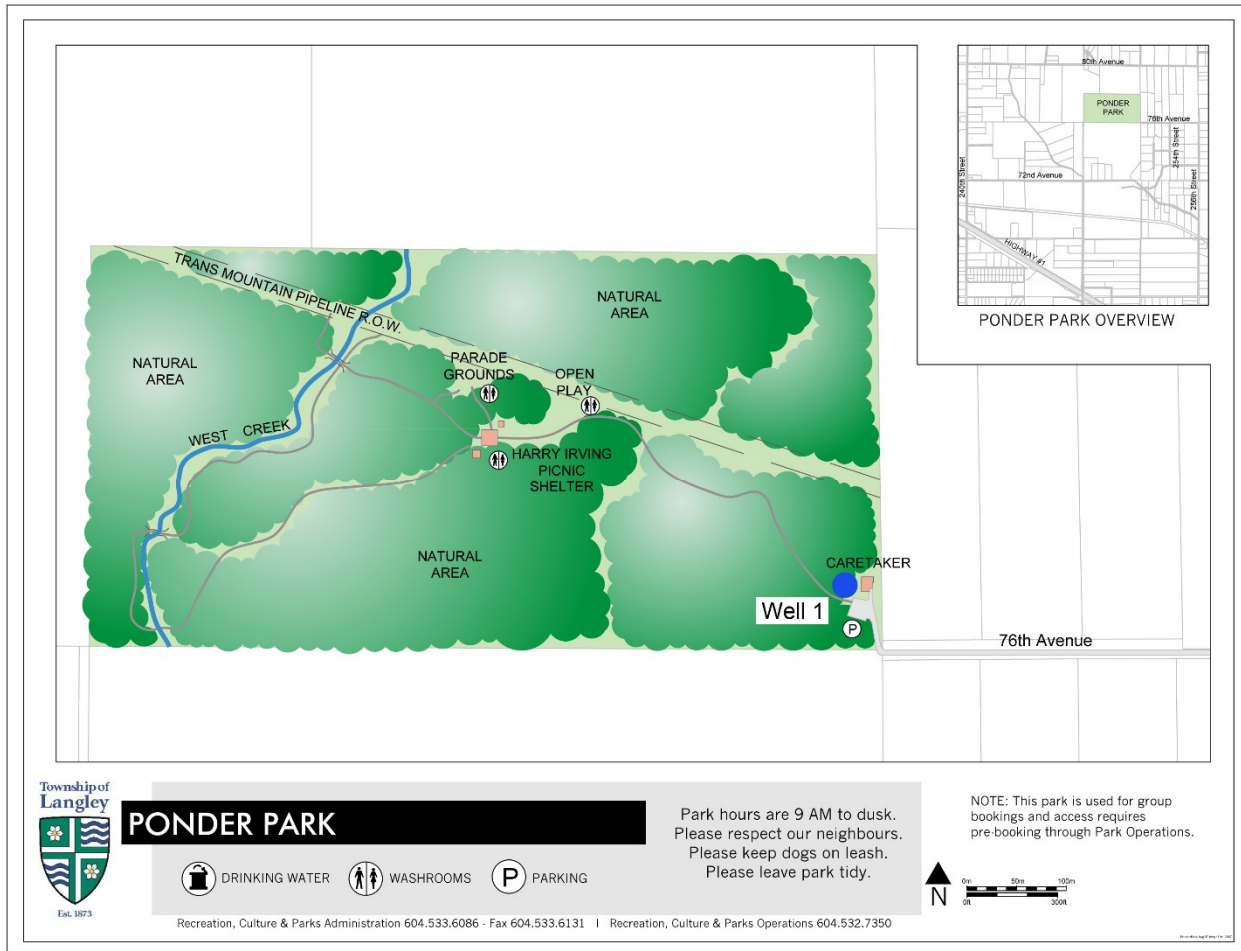


Figure 4.0.3 Well Locations indicating Weekly Water Distribution Test Site Location Map - Ponder Park

Table 4.0.2 shows results for the 2016 quarterly microbiological analysis of the source water for total coliforms and *E.coli*. Township Park's water did not test positive for total coliform at any site however the indicator Heterotrophic Bacteria was recorded at Brown Park in September. All subsequent HPC (heterotrophic plate count) test results were within an acceptable range. Per the Guidelines to Canadian Drinking Water, HPC "*is a useful operational tool for monitoring general bacteriological water quality throughout the treatment process and in the distribution system. HPC results are not an indicator of water safety and, as such, should not be used as an indicator of potential adverse human health effects.*"

Table 4.0.2 Monthly Microbial Analysis for Brown and Williams Park

Month	# of Total Coliform Tests	# of Positive Test Results	Source
January	8	0	
February	8	0	
March	10	0	
April	8	0	
May	10	0	
June	8	0	
July	6	0	
Aug	9	0	
September	6	0	
October	8	1	Williams Park
November	9	2	Williams Park
December	10	0	

The wells in Brown Park and Williams Park supply water for a caretaker, drinking fountains in the picnic area, and for irrigation purposes only. Therefore, fewer than 5,000 people are served by the water supply in these parks yearly. The required number of samples should be on the order of four samples per month. Currently the Township takes an average of four samples per month per site. Water sampling and testing for *E.coli* and total coliform bacteria, as described in Table 4.0.3, meets regulatory requirements as set by the Guidelines for Canadian Drinking Water Quality.

Although not included in Table 4.0.2, Ponder Park Well, supplying the caretaker and sanitation to the Harry Irving Shelter is tested quarterly and met the Guidelines.

Table 4.0.3 Schedule A of the B.C. Drinking Water Protection Regulation

Parameter	Standard
Escherichia coli	No detectable Escherichia coli (<i>E.coli</i>) per 100 ml
Total coliform bacteria:	
(a) 1 sample in a 30 day period	No detectable total coliform bacteria per 100 ml
(b) more than 1 sample in a 30 day period	At least 90% of samples have no detectable total coliform bacteria per 100 ml and no sample has more than 10 total coliform bacteria per 100 ml

4.1 Microbial Results for 2015

The Maximum Allowable Concentration (MAC) for E. Coli is no detectable E Coli per 100ml and for Total Coliform is 10% of samples taken and; in 2016 0% of samples tested were positive for E. Coli and three samples at Williams Park were positive for the indicator bacteria, Total Coliform. One sample was greater than 10 Total Coliform bacteria per 100ml during this event. Remediation was addressed immediately by engaging a Contractor to service the UV System, and retesting for Total Coliform and E. Coli. Upon replacing equipment for the UV system and CAEL certified lab tests results showing no coliforms present the system was returned to service per section 3.3 Emergency Response and Contingency Plan. The sole sample above 10 coliform forming units was addressed by this maintenance upgrade. These results can be seen in Figure 4.1.1.

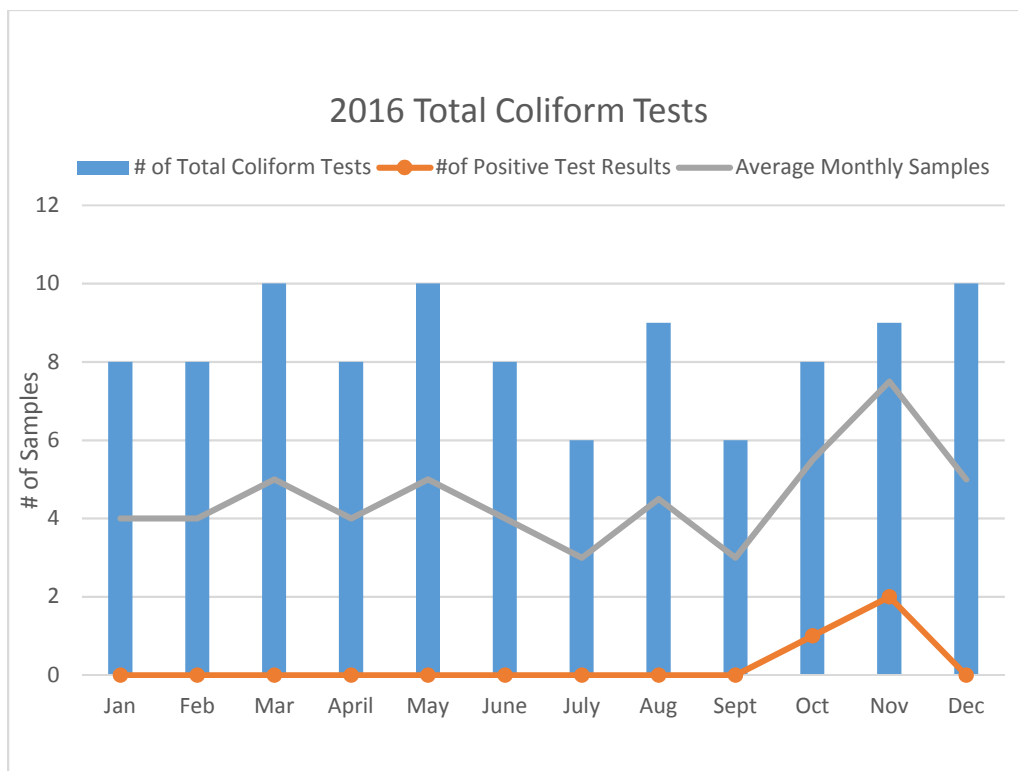


Figure 4.1.1 Number of Samples per Month Positive for Total Coliform Bacteria

5.0 Project Updates

5.1 2016 Projects

The following projects were completed in 2016

- New Ponder Park Pumphouse
- Ponder Park disinfection system upgrade

5.2 2017 Projects

The following projects are scheduled during 2017

- Upgrading Williams Park water room including water treatment equipment
- In accordance with the BC Drinking Water Protection Regulation, section 15, finalizing the Emergency Response Plan which incorporates the provision to identify, eliminate and prevent cross connection with non-potable water sources.
- Installing non testable frost free hose bib vacuum breakers to faucets, some janitor sinks, etc

6.0 Conclusion

It can be concluded from the 2016 water testing programs that the Brown Park and William's Park wells meet the Guidelines to Canadian Drinking Water Quality. Three Total Coliform positive samples were remediated at Williams Park by system maintenance and one uncommon Heterotrophic Bacteria test result at Brown's Park did not indicate further action required. Furthermore, Manganese test results were above aesthetic objective guidelines. No action was required to meet the Guidelines.

Township of
Langley



Est. 1873

Parks Water Quality Report 2016

Appendix A Source Water Test Results

List of Figures

Figure A.1: pH **Error! Bookmark not defined.**
Figure A.2: Temperature..... 2
Figure A.3: Turbidity 3

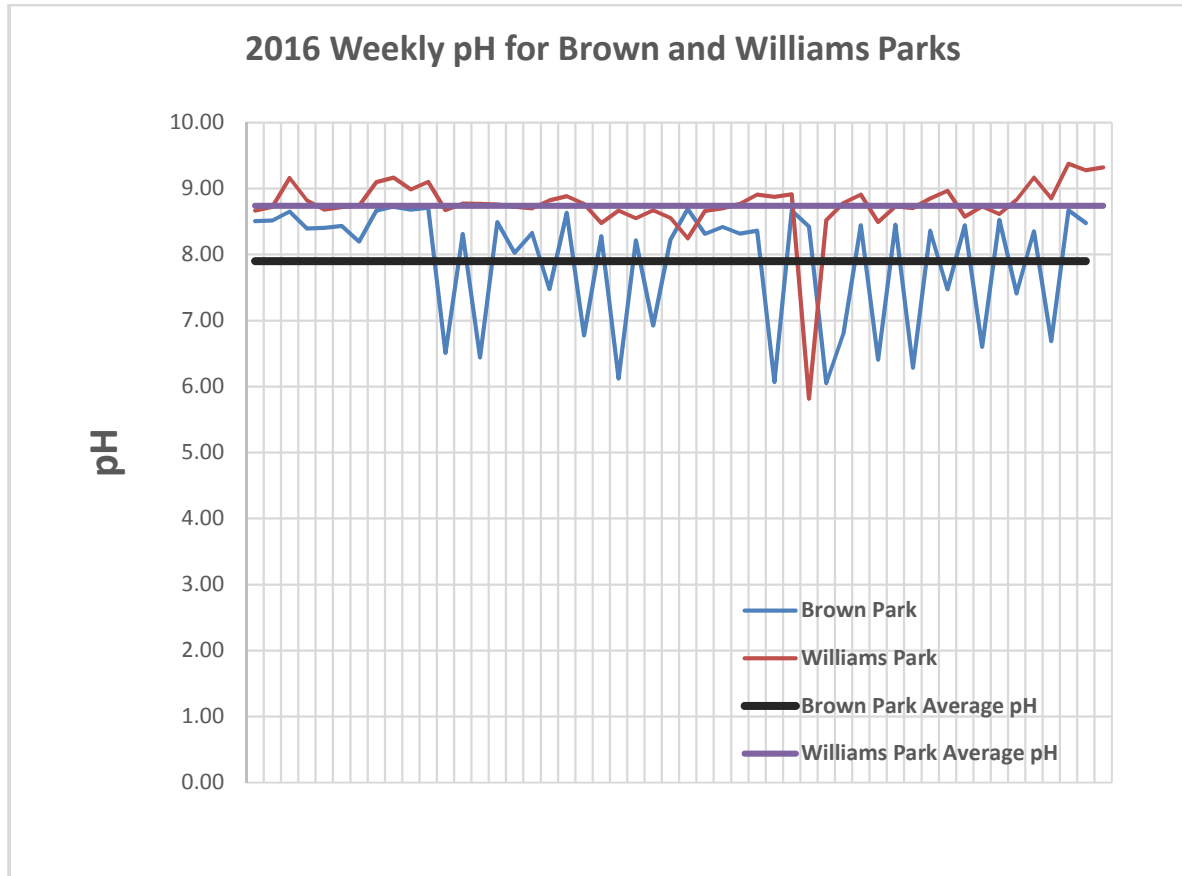


Figure A.1: pH

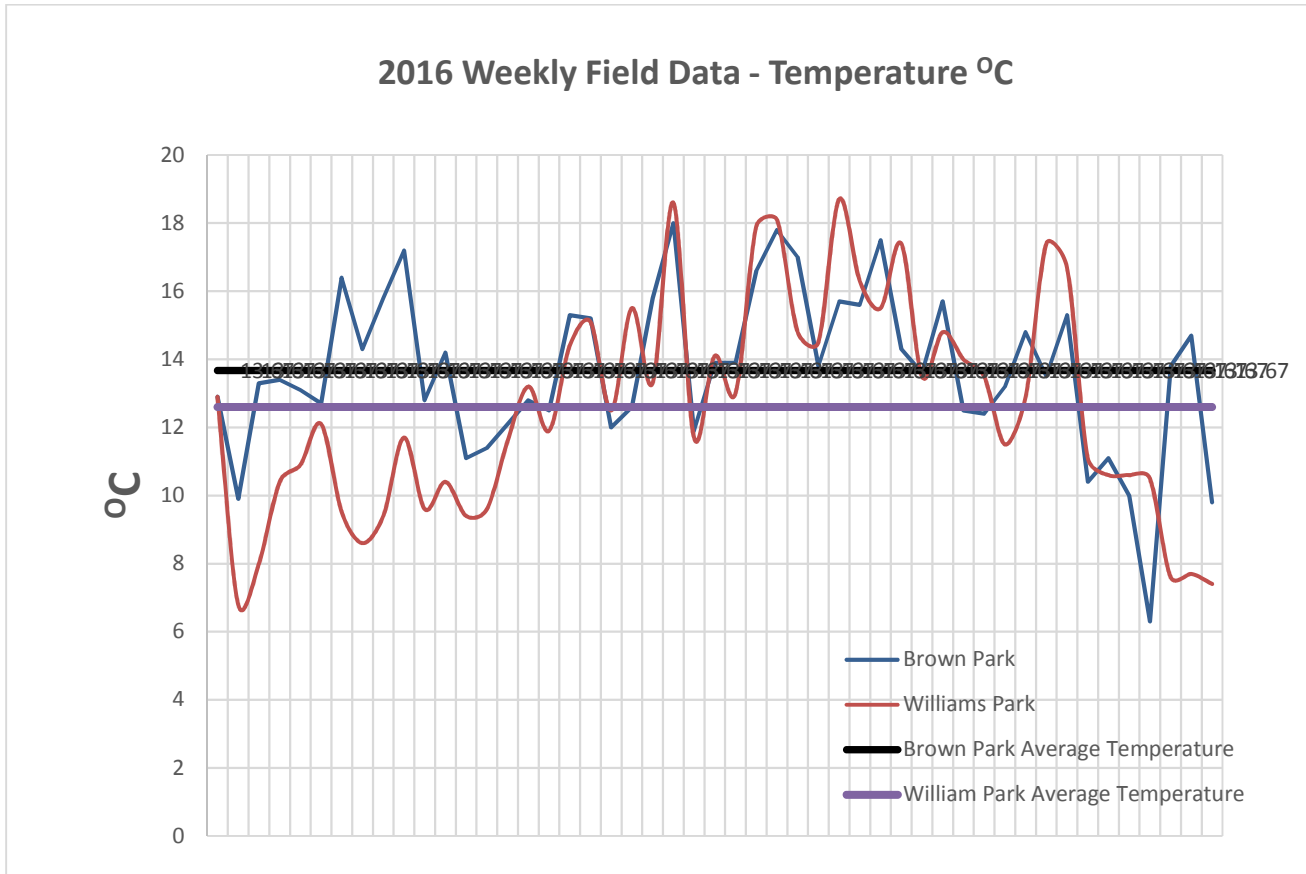


Figure A.1: Temperature

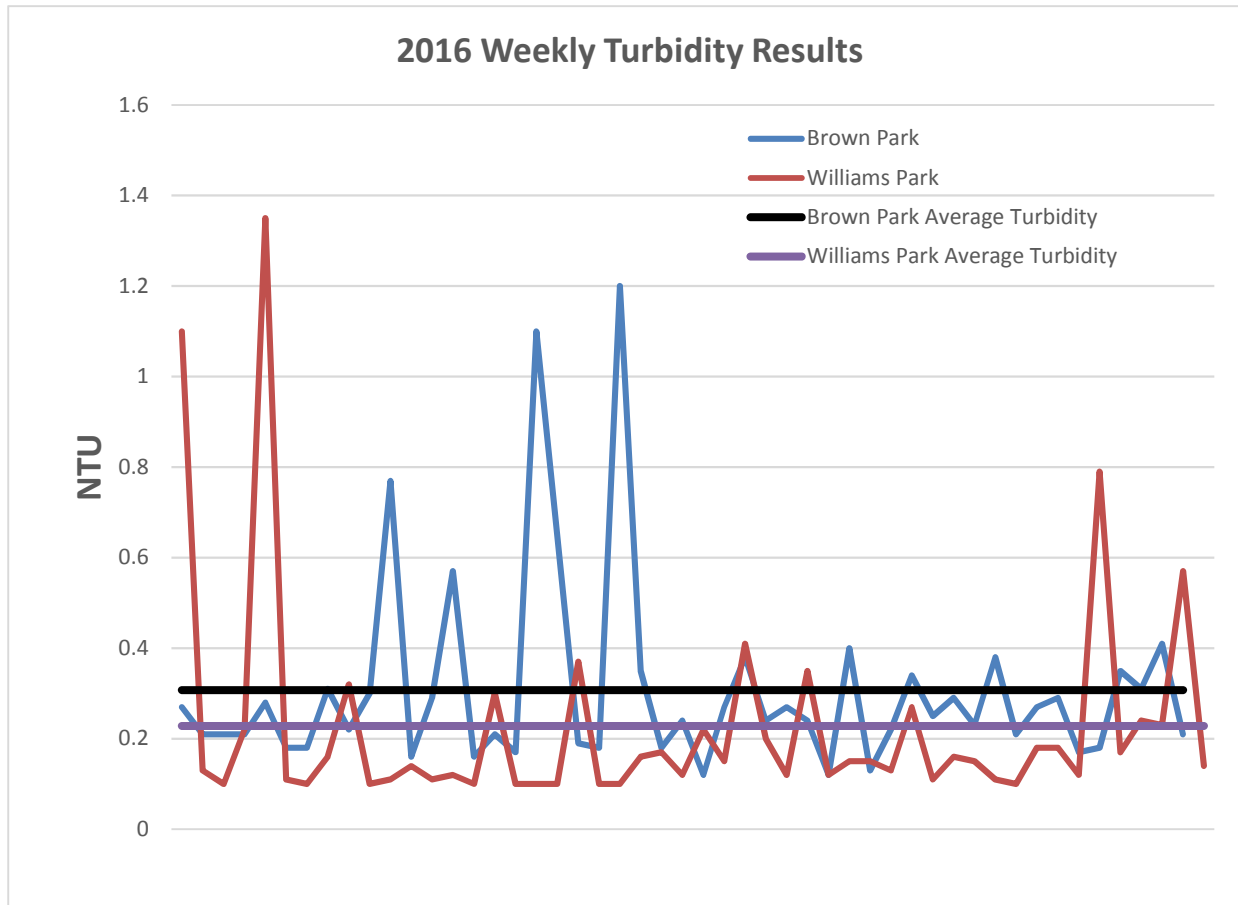


Figure A.2: Turbidity

Township of
Langley



Est. 1873

Parks Water Quality Report 2016

Appendix B Raw Data

Sampling Point	Collection Date	Colour	E. coli (MPN / PA)	Heterotrophic Plate Count / HPC	pH	Temperature	Total Coliforms (MPN / PA)	Turbidity
		TCU	MPN/100mL	CFU/mL		degrees C	MPN/100mL	NTU
Brown Park	01/05/2016	< 5.0	< 1	1	8.51	12.9	< 1	0.27
Brown Park	01/12/2016	< 5.0	< 1	< 1	8.52	9.9	< 1	0.21
Brown Park	01/19/2016	< 5.0	< 1	< 1	8.65	13.3	< 1	0.21
Brown Park	01/26/2016	< 5.0	< 1	< 1	8.40	13.4	< 1	0.21
Brown Park	02/02/2016	< 5.0	< 1	< 1	8.41	13.1	< 1	0.28
Brown Park	02/09/2016	< 5.0	< 1	< 1	8.44	12.7	< 1	0.18
Brown Park	02/16/2016	< 5.0	< 1	< 1	8.20	16.4	< 1	0.18
Brown Park	02/23/2016	< 5.0	< 1	< 1	8.67	14.3	< 1	0.31
Brown Park	03/01/2016	< 5.0	< 1	< 1	8.73	15.8	< 1	0.22
Brown Park	03/08/2016	< 5.0	< 1	< 1	8.68	17.2	< 1	0.3
Brown Park	03/15/2016	< 5.0	< 1	< 1	8.71	12.8	< 1	0.77
Brown Park	03/22/2016	< 5.0	< 1	< 1	6.51	14.2	< 1	0.16
Brown Park	03/29/2016	< 5.0	< 1	< 1	8.31	11.1	< 1	0.29
Brown Park	04/05/2016	< 5.0	< 1	< 1	6.44	11.4	< 1	0.57
Brown Park	04/12/2016	< 5.0	< 1	< 1	8.49	12.1	< 1	0.16
Brown Park	04/19/2016	< 5.0	< 1	< 1	8.03	12.8	< 1	0.21
Brown Park	04/26/2016	< 5.0	< 1	< 1	8.33	12.5	< 1	0.17
Brown Park	05/03/2016	6.5	< 1	1	7.48	15.3	< 1	1.1
Brown Park	05/10/2016	< 5.0	< 1	< 1	8.63	15.2	< 1	0.65
Brown Park	05/17/2016	< 5.0	< 1	< 1	6.78	12	< 1	0.19
Brown Park	05/24/2016	< 5.0	< 1	< 1	8.28	12.6	< 1	0.18
Brown Park	05/31/2016	< 5.0	< 1	< 1	6.12	15.8	< 1	1.2
Brown Park	06/07/2016	< 5.0	< 1	< 1	8.22	18	< 1	0.35
Brown Park	06/14/2016	< 5.0	< 1	< 1	6.93	11.9	< 1	0.18
Brown Park	06/21/2016	< 5.0	< 1	< 1	8.23	13.9	< 1	0.24
Brown Park	06/28/2016	< 5.0	< 1	< 1	8.69	13.9	< 1	0.12
Brown Park	07/06/2016	< 5.0	< 1	< 1	8.31	16.6	< 1	0.27
Brown Park	07/12/2016	< 5.0	< 1	< 1	8.42	17.8	< 1	0.38
Brown Park	07/19/2016	< 5.0	< 1	< 1	8.32	17	< 1	0.24
Brown Park	08/02/2016	< 5.0	< 1	< 1	8.36	13.8	< 1	0.27
Brown Park	08/09/2016	< 5.0	< 1	< 1	6.07	15.7	< 1	0.24
Brown Park	08/23/2016	< 5.0	< 1	4	8.67	15.6	< 1	0.12
Brown Park	08/30/2016	< 5.0	< 1	1	8.43	17.5	< 1	0.4
Brown Park	09/06/2016	< 5.0	< 1	1	6.05	14.3	< 1	0.13
Brown Park	09/16/2016	< 5.0	< 1	494	6.81	13.6	< 1	0.22
Brown Park	09/27/2016	< 5.0	< 1	< 1	8.45	15.7	< 1	0.34
Brown Park	10/04/2016	< 5.0	< 1	< 1	6.41	12.5	< 1	0.25
Brown Park	10/11/2016	< 5.0	< 1	< 1	8.46	12.4	< 1	0.29
Brown Park	10/18/2016	< 5.0	< 1	< 1	6.29	13.2	< 1	0.23
Brown Park	10/25/2016	< 5.0	< 1	< 1	8.36	14.8	< 1	0.38
Brown Park	11/01/2016	< 5.0	< 1	1	7.48	13.5	< 1	0.21
Brown Park	11/08/2016	< 5.0	< 1	< 1	8.45	15.3	< 1	0.27
Brown Park	11/15/2016	< 5.0	< 1	< 1	6.60	10.4	< 1	0.29
Brown Park	11/22/2016	< 5.0	< 1	< 1	8.53	11.1	< 1	0.17
Brown Park	11/29/2016	< 5.0	< 1	< 1	7.41	10	< 1	0.18
Brown Park	12/06/2016	< 5.0	< 1	< 1	8.35	6.3	< 1	0.35
Brown Park	12/13/2016	< 5.0	< 1	26	6.69	13.8	< 1	0.31
Brown Park	12/14/2016		< 1	< 1			< 1	
Brown Park	12/20/2016	< 5.0	< 1	1	8.67	14.7	< 1	0.41
Brown Park	12/28/2016	< 5.0	< 1	< 1	8.48	9.8	< 1	0.21
Williams Park	01/05/2016	< 5.0	< 1	< 1	8.67	12.9	< 1	1.1
Williams Park	01/12/2016	< 5.0	< 1	< 1	8.73	6.8	< 1	0.13
Williams Park	01/19/2016	< 5.0	< 1	< 1	9.16	8	< 1	< 0.10
Williams Park	01/26/2016	< 5.0	< 1	< 1	8.82	10.4	< 1	0.22
Williams Park	02/02/2016	< 5.0	< 1	< 1	8.68	10.9	< 1	1.35
Williams Park	02/09/2016	< 5.0	< 1	< 1	8.72	12.1	< 1	0.11
Williams Park	02/16/2016	< 5.0	< 1	< 1	8.74	9.5	< 1	< 0.10
Williams Park	02/23/2016	< 5.0	< 1	< 1	9.10	8.6	< 1	0.16
Williams Park	03/01/2016	< 5.0	< 1	< 1	9.17	9.4	< 1	0.32
Williams Park	03/08/2016	< 5.0	< 1	< 1	8.99	11.7	< 1	< 0.10
Williams Park	03/15/2016	< 5.0	< 1	< 1	9.11	9.6	< 1	0.11
Williams Park	03/22/2016	< 5.0	< 1	< 1	8.67	10.4	< 1	0.14
Williams Park	03/29/2016	< 5.0	< 1	< 1	8.78	9.4	< 1	0.11
Williams Park	04/05/2016	< 5.0	< 1	< 1	8.77	9.6	< 1	0.12
Williams Park	04/12/2016	< 5.0	< 1	< 1	8.76	11.6	< 1	< 0.10
Williams Park	04/19/2016	< 5.0	< 1	< 1	8.73	13.2	< 1	0.3
Williams Park	04/26/2016	< 5.0	< 1	< 1	8.70	11.9	< 1	< 0.10
Williams Park	05/03/2016	< 5.0	< 1	< 1	8.82	14.4	< 1	< 0.10
Williams Park	05/10/2016	< 5.0	< 1	< 1	8.89	15.1	< 1	< 0.10
Williams Park	05/17/2016	< 5.0	< 1	< 1	8.77	12.5	< 1	0.37
Williams Park	05/24/2016	< 5.0	< 1	< 1	8.48	15.5	< 1	< 0.10
Williams Park	05/31/2016	< 5.0	< 1	45	8.67	13.3	< 1	0.1
Williams Park	06/07/2016	< 5.0	< 1	< 1	8.55	18.6	< 1	0.16
Williams Park	06/14/2016	< 5.0	< 1	< 1	8.67	11.7	< 1	0.17
Williams Park	06/21/2016	< 5.0	< 1	7	8.56	14.1	< 1	0.12
Williams Park	06/28/2016	< 5.0	< 1	< 1	8.25	13	< 1	0.22
Williams Park	07/06/2016	< 5.0	< 1	< 1	8.66	17.9	< 1	0.15
Williams Park	07/12/2016	< 5.0	< 1	< 1	8.70	18.1	< 1	0.41
Williams Park	07/19/2016	10.6	< 1	< 1	8.77	14.8	< 1	0.2
Williams Park	08/02/2016	< 5.0	< 1	< 1	8.91	14.5	< 1	0.12
Williams Park	08/09/2016	< 5.0	< 1	< 1	8.88	18.7	< 1	0.35
Williams Park	08/16/2016	< 5.0	< 1	< 1	8.92	16.3	< 1	0.12
Williams Park	08/23/2016	< 5.0	< 1	< 1	5.82	15.5	< 1	0.15
Williams Park	08/24/2016	< 5.0	< 1	< 1	8.52		< 1	0.15
Williams Park	08/30/2016	< 5.0	< 1	3	8.79	17.4	< 1	0.13

Williams Park	09/06/2016	< 5.0	< 1	< 1	8.91	13.5	< 1	0.27
Williams Park	09/16/2016	< 5.0	< 1	< 1	8.49	14.8	< 1	0.11
Williams Park	09/27/2016	< 5.0	< 1	< 1	8.73	14	< 1	0.16
Williams Park	10/04/2016	< 5.0	< 1	< 1	8.71	13.5	< 1	0.15
Williams Park	10/11/2016	< 5.0	< 1	< 1	8.85	11.5	< 1	0.11
Williams Park	10/18/2016	< 5.0	< 1	< 1	8.97	12.9	< 1	0.1
Williams Park	10/25/2016	< 5.0	< 1	< 1	8.58	17.4	2	0.18
Williams Park	11/08/2016	< 5.0	< 1	< 1	8.73	16.7	1	0.18
Williams Park	11/15/2016	< 5.0	< 1	6	8.62	11.1	38	0.12
Williams Park	11/22/2016	< 5.0	< 1	< 1	8.83	10.6	< 1	0.79
Williams Park	11/29/2016	< 5.0	< 1	< 1	9.17	10.6	< 1	0.17
Williams Park	12/06/2016	< 5.0	< 1	< 1	8.85	10.5	< 1	0.24
Williams Park	12/13/2016	< 5.0	< 1	24	9.38	7.6	< 1	0.23
Williams Park	12/14/2016		< 1	< 1			< 1	
Williams Park	12/20/2016	< 5.0	< 1	< 1	9.28	7.7	< 1	0.57
Williams Park	12/28/2016	< 5.0	< 1	< 1	9.32	7.4	< 1	0.14