



**TOWN OF WHITCHURCH-STOUFFVILLE**

**2010 Summary Report**

**for**

**The Community of Stouffville Water Distribution System**

**and**

**The Communities of Ballantrae and Musselman Lake  
Water Distribution System**

**Regulatory Reporting of Municipal Drinking Water Systems  
Ontario Regulation 170/03**

37 Sandiford Drive, 4<sup>th</sup> Floor, Stouffville, Ontario, L4A 7X5  
(905)640-1900 • (905)895-2423 • FAX (905)640-7957

## **Introduction**

The 2010 "Summary Report" is produced with the goal of providing information to the Mayor and Members of Council with an understanding of the town's two large residential drinking water systems for the period of January 1<sup>st</sup> to December 31<sup>st</sup>, 2010. This report is mandated under requirements of the Ministry of the Environment's (MOE) Drinking Water Systems Regulation O.Reg. 170/03 as described in Schedule 22 of the regulation and addresses specifically the drinking water systems for the Community of Stouffville and the Communities of Ballantrae & Musselman Lake.

Supplementary information about the Town's three (3) small drinking water systems (Museum, Vandorf Community Centre & Lemonville Community Centre) has been included in this report.

This document complements two (2) reports prepared earlier this year. The Stouffville water distribution system annual report and the Ballantrae Musselman Lake water distribution system annual report generally describe the operation of each large residential water distribution system and detail the drinking water quality for each system. These Annual Reports are available for viewing to the general public at the Town of Whitchurch-Stouffville's Public Works Department administrative office located at 37 Sandiford Drive, 4<sup>th</sup> Floor, Stouffville, Ontario and on the Town's web site at [www.townofws.com](http://www.townofws.com). Copies are available free of charge.

## **Summary**

This report provides an overview of the legislative requirements under the Safe Drinking Water Act and the associated regulations. It also includes information for each of the large municipal residential drinking water distribution systems owned and operated by the Town. Attached to this report is a series of figures on the 2010 pumping history for the individual wells and systems serving the residents of Whitchurch-Stouffville. The comprehensive flow data and charts have been obtained from the Region of York and assist in assessing the capacity of the Town's two (2) "Large Municipal Residential" water systems. This information has been included as supplemental information to the report.

There have been no orders issued by the MOE to comply with the Act for the period of January 1, 2009 to December 31, 2010.

## **Legislative Requirements**

Since the issuance of the Walkerton Reports I and II in 2002, many legislative and regulatory changes have occurred for those supplying drinking water in Ontario. The following are the primary pieces of legislation that have directly affected the operation of the Town of Whitchurch-Stouffville's water distribution systems.

### ***The Safe Drinking Water Act (2002)***

In December 2002 the Government of Ontario passed this Act in response to recommendations made by Commissioner Dennis O'Connor at the Walkerton Inquiry. It provided the legislative authority to implement the recommendations made in the Walkerton Part I and Part II reports. The Act expands on the existing provincial policy and practice and introduced new features to protect drinking water in Ontario. It is intended to protect human health through the control and regulation of drinking water systems and drinking water testing.

### ***Drinking Water Systems Regulation (O. Reg. 170/03)***

The Ontario Government has enacted several new regulations under the Act. The Drinking Water Systems Regulation (O. Reg. 170/03) came into effect on June 1<sup>st</sup>, 2003 and replaced regulations 459/00 and 505/00 under the Ontario Water Resources Act (OWRA) which previously governed the operation of municipal drinking water systems. In addition, O. Reg. 169/03 was released to support O. Reg. 170/03 and prescribes the standards for numerous chemical/physical, microbiological and radiological parameters for testing which was previously detailed in the Ontario Drinking Water Standards under the OWRA.

The Ontario Regulation O. Reg. 170/03 distinguishes between municipal and non-municipal drinking water systems. The Town's two (2) municipal water distribution systems are presently classified as large residential systems under the regulation.

### ***Requirements of the Drinking Water Systems Regulation***

Owners and operators of municipal drinking water systems must:

- *Sample and test* - The frequency and the type of testing for various parameters and systems are outlined in the Regulation. Generally the Public Works Department collects water samples for testing twice per week for this purpose.
- *Use an accredited laboratory* - An accredited laboratory must be used for the testing of municipal drinking water samples. The Town and all the municipalities in York Region use the York/Durham Regional Laboratory. It operates under O.Reg. 248/03 which came into effect October 31, 2003.
- *Report adverse test results* - Any standard from Schedules 1 - 3 in O.Reg. 169/03 that has been exceeded is required to be reported to the Medical Officer of Health and the MOE both verbally and in writing upon detection and upon completion of corrective action.
- *Have certified operators or trained persons* - Certification of staff is required to operate systems. The level of certification needed is subject to the category designation of the system. Presently Whitchurch-Stouffville's two (2) large residential water distribution systems are operated as level 1 systems with the Public Works Department having eight (8) fully certified operators.

- *Prepare an Annual Report* - An Annual Report must be prepared and made available to the Public for each large residential system. Amendments were introduced in 2006 which no longer require submission of the annual Report to the MOE.
- *Prepare an Annual Summary Report* - Schedule 22 requires a Summary Report to be produced annually for drinking water system owners and operators, including members of Council or municipal service boards. This report summarizes the requirements of the Safe Drinking Water Act, the regulations, system approvals and any order that the system failed to meet during the reporting period. For any failures the report must detail the corrective actions taken. The report must also include information about system capacities enabling owners and operators to determine future capabilities.
- *Lead Sampling Program* – On July 26<sup>th</sup>, 2007 further amendments were introduced requiring the Town to expand its lead sampling program. The purpose of the program is to further enhance the Province’s water safety protection measures and to reduce potential levels of lead intake, especially for pregnant women and children six years and under. This sampling program is performed in accordance with Schedule 15.1 of regulation O. Reg. 170/03.

During 2009, the Public Works Department requested “Regulatory Relief” from the lead sampling requirements outlined in Schedule 15.1. This was necessary as the Town was unable to obtain the required of legislated number of sampling locations (clients) from private residences. The MOE granted relief on August 11<sup>th</sup>, 2009 for both the Stouffville and the Ballantrae/Musselman Lake water distribution systems. Certificates of Approvals for these exemptions were issued for each system with expiry taking place on October 15<sup>th</sup>, 2010. Schedule 15.1 then allowed the Town to receive an exemption from lead sampling for the following sampling periods December 2010 to April 2011 and June 2011 to October 2011.

### ***Engineer’s Reports***

On January 9<sup>th</sup>, 2001 the Public Works Department received clarification from the MOE regarding the applicability of preparing an Engineer’s Report. They advised that in a two-tier municipal system where the upper tier owns and operates the water treatment plant and any re-chlorination facilities within the system, and the lower tier municipalities own and operate their distribution systems only, the responsibility for ensuring preparation and submission of the Engineer’s Report for the entire system remains with the upper tier municipality. This report must be prepared by a Professional Engineer who is not an employee of the drinking water system owner and must be in accordance with MOE’s Terms of Reference. Please note that the Town of Whitchurch-Stouffville is the lower tier municipality and the Regional Municipality of York is classified as the upper tier municipality.

### ***Training and Certification***

In May 2004 a regulation regarding the training and certification of drinking water system operators known as O.Reg. 128/04, Certification of Drinking -Water System Operators and Water Quality Analysts, was enacted.

This regulation establishes the on-going training requirements for these operators. It details different types of licenses, re-issuance and transferability, overall and operator in charge responsibilities, record keeping and operations / maintenance manuals.

To obtain a Level one (1) license under this regulation, all new operators called "Operators in Training" (OIT), must complete an Entry Level Course of Study within the first 16 months of obtaining their OIT certificate. At present this consists of the completion of a forty (40) hour at home study/training course and successfully passing a written test. They then must attend a five (5) day in class training seminar and examination. Once these requirements are met, the operator's license is valid for three (3) years, allowing them time to meet the requirements needed for a Level One License.

### ***Drinking Water Licensing Program***

In May 2007 the MOE proclaimed Section 33 of the Safe Drinking Water Act which began the implementation process of the new Municipal Drinking Water Licensing Program. This addressed Justice O'Connor's concerns that owners of municipal drinking water systems obtain a license for the operation of their waterworks systems and that the MOE develop a drinking water quality management standard for Ontario.

A Municipal Drinking Water License is issued when the following items are in place:

1. A Drinking Water Works Permit – Replaces the Certificate of Approval (C of A) process. Subject to the conditions of this permit process it allows the Town to approve in house many modifications to the Town's large drinking water systems
2. A Permit to Take Water – Responsibility of the Region of York
3. A Financial Plan – Financial Plans for existing systems are not required with an application for the first drinking-water license but is required no later than 6 months after the issuance of that system's first license.
4. An accepted Operational Plan – This plan documents the Public Works Department's day to day activities related to the Stouffville and Ballantrae/Musselman Lake drinking water systems.
5. Accreditation of the Operating Authority – The Public Works Department is the Operating Authority for the Town's drinking water systems. Accreditation is achieved following a successful third party audit of the Town's QMS. The MOE has hired the GCSB to review Operational Plans to ensure that it conforms to the DWQMS.

The Town is required to obtain a license to operate each of its two (2) large residential drinking water systems and to incorporate the concept of quality management into our operations. The MOE developed the Drinking Water Quality Management System Standard (DWQMS). In 2009 The Public Works Department developed a Quality Management System (QMS) that meets the requirements of all twenty-one (21) elements of the DWQMS. An "Operational Plan" was created to document the QMS,

which is one of the requirements needed to obtain a municipal drinking water license. The MOE has hired the Canadian Government Standards Board (CGSB) to review Operational Plans to ensure that it conforms to the DWQMS. The Town's Operational Plan was submitted to the MOE and the Canadian General Standards Board (CGSB) for approval and accreditation in June 2009. Comments related to a document audit performed by the CGSB were received in October 2010. Adjustments have been made to the plan. An on-site audit is required prior to the issuance of drinking water licenses. It is anticipated this will take place in 2011.

Subsequent submissions of operational plans and applications for licence renewals may be required through conditions placed on licenses.

## **System Descriptions and Information**

### *The Communities of Ballantrae/Musselman Lake Water Distribution System*

The Ballantrae/Musselman Lake water distribution system is classified as a Class 1 "Large Municipal Residential" system. The MOE Waterworks Number for this system is 260006737. This area is serviced by two (2) groundwater production wells and a pump house located at 15,341 McCowan Road. The water is treated with chlorine for disinfection and sodium silicate to keep iron and manganese in suspension. An elevated storage tank with a capacity of 2,271 cubic metres is situated on the Ninth Line.

### *Water Taking*

The total volume of water taken from the Region of York production wells for the Ballantrae/Musselman Lake water supply system for the reporting period January 1<sup>st</sup>, 2010 to December 31<sup>st</sup>, 2010 was 393,516 cubic metres. The maximum permitted water withdrawal by the MOE for these wells is 1,598,875 cubic metres. The total volume of water supplied to the system represented approximately 24.6% of the maximum permitted withdrawal.

The maximum permitted daily water taking and the actual maximum recorded daily water taking are presented below. Peak pumping days represent the number of days where the wells pump at or above 80% of the maximum permitted daily withdrawal.

<b>Well Number</b>	<b>Permitted Daily Withdrawal (Litres)</b>	<b>Actual Maximum Daily Withdrawal (Litres)</b>	<b>Peak Pumping Days (% of the year)</b>
Well #1	2,647,920	1,993,625 on May 26, 2010	0.0%
Well #2	2,647,920	2,161,125 on July 2, 2010	0.8%
Well #1 & 2	4,580,000	2,916,125 on May 26, 2010	0.0%

The average monthly flow rates and the maximum daily flow for 2010 are presented in graph form as page 16 and identified as figure 17 in the appendix.

The “Daily Instantaneous Peak Flow” is recorded in litres per second for the period January 1<sup>st</sup> to December 31<sup>st</sup>, 2010. Wells 1 and 2 are shown in graph form in Figure 18 and Figure 19 in the Appendix identified as page 17.

All flow data and graphs courtesy of The Region of York.

Attached to the appendix is a schematic diagram depicting the Ballantrae/Musselman Lake water distribution system.

### *The Community of Stouffville Water Distribution System*

The Stouffville Water Distribution System is a Class 1 “Large Municipal Residential” system. The Town’s Waterworks Number for this system is 260003162. The Region of York uses five (5) wells and water from the York Water System (YDS) which is a lake based system drawing water from Lake Ontario to service the Community.

Well #1 and well #2 and the associated pumping/treatment building are located at #6985 Main Street. Well #3 and its pumping/treatment building and elevated storage are located at 12519 Tenth Line. Well #5 and well #6, the in-ground reservoirs and the high lift pumping station, are situated at 13461 Highway 48. The treatment for the Stouffville wells includes the addition of chlorine for disinfection and sodium silicate to sequester iron and manganese at three (3) of the five (5) wells.

In 2009 The Region of York completed the physical connection and testing of a transmission watermain and appurtenances from the Region’s Markham reservoir to the Community of Stouffville via a 2.1 km long regional watermain located on Stouffville Rd. The Community of Stouffville commenced accepting water from this system in 2010.

The lake (surface) creates a mixed or blended water supply to the Community with treatment provided by the Region of York by means of Chlorination. The YWS supplies water to the City of Vaughan, and the Towns Markham, Richmond Hill, Aurora, and Newmarket through the same treatment facilities that service the City of Toronto. For further information on the lake based water supply visit the Region of York web site.

In November 2003, the Stouffville Master Water Servicing Study identified the need to create three (3) pressure zones within the Community to adequately provide consistent pressure throughout the entire system. Two pressure zones were added to the original single pressure zone system. One was created in the north-east quadrant of the Community and was implemented in November 2006. This pressure zone was created and is controlled by isolating strategically selected main line valves. This zone is not equipped with pressure control devices. A pressure zone was also created in the south-west quadrant of Stouffville in 2006 with installation of two (2) pressure control devices (pressure reducing valves). To meet the pressure zone demands and to prepare for the need for an additional water supply to sustain growth and development within the Community, the Region of York completed the construction of large transmission

watermains on the Tenth Line, Main Street and Bethesda Road, a booster pumping station on the Tenth Line and an elevated storage tank on Bethesda Road during 2006.

Water Taking

The total volume of water supplied by the Region of York to the Community of Stouffville for the reporting period January 1<sup>st</sup> to December 31<sup>st</sup>, 2010 was 2,580,372 cubic metres.

Water supplied from the lake based York Water System (YDS) for the reporting period January 1<sup>st</sup> to December 31<sup>st</sup>, 2010 was 1,128,731 cubic metres. This represents approximately 56% other the water purchased from the Region of York to supply the community of Stouffville in 2010. No other statistics are available at this time from the Region of York.

The volume of water taken from the Region of York production wells for the reporting period January 1<sup>st</sup> to December 31<sup>st</sup>, 2010 was 1,436,126 cubic metres. The MOE allows The Region of York to take 5,197,133 cubic metres annually from production wells servicing the residents of the Community of Stouffville. The actual volumes of water taken from the Stouffville production wells for the period mentioned above represents approximately 27.6% of permitted annual withdrawal.

The maximum allowable daily water taking and the actual maximum recorded daily water taking for the production wells are presented in the table below. Peak pumping days represent the number of days where the wells pump at or above 80% of the maximum permitted daily withdrawal.

<b>Well Number</b>	<b>Permitted Daily Withdrawal (Litres)</b>	<b>Actual Maximum Daily Withdrawal (Litres)</b>	<b>Peak Pumping Days (% of the year)</b>
Well # 1	2,946,240	1,738,500 on August 29, 2010	0.0%
Well # 2	2,946,240	1,865,500 on May 5, 2010	0.0%
Well # 3	2,946,240	2,398,000 on January 8, 2010	0.8%
Well # 5	2,289,600	1,888,000 on February 1, 2010	3.3%
Well # 6	3,110,400	1,588,938 on May 21, 2010	0.0%

The monthly average flow rates, maximum daily flow and permitted daily withdrawal are presented in Figure 69, 70, 71, 72 and 73. These are shown in the appendix and identified as page 65, 66 and 67.

The “Daily Instantaneous Peak Flow for Stouffville Wells #1, #2 #3, #5 and #6 for the period January 1 to December 31, 2010 appear in graph form in the appendix. Figures 74, 75, 76, 77 and 78 appear and are labelled as pages 68, 69 and 70.

All flow data and graphs courtesy of The Region of York.

Attached to the appendix is a schematic diagram depicting the Community of Stouffville water distribution system.

### ***Small Drinking Water Systems***

The Town of Whitchurch-Stouffville has three (3) systems classified as small municipal non-residential systems that do not serve a designated facility. These are the Whitchurch-Stouffville Museum, the Vandorf Community Centre and the Lemonville Community Centre. On December 1<sup>st</sup>, 2008 the MOE transferred responsibility for small drinking water systems to the Ministry of Health and Long Term Care. At that time under the Health Protection and Promotion Act, new regulations for small municipal non-residential systems came into effect: O. Reg. 318/08 (Transitional – Small Drinking Water Systems) and O. Reg. 319/08 (Small Drinking Water Systems).

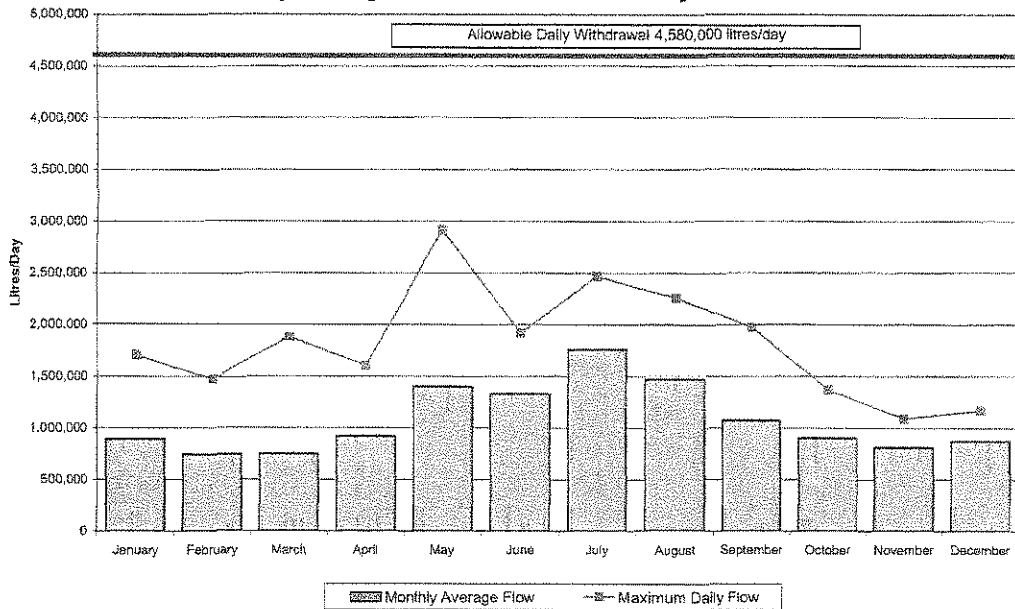
Under the new regulations the Town’s small drinking water facilities were inspected by the Region of York Public Health Department for purposes of providing site specific risk assessments for each facility to determine what needs to be done to keep each site safe. The Public Health Department will issue a “directive” for each system. These assessments will reflect the customized approach being taken for each small drinking water system rather than using a one size fits all approach which was used in the past.

The transitional Regulation 318/08 will apply until directives have been issued. Once this has been done the system will become subject to O. Reg. 319/08. The requirements under O. Reg. 318/08 are similar to those in O. Reg. 252/05 which had been in effect prior to being revoked as of December 1<sup>st</sup>, 2008.

## APPENDIX

**York Region Drinking Water System Schedule 22 Summary Report  
2010 Reporting Year**

**Figure 17: Ballantrae Wells No. 1 & 2  
Monthly Average Flow and Maximum Daily Flow 2010**



The actual volume of water taken from the Ballantrae/Musselman's production wells during January 1 – December 31, 2010 did not exceed the permitted daily withdrawal volume.

The 'Daily Instantaneous Peak Flow (litres)' for January 1- December 31, 2010 are presented in Figures 18 and 19.

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Figure 18: Ballantrae Well No. 1  
Daily Instantaneous Peak Flow 2010

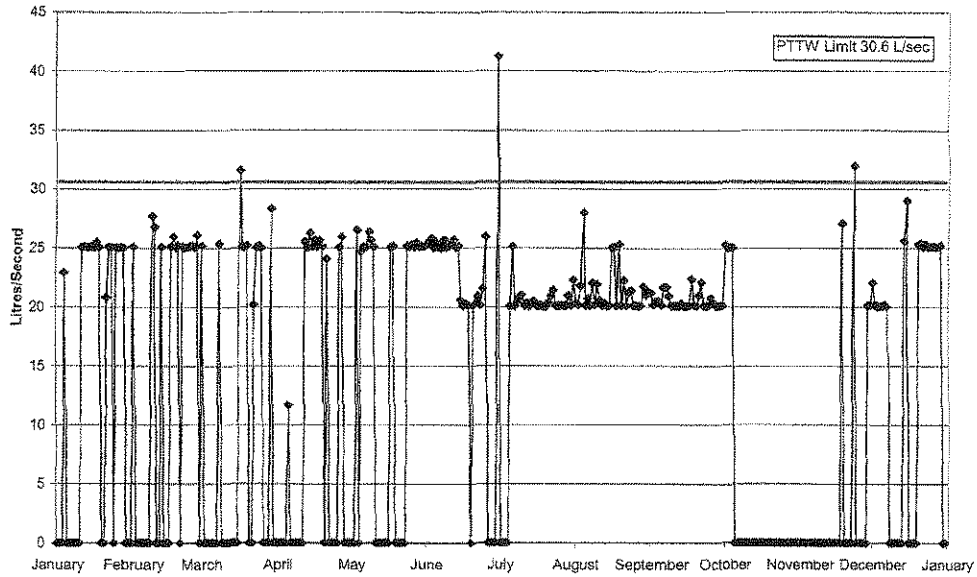
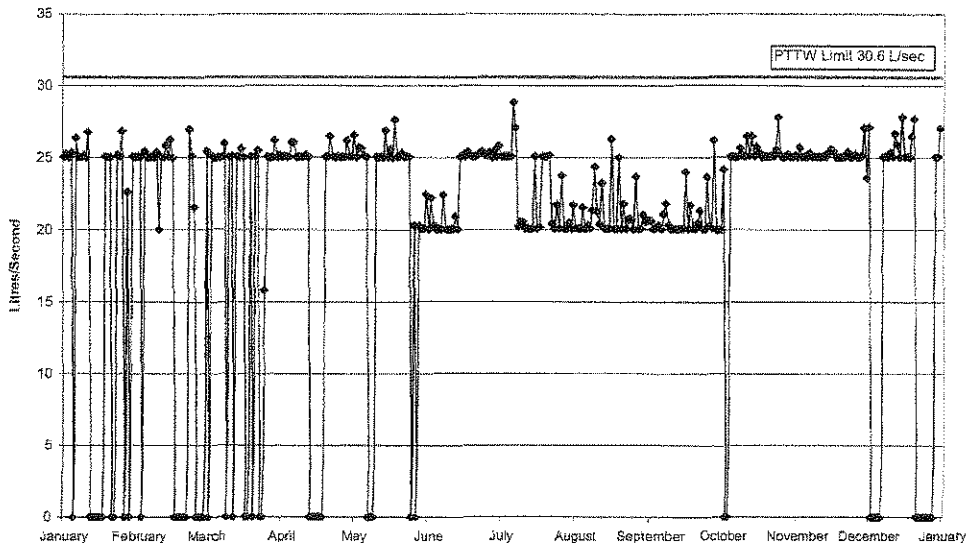
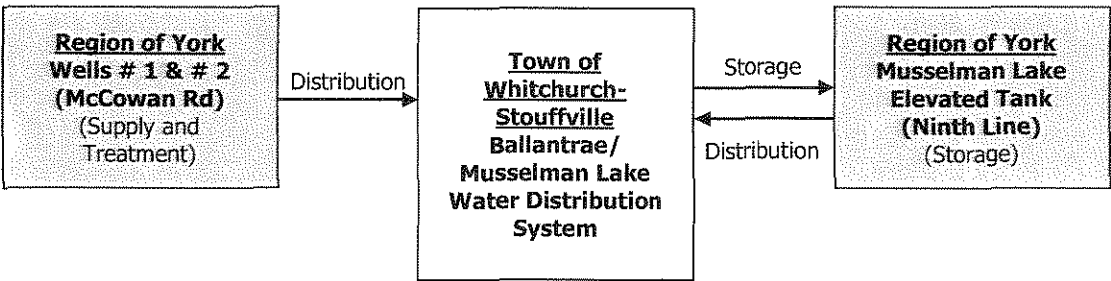


Figure 18 shows instantaneous peak flow rates recorded over the PTTW limit. All peaks were less than 5 minutes in duration and represent less than 1% of the total volume of water taken for the day. These peaks are associated with the initial start up of a pump by removing back pressure or change in the distribution system pressure.

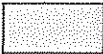
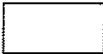
Figure 19: Ballantrae Well No. 2  
Daily Instantaneous Peak Flow 2010



**Ballantrae/Musselman Lake Water Distribution System**

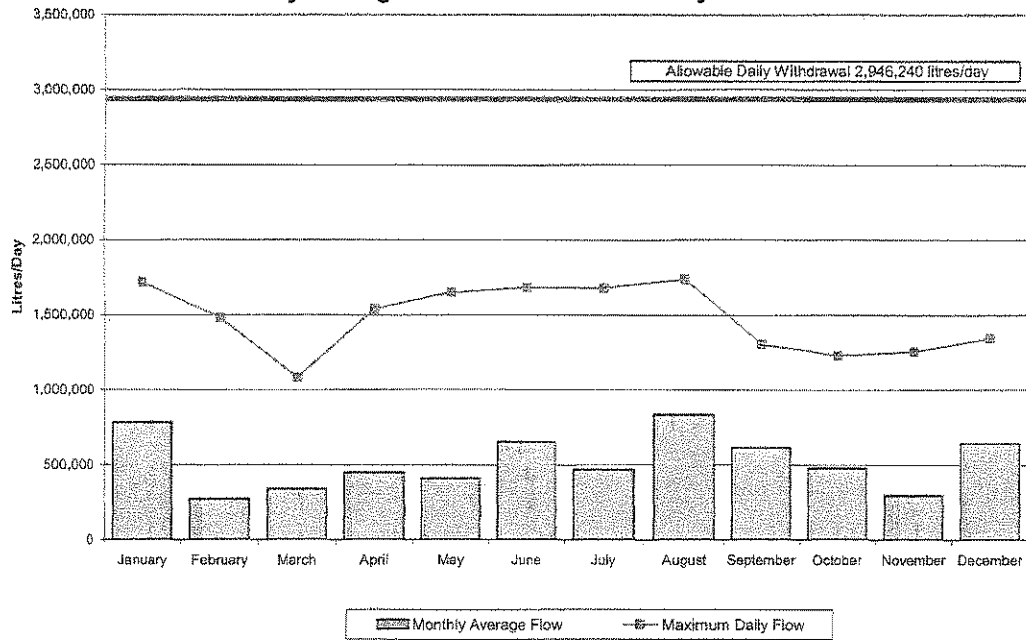


**Legend**

-  Owned and Operated by the Region of York
-  Owned and Operated by the Town of Whitchurch-Stouffville

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**Figure 69: Stouffville Well No. 1  
Monthly Average Flow and Maximum Daily Flow 2010**



**Figure 70: Stouffville Well No. 2  
Monthly Average Flow and Maximum Daily Flow 2010**

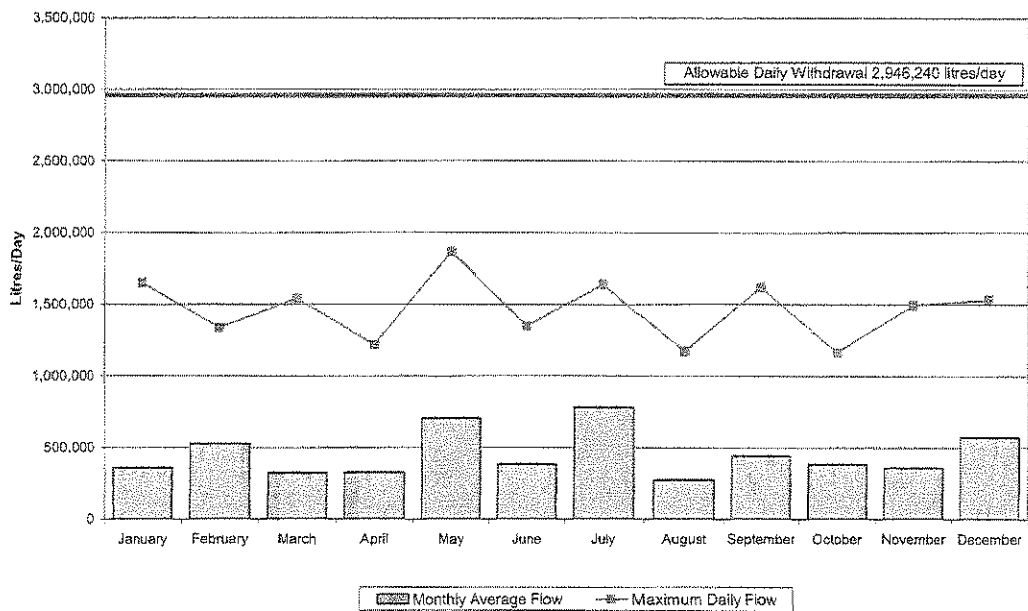


Figure 71: Stouffville Well No. 3  
Monthly Average Flow and Maximum Daily Flow 2010

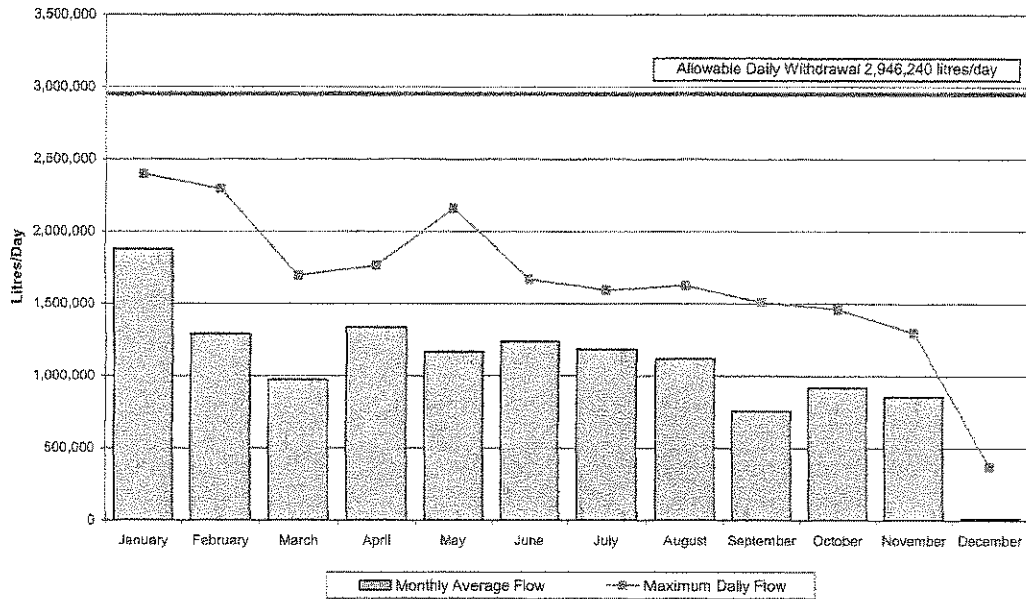


Figure 71 shows a reduced monthly average flow recorded for the month of December 2010. This reduction in flow was mainly due to scheduled and or unscheduled maintenance conducted on the well to improve the overall operation of the water system.

Figure 72: Stouffville Well No. 5  
Monthly Average Flow and Maximum Daily Flow 2010

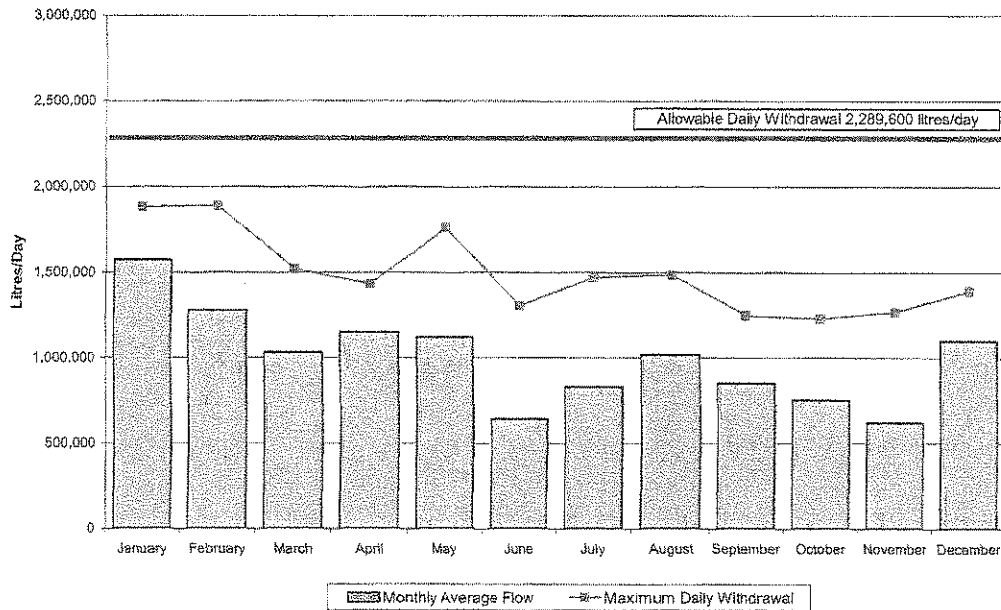
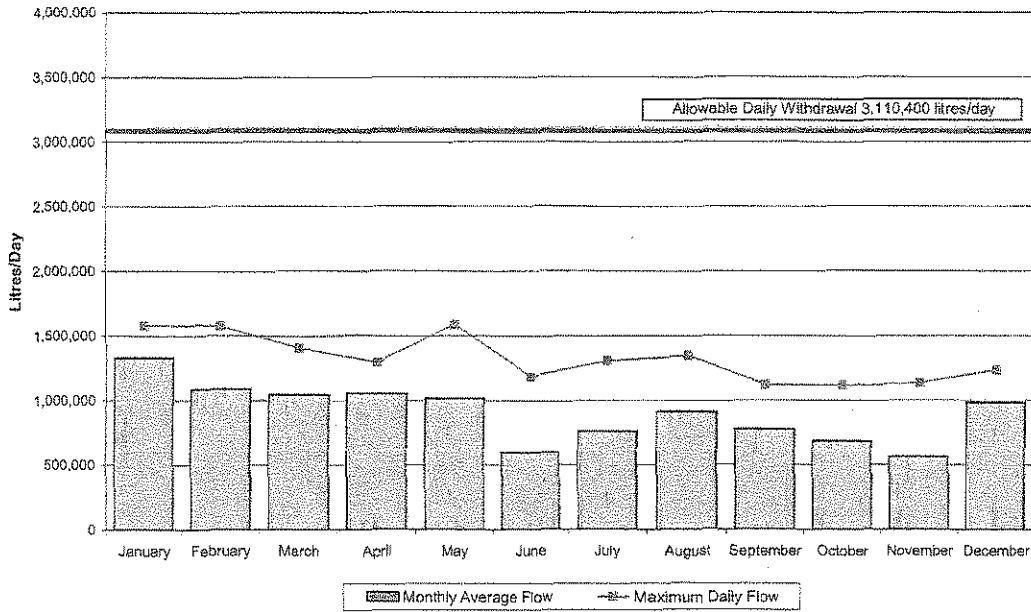


Figure 73: Stouffville Well No. 6  
Monthly Average Flow and Maximum Daily Flow 2010



The actual volumes of water taken from the Stouffville production wells for January 1 – December 31, 2010 did not exceed the permitted daily withdrawal volumes.

The 'Daily Instantaneous Peak Flow (litres)' for January 1- December 31, 2010 are presented in Figures 74 through 78.

Figure 74: Stouffville Well No. 1  
Daily Instantaneous Peak Flow 2010

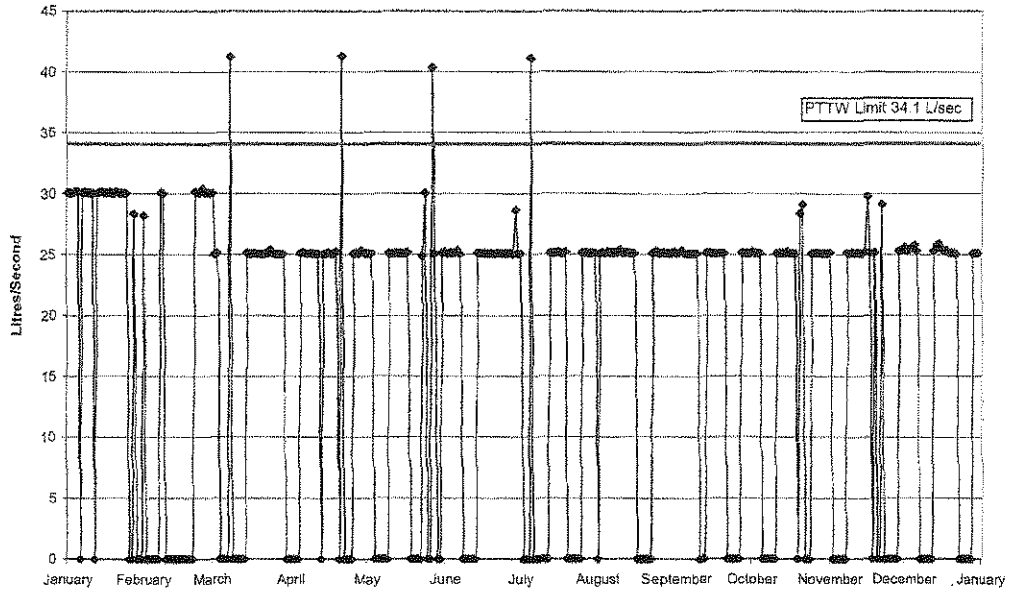
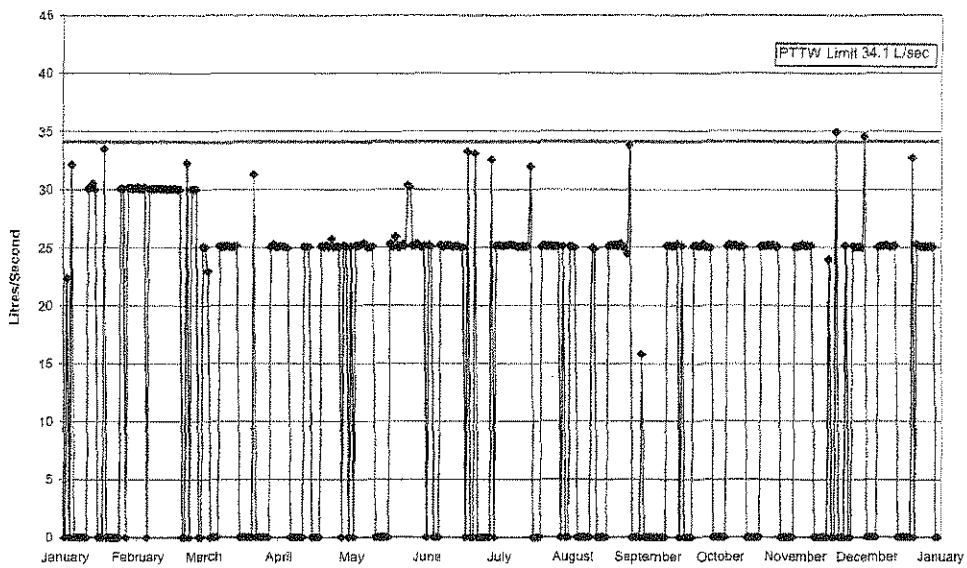


Figure 74 shows instantaneous peak flow rates recorded over the PTTW limit. All peaks were less than 5 minutes in duration and represent less than 1% of the total volume of water taken for the day. These peaks are associated with the initial start up of a pump by removing back pressure or a change in the distribution system pressure.

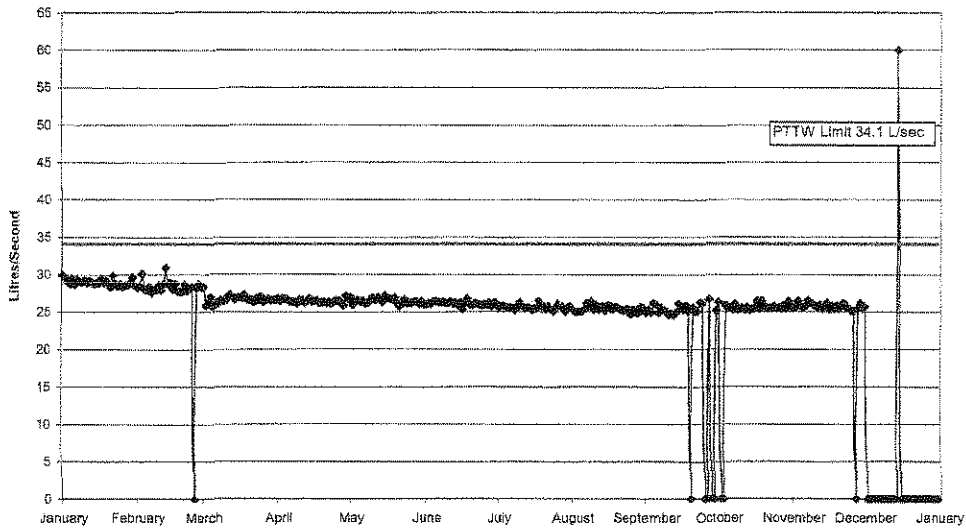
Figure 75: Stouffville Well No. 2  
Daily Instantaneous Peak Flow 2010



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Figure 75 and 76 shows instantaneous peak flow rates recorded over the PTTW limit. All peaks were less than 5 minutes in duration and represent less than 1% of the total volume of water taken for the day. These peaks are associated with the initial start up of a pump by removing back pressure or a change in the distribution system pressure.

**Figure 76: Stouffville Well No. 3  
Daily Instantaneous Peak Flow 2010**



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Figure 77: Stouffville Well No. 5  
Daily Instantaneous Peak Flow 2010

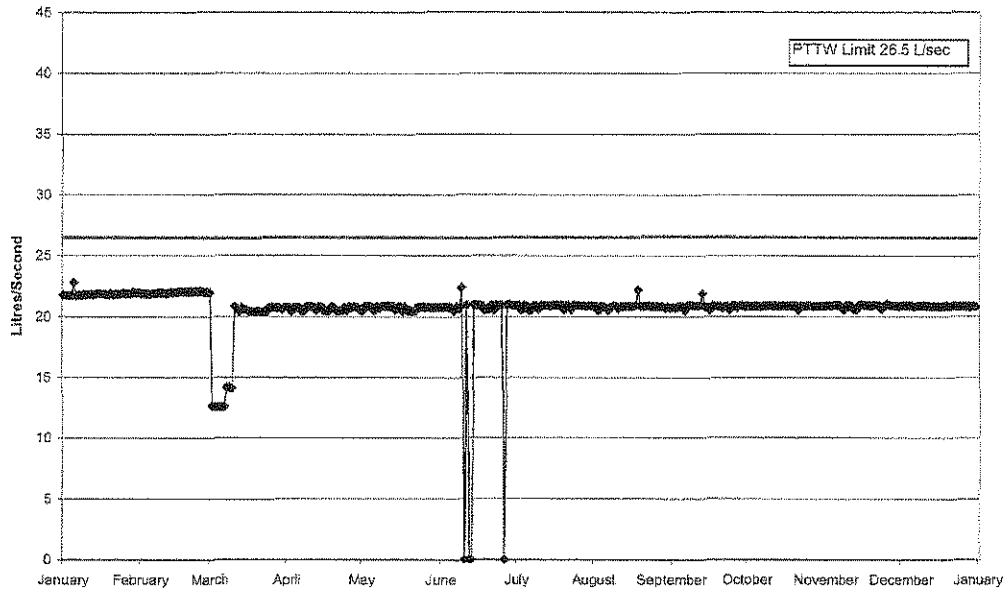
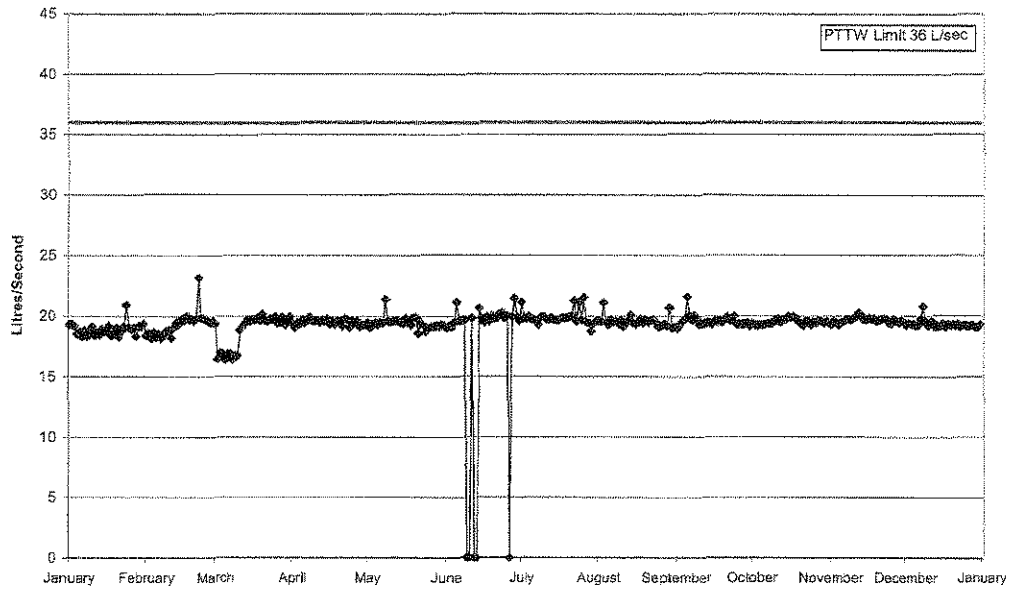


Figure 78: Stouffville Well No. 6  
Daily Instantaneous Peak Flow 2010



# Stouffville Water Distribution System

