

**Report to / Rapport au:**

**and Council / et au conseil**

**27 April 2011 / le 27 avril 2011**

**Submitted by / Soumis par: Nancy Schepers, Deputy City Manager /  
directrice municipale adjointe, Infrastructure Services and Community Sustainability /  
Services d'infrastructure et Viabilité des collectivités**

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Wards 3, 9, 22, 21

Ref N° : ACS2011-ICS-ESD-0021

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**SUBJECT: WOODROFFE TRANSMISSION WATERMAIN REPAIR UPDATE**

**OBJET: MISE À JOUR SUR LA RÉPARATION DE LA CONDUITE DE  
DISTRIBUTION DE L'AVENUE WOODROFFE**

**REPORT RECOMMENDATIONS**

**That Council:**

- 1. Receive the information in this report regarding the implementation of an immediate, mandatory ban on all outdoor water use in Barrhaven, Riverside South and Manotick enacted today by the Deputy City Manager of Infrastructure Services and Community Sustainability in order to fulfill the City's responsibilities under the *Safe Drinking Water Act 2002*;**
- 2. Approve the implementation of the suite of measures outlined in this report designed to support voluntary compliance with the outdoor water use ban;**
- 3. Approve a one-time operating budget requirement in the amount of \$2,055,000 for outdoor water use ban voluntary compliance measures, critical path communications, and contingency as identified in this report to be funded from the Water Reserve Fund as permitted under *Water Reserve Fund By-law 2003 – 141*;**
- 4. Delegate authority to the Deputy City Manager of Infrastructure Services and Community Sustainability to expend water reserve funds as necessary to manage the drinking water system in the impacted areas in accordance with *Water By-law 2003-500* as well as the principles of the *Safe Drinking Water Act 2002* and implement any measures required during the outdoor watering ban; and**

5. Approve an amendment to the *Water By-law 2003-500*, in the form set out in Document 3, in order to provide for enforcement, including fines, for violations of bans issued under the by-law.

## **RECOMMANDATIONS DU RAPPORT**

Que le Comité :

1. reçoive les renseignements qui se trouvent dans le présent rapport quant à la mise en œuvre d'une interdiction immédiate et obligatoire d'arrosage à l'extérieur à Barrhaven, à Riverside Sud et à Manotick à la suite de son décret aujourd'hui par la directrice municipale adjointe des Services d'infrastructure et de la viabilité des collectivités, et ce, afin d'assumer les responsabilités de la Ville en vertu de la *Loi de 2002 sur l'eau potable saine*;
2. approuve la mise en œuvre de la série de mesures décrites dans le présent rapport qui sont conçues pour soutenir le respect volontaire de l'interdiction d'arrosage extérieur;
3. approuve une exigence budgétaire de fonctionnement ponctuelle d'un montant de 2 055 000 \$ pour les mesures de respect volontaire de l'interdiction d'arrosage extérieur et les communications sur les chemins critiques, telles qu'elles ont été précisées dans le présent rapport, qui seront financées à même le Fonds de réserve de l'eau tel que l'autorise le *Règlement n° 2003-141* sur le Fonds de réserve de l'eau;
4. délègue à la directrice municipale adjointe des Services d'infrastructure et de la viabilité des collectivités le pouvoir de puiser des fonds dans le Fonds de réserve de l'eau au besoin afin de gérer le réseau d'eau potable dans les secteurs touchés conformément au *Règlement n° 2003-500 – Eau* ainsi que les principes de la *Loi de 2002 sur l'eau potable saine* et de mettre en œuvre toutes les mesures requises au cours de la période d'interdiction d'arrosage extérieur;
5. approuve une modification au *Règlement n° 2003-500 – Eau* sous la forme décrite dans le document 3 afin d'assurer l'application de l'interdiction, y compris les amendes relatives aux violations des interdictions qui sont imposées en vertu du Règlement.

## **EXECUTIVE SUMMARY**

As a result of recent events described in this report, the Deputy City Manager of Infrastructure Services and Community Sustainability, in accordance with the provisions of Section 77 of the City's *Water By-law 2003-500*, as amended, and in accordance with the principles and obligations contained in the *Safe Drinking Water Act, 2002*, is enacting immediate and mandatory restrictions on outdoor water-use in the areas of Barrhaven, Riverside South and Manotick in order to ensure continued delivery of drinking water to the area. These restrictions will be in effect until further notice.

The City's Water Quality Management System was developed using principles contained in the *Safe Drinking Water Act, 2002* and submitted to the Ministry of the Environment, which granted the City a licence to operate the City's drinking water system. These principles include those set out in Section 19 of the Act, which is scheduled to come into force in 2013, and include "prudent" management of municipal drinking water systems to ensure the service is delivered "competently and with integrity, with a view to ensuring the protection and safety of the users of the municipal drinking water system

In keeping with these principles, the restrictions are being enacted under Section 77 of the City of Ottawa's *Water By-law No. 2003-500*, and they are supported by the City Solicitor as well as other City officials and departments.

Council and the public are assured that the drinking water in these areas continues to be safe.

However, the City's ability to supply water to this area has been greatly limited by the premature deterioration and failure of the Woodroffe Avenue transmission watermain, which normally supplies nearly all drinking water, including water used for outdoor purposes, to the areas in which the ban is now in place. Since January, the transmission watermain has been out of service for repairs and replacement of approximately one kilometre.

The City is doing everything within its power to have the repairs completed in July 2011. However, working on an accelerated schedule, re-commissioning could take place as late as mid-August 2011 depending on a number of factors. Until the transmission main is re-commissioned, the impacted areas will be served by a much smaller backup system.

Until mid-June, the back-up system will only deliver 10 per cent of the normal water volume the City usually can deliver to the area. After that, an upgrade will allow roughly 18 per cent of the normal volume to be delivered until such time as the transmission watermain is back in service. Additional options to increase supply are being investigated.

Modeling shows the back-up system will provide enough volume for normal indoor use demand, but that it will not meet regular late spring and summer water demand in these areas.

Should water use exceed supply, serious impacts in the affected areas could result including potential contamination of the water supply, depressurization of the system, loss of supply, and difficulties in supplying fire protection. Addressing these potential consequences could require issuance of "no water use" advisories for up to seven days, boiled-water advisories for up to four weeks, severe water-use restrictions including indoor use restrictions, bottled water being supplied to 60,000 to 80,000 customers for an extended period, and extensive system flushing and testing.

Emergency plans to address a depressurization of the system, including back-up fire fighting supplies, emergency communications, and more, have been developed and are ready for implementation should the need arise.

To avoid the scenarios listed above, and after an exhaustive search of all reasonable alternatives to supply more water to this area proved unsuccessful, the City has no choice but to implement an immediate ban on all outdoor water use until the renewal work is completed on the Woodroffe Avenue transmission watermain. This includes a ban on lawn and garden watering, car washing, pool filling and top ups, building or grounds cleaning, and any other outdoor uses of City-supplied water in the affected areas.

It is important to note that if the public follows the ban, modeling shows pressure will be maintained in the system and the emergency scenarios outlined above will be avoided.

This report details the steps that led to the ban being enacted. It also seeks Council approval for a series of measures designed to promote voluntary compliance with the outdoor water-use ban; spending on these measures; amendments to *Water By-law No. 2003-500* to clarify the offence provisions regarding use of water in a restricted manner; and, an increase of delegated authority to the Deputy City Manager Infrastructure Services and Community Sustainability for reserve spending as appropriate until the end of the water use restrictions.

## **RÉSUMÉ**

À la suite des récents événements qui sont décrits dans le présent rapport, la directrice municipale adjointe des Services d'infrastructure et de la viabilité des collectivités, conformément aux dispositions de l'article 77 du *Règlement de la Ville d'Ottawa régissant l'alimentation en eau 2003-500*, tel que modifié, ainsi qu'aux principes et aux obligations établis dans la *Loi de 2002 sur la salubrité de l'eau potable*, décrète aujourd'hui des restrictions immédiates et obligatoires sur l'utilisation extérieure de l'eau, jusqu'à nouvel avis, dans les secteurs de Barrhaven, de Riverside Sud et de Manotick, et ce, afin d'assurer l'approvisionnement en eau potable salubre et propre dans ces secteurs.

Le Système de gestion de la qualité de l'eau de la Ville a été élaboré en tenant compte des principes établis dans la *Loi de 2002 sur la salubrité de l'eau potable*, puis soumis au ministère de l'Environnement, qui a accordé à la Ville un permis d'exploitation d'un réseau municipal d'eau potable. Ces principes sont notamment ceux énoncés à l'article 19 de la Loi, qui doit entrer en vigueur en 2013. Ils prévoient une gestion prudente des réseaux municipaux d'eau potable, de façon à ce que le service soit assuré « avec compétence et intégrité, afin d'assurer la protection et la sécurité des usagers du réseau municipal d'eau potable. »

Les restrictions sont décrétées en vertu du paragraphe 4(a) et de l'article 77 du *Règlement n° 2003-500 – Eau* de la Ville d'Ottawa et sont appuyées par le chef du contentieux ainsi que par les dirigeants et les services municipaux.

On assure aux membres du Conseil et du public que l'eau potable de ces secteurs restera salubre.

Cependant, la capacité de la Ville à approvisionner ces secteurs en eau a été grandement limitée par la détérioration prématurée de la conduite de distribution de l'avenue Woodroffe, qui transporte normalement presque toute l'eau potable, y compris l'eau servant à des fins extérieures, dans les secteurs où l'interdiction est maintenant en vigueur. La conduite de

distribution est hors service en raison de travaux de réparation et de remplacement sur environ un kilomètre.

La Ville fait tout son possible pour que les réparations soient terminées en juillet 2011. Cependant, dans un calendrier accéléré, la remise en service pourrait n'avoir lieu qu'à la mi-août 2011 selon un certain nombre de facteurs. Jusqu'à ce que la conduite de distribution soit remise en service, les secteurs touchés seront desservis par un réseau de secours beaucoup plus petit.

Jusqu'à la mi-juin, le réseau de secours ne transportera que 10 p. 100 du volume d'eau normal que la Ville achemine habituellement à ces secteurs. Après cette date, des améliorations permettront d'acheminer à peu près 18 p. 100 du volume normal jusqu'à la remise en service de la conduite de distribution. Une analyse est en cours pour évaluer d'autres options.

Selon la modélisation, le réseau de secours fournira un volume suffisant d'eau pour répondre à la demande d'eau à des fins intérieures, mais il ne répondra pas à la demande d'eau normale de la fin du printemps et de l'été dans ces secteurs.

Si l'utilisation d'eau venait à dépasser la capacité d'approvisionnement, il pourrait y avoir de graves répercussions sur les secteurs touchés, y compris une contamination éventuelle de l'approvisionnement en eau, la dépressurisation du réseau, la perte d'approvisionnement et des difficultés à assurer une protection contre les incendies. Pour aborder ces répercussions possibles, il pourrait être nécessaire de maintenir des avis d'« interdiction d'utiliser l'eau » pendant une période pouvant aller jusqu'à sept jours et des avis d'ébullition de l'eau pendant une période pouvant aller jusqu'à quatre semaines, de restreindre sévèrement l'utilisation d'eau, y compris à l'intérieur, de fournir de l'eau embouteillée à 60 000 à 80 000 clients pendant une période prolongée et de mettre en place un vaste système de chasse d'eau et d'analyse.

Des plans d'urgence visant à pallier une dépressurisation du réseau, y compris des fournitures de secours de lutte contre les incendies, des communications d'urgence et plus encore, ont été élaborés et sont prêts à être mis en œuvre au besoin.

Afin d'éviter les scénarios énumérés ci-dessus et étant donné l'insuccès d'une recherche exhaustive de toutes les options de rechange raisonnables visant à fournir plus d'eau à ces secteurs, la Ville n'a d'autre choix que de mettre en œuvre une interdiction d'arrosage extérieur immédiate jusqu'à la fin des travaux de renouvellement de la conduite de distribution de l'avenue Woodroffe. L'interdiction vise l'arrosage des pelouses et des jardins, le lavage des voitures, le remplissage des piscines, le nettoyage des immeubles et des terrains et toute autre utilisation extérieure de l'eau fournie par la Ville dans les secteurs touchés.

Il est important de noter que la modélisation indique que, si le public respecte l'interdiction, la pression sera maintenue dans le réseau et les scénarios d'urgence ci-dessus seront évités.

Le présent rapport décrit les étapes qui ont mené au décret de l'interdiction. On y demande aussi que les membres du Conseil approuvent une série de mesures destinées à favoriser le respect volontaire de l'interdiction d'arrosage extérieur; les dépenses liées à ces mesures; les

modifications au *Règlement n° 2003-500 – Eau* visant à clarifier les dispositions relatives aux violations des restrictions sur l'utilisation de l'eau et la délégation de nouveaux pouvoirs à la directrice municipale adjointe des Services d'infrastructure et de la viabilité des collectivités afin que celle-ci puisse puiser des fonds dans la réserve, le cas échéant, jusqu'à ce que les restrictions sur l'arrosage soient levées.

## BACKGROUND

### **The Woodroffe Avenue Transmission Watermain**

The 1220 mm (48") Woodroffe Avenue transmission watermain runs from Navaho Drive to Fallowfield Road and was installed in 1975-76. It is a concrete pressure pipe typical of use during that era for large transmission watermains. According to the Ontario Ministry of the Environment Asset Renewal Guidelines, the life span of this pipe and others its vintage is 50 to 100 years.

The first break of this pipe occurred on November 26, 2007 just south of the Nepean Sportsplex. In October 2008, the pipe was temporarily decommissioned to carry out a condition assessment between Hunt Club and Fallowfield that identified several locations of low to moderate deterioration. In a February 2009 report, the determination was made that spot repairs would be necessary at a number of sites. It was proposed that these repairs would be scheduled to occur when the pipe could be taken out of service for an extended period.<sup>1</sup> This was scheduled to take place in late 2011 and early 2012 after completion of the new secondary water supply to the area (referred to as the 2W2C transmission watermain) scheduled for later this year. Completion of the secondary water supply would have allowed for work on the Woodroffe Avenue transmission watermain to be done without service impacts. The 2008 inspection indicated there was not a high risk of failure, and that the Woodroffe Avenue transmission watermain renewal works could proceed on this schedule.

On January 14, 2011, a second pipe failure occurred at a location north of Hunt Club Road — an area that was *not* part of the 2008 investigation. Subsequently, a more extensive condition assessment of the transmission main was carried out on the section from David Dr. to Fallowfield Rd. to determine whether the pipe could be safely re-commissioned.<sup>2</sup> In mid-February, the investigation identified significant deterioration immediately north and south of Hunt Club Road, as well as additional areas requiring spot repair in isolated areas near Knoxdale, Slack and Grenfell.

The investigation found several areas in critical distress with a high risk of eminent failure in areas north and south of Hunt Club.

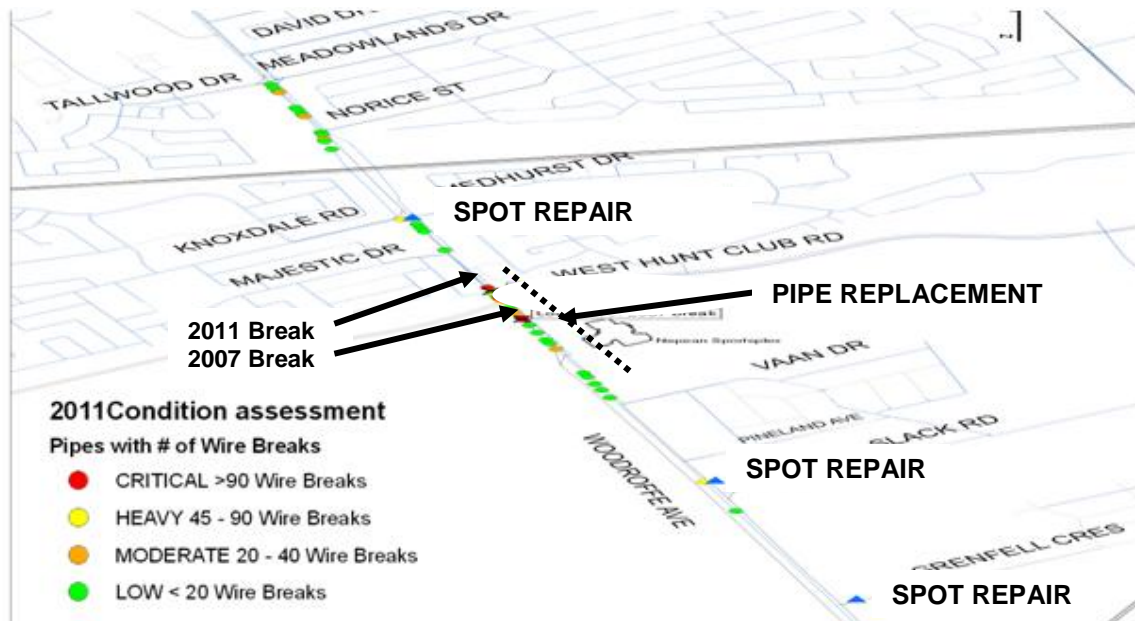
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<sup>1</sup> As the main supply line to over 26,000 customers, this would necessitate a secondary feed to be established, which was one of several "redundancy/reliability" projects identified in the *Infrastructure Master Plan* for completion in the short-term.

<sup>2</sup> Special approval was sought for these investigations, as the work needed to occur while a spending freeze was in effect. Approval for the \$1.67 million investigation was obtained on Jan. 21, 2011 under emergency delegated authority.

On this basis, staff determined that the Woodroffe transmission main failed well before its expected life span as described by the Ministry of the Environment and could not be re-commissioned without high risk of another pipe failure.

**Figure 1**  
**Condition Assessment & Planned Rehabilitation Work**



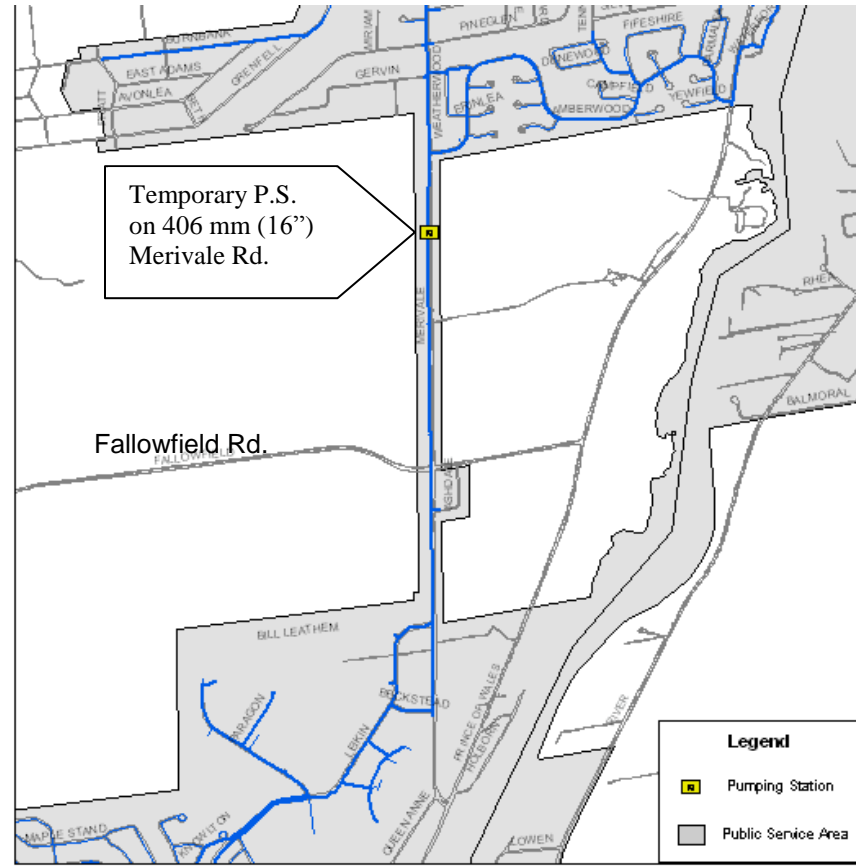
### The Back-up Water Supply

Subsequent to the 2007 transmission main break, two back-up pumps were purchased to allow for temporary pumping should a failure occur in any major transmission main in the city. This temporary pumping system was first put in service to conduct the condition assessment in 2008.

On January 14, 2011, one of those pumps was installed within hours on a 400 mm PVC watermain on Merivale Road to maintain pressure and supply to the area served by the Woodroffe transmission main. Safe drinking water has been supplied to the communities of Manotick, Riverside South, and Barrhaven using this back-up water supply since the January watermain break.

The pump serving this system has since been monitored 24-7 by Drinking Water Service staff on site, who have the second back-up pump and pipe repair supplies ready at hand if anything were to occur with this back-up system. The Merivale Road watermain is made of PVC pipe, and was installed in 2000 as part planned system expansion, and is felt to be of very low risk of failure. Regardless, the entire length of pipe undergoes daily visual inspection for potential breaks.

**Figure 2**  
**Temporary Pump Station & Back-up Supply**



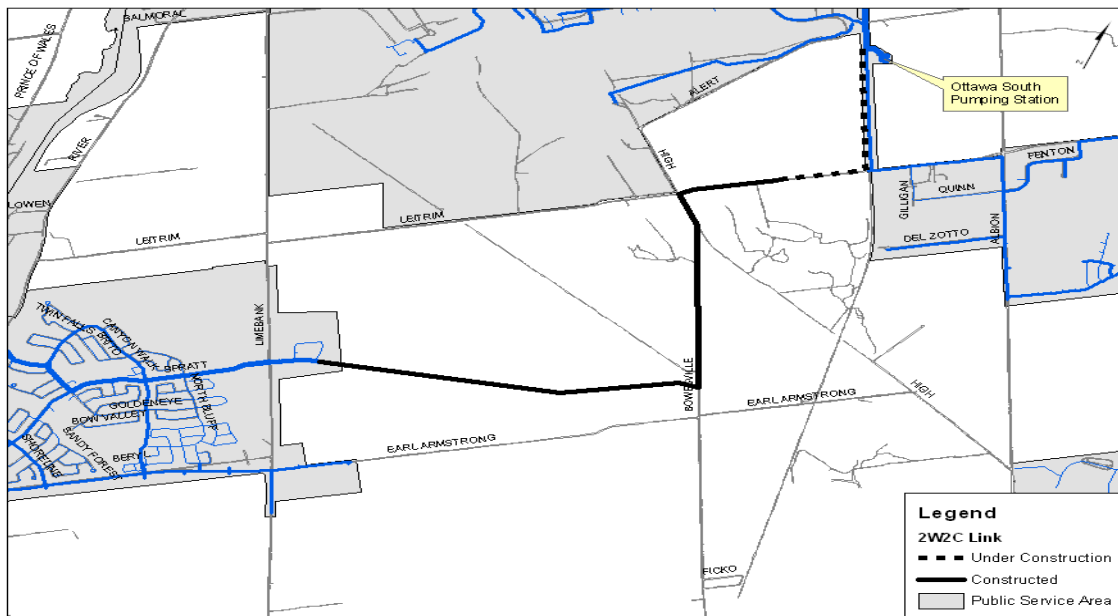
### **The Long-term Reliability Plan**

The City's *Infrastructure Master Plan* identifies several capital projects intended to provide water system redundancy and improved water service reliability. The City's *Long-Range Financial Plan* identifies funds in 2010-2011 for a secondary water supply across the Rideau River (2W2C transmission main) to provide back-up supply to the areas serviced by the Woodroffe transmission main. Therefore, as of 2008 and until the January break, the plan had been to complete the previously mentioned spot repairs once this secondary feed across the Rideau River was commissioned and the Woodroffe transmission watermain could be temporarily decommissioned without service impacts.

Design of the secondary transmission watermain was carried out in 2010 and completion is scheduled for October 31, 2011. Design of the Woodroffe transmission watermain spot repairs started in 2010, and the works were scheduled to commence in late 2011 after commissioning of the new 2W2C transmission main.



**Figure 3  
2W2C Link**



Unfortunately, the January 2011 break has taken the Woodroffe transmission water main out of operation approximately eight months sooner than planned. This could not have been anticipated in 2008 as the assessment carried out at that time did not indicate that this transmission main was particularly vulnerable, or that the pipe material was subject to premature failure.<sup>3</sup>

Similar reliability links are underway in the west and east of the City. A secondary link to Kanata is under construction and is due to be commissioned in 2012. The environmental assessment for the Orleans secondary link is due to commence within weeks and be completed later this year. Design of the secondary link is to be completed in 2012, and construction of it is scheduled for 2013-2014.

## ANALYSIS

### **Action Post 2007 Watermain Break**

As previously indicated, the first break on the Woodroffe watermain took place in November 2007 on a pipe section in front of the Nepean Sportsplex. Due to the premature failure of this pipe, the section that failed was investigated to determine the cause. The investigation concluded that the exterior mortar coating at the failure location was deteriorated and was the root cause of the watermain break, and that the mortar had deteriorated in more than one location along the single length of the pipe that was examined. These observations led to a detailed condition assessment of the watermain from Hunt Club to Fallowfield. This detailed condition assessment

<sup>3</sup> This pipe is requiring extensive replacement and repair approximately 15 to 65 years sooner than its projected normal life of 50 to 100 years.

was carried out in late 2008 and the results were finalized in early 2009. The results of this condition assessment indicated that the pipe was generally in good condition, with some sections that showed signs of low to moderate deterioration in the area near where the failure had taken place.

The 2007 watermain failure reinforced the need for a secondary supply of sufficient size to meet peak seasonal demand for the Barrhaven, Riverside South, and Manotick pressure zone to provide redundancy. This need was identified in the City's Infrastructure Master Plan, and, at the time of failure, the secondary supply was in the initial stages of the Environmental Assessment (EA) process to review alternative alignments. The plan for this significant undertaking was to complete the EA in 2009, undertake the design in 2010 and proceed to construction in 2011. This secondary supply (referred to as the 2W2C watermain) is under construction and is expected to be operational in late October 2011.

The strategy to repair the deteriorated sections of watermain on Woodroffe was to undertake spot repairs after completion of the 2W2C secondary watermain so that the Woodroffe watermain could be taken out of service without any service interruptions. Funding for these repairs was identified in the 2011 capital budget.

Unfortunately, in January 2011 another failure occurred on the Woodroffe watermain, this time on the section north of Hunt Club Road. This section was not within the limits of the watermain that was inspected in 2008. In February 2011, another detailed condition assessment was undertaken, this time from David Drive to Fallowfield Road. This condition assessment was commissioned under the Deputy City Manager Infrastructure Services and Community Sustainability's delegated authority given the urgency of the assessment. The results obtained in mid-February indicated significant deterioration of the section just to the north of Hunt Club and what was even more concerning was that the sections previously identified south of Hunt Club (in front of the Nepean Sportsplex) had deteriorated at an accelerated rate.

The decision was made not to put the watermain back in service out of concern that the risk of another failure was too high. In short, the pipe is prematurely beyond its useful life and cannot be relied upon to safely and reliably convey water.

Based on the results of the new condition assessment, the renewal approach changed from spot repairs to complete replacement of a one-kilometre section from north of Hunt Club to Vaan Drive. The change in approach was the result of the 2011 condition information that showed the areas that needed attention were no longer limited to a few discrete areas as the 2008 assessment showed. The deterioration was extensive between the sections between north of Hunt Club and Vaan Drive where total replacement is needed. This change resulted in a need for additional fund authority to cover the increased scope of work.

The request for the additional financial authority was included in a motion that was approved by Council at the March 9, 2011 Council Meeting. At that point, work was already underway on the design for the pipe replacement and on options to mitigate service impacts, including the extension of the 305 mm watermain that currently services the Nepean Sportsplex up to Vaan Drive to help provide more water volume to Barrhaven, Riverside South and Manotick.

Initial indications through modeling suggested that this interim connection, along with the 400 mm back-up supply, could meet summer demand conditions, but on March 24<sup>th</sup> after additional verification of the model, it was concluded that the system would not be able to meet summer demands. Given the critical situation, staff are focusing on finding ways to accelerate the watermain replacement and on interim water supply measures to prevent depressurization of the water system while continuing to search for other interim relief measures.

As can be seen, since the 2007 watermain break there has been a strategy in place to reduce the risk of service interruptions to this area. Unfortunately, the break in January 2011 occurred before completion of the 2W2C watermain. Since the January 2011 break, there has been a sustained effort to find solutions and have these implemented in the most expeditious manner possible.

The imposition of the ban on outdoor water use is being implemented as it is the only measure that can safeguard the integrity of the supply in the short term until the repairs are completed or a more robust interim supply is found.

### **Alternative Transmission Main Rehabilitation and Interim Supply Options**

#### Rehabilitation of the 1220 mm Woodroffe Transmission Main

Several options were considered for the rehabilitation of the Woodroffe watermain, as summarized in Document 1. These options ranged from deferring the repairs until after the secondary watermain to the area is in service to undertaking spot repairs of deteriorated sections, relining the old pipe and complete pipe replacement.

After careful consideration, and in light of the increased pace of deterioration, it was determined that the preferred solution was to replace the 1220 mm watermain between north of Hunt Club to Vaan Drive (approx. 1 km) and undertake spot repairs at other isolated locations.

#### Interim Water Supply

Given the Woodroffe 1220 mm transmission watermain would not be in service until early to mid-August, other interim water supply options were considered with the objective of meeting peak summer demand conditions. These options are summarized in Document 2. These ranged from providing additional pumping capacity, to providing an overland pipe, to a complete water ban on outdoor water use in the impacted area.

There are measures that were identified that could improve service, but these would not be in place until early June. These measures include extending the existing 305 mm watermain that services the Nepean Sportsplex and connecting it to the 1220 mm watermain at Vaan Drive at a point beyond where the pipe is going to be replaced. This option has been incorporated into the construction program.

Consideration is also being given to changing the connection point of this 305 mm at Hunt Club and providing temporary pumping, similar to what is in place for the 406 mm watermain along Merivale. These additional measures are still under review to see to what extent they can improve the situation. These measures could improve the situation after the early June period, but they do not remove the need for a water ban on outdoor use.

### Implementation Status Update

The tender for the works includes 2 phases. Phase 1 is to extend the 305 mm watermain from the Nepean Sportsplex to Vann Drive, and Phase 2 is to replace the 1220 mm diameter transmission watermain between north of Hunt Club and Vaan Drive. The tender closed on Thursday, 21 April 2011.

The contract has been awarded. Infrastructure Services staff are working with Greenbelt Construction on opportunities to accelerate both the 305 mm extension and the replacement of the 1220 mm watermain. The tender includes bonus provisions for accelerated on-time completion of both phases: 6 June 2011 for the extension of the 305 mm watermain; and 29 July 2011 for the replacement of the 1220 mm transmission watermain. There are also substantial incentives in the contract for early completion of both phases. In addition to these bonus provisions, every effort is being made to accelerate the completion of both phases of the project, including providing the contractor with a flexible working schedule. Based on initial discussions with the contractor, they are optimistic that they will be able to complete both phases within the specified timelines and are looking at ways to complete the project early.

It is also important to understand that after completion of construction of the 1220 mm transmission, Drinking Water Services requires approximately two weeks to complete the necessary commissioning processes required by regulation.

In short, the City is doing everything within its control to ensure these works are completed as soon as possible. However, until the 1220 mm Woodroffe Avenue watermain is re-commissioned, Barrhaven, Riverside South, and Manotick will continue to be served by a backup system.

### **Meeting Peak Demand**

The communities of Barrhaven, Riverside South, and Manotick are serviced by two water reservoirs that allow the system to meet fluctuations in demand.<sup>4</sup> These reservoirs are primarily serviced by the 1220 mm Woodroffe transmission main and the 406 mm diameter Merivale watermain, which together can keep levels in the reservoirs in the safe zone during peak demand.

Until the Woodroffe transmission main is replaced or the secondary link completed, the area will be serviced by a much smaller back-up system, which modeling shows cannot meet peak demand.

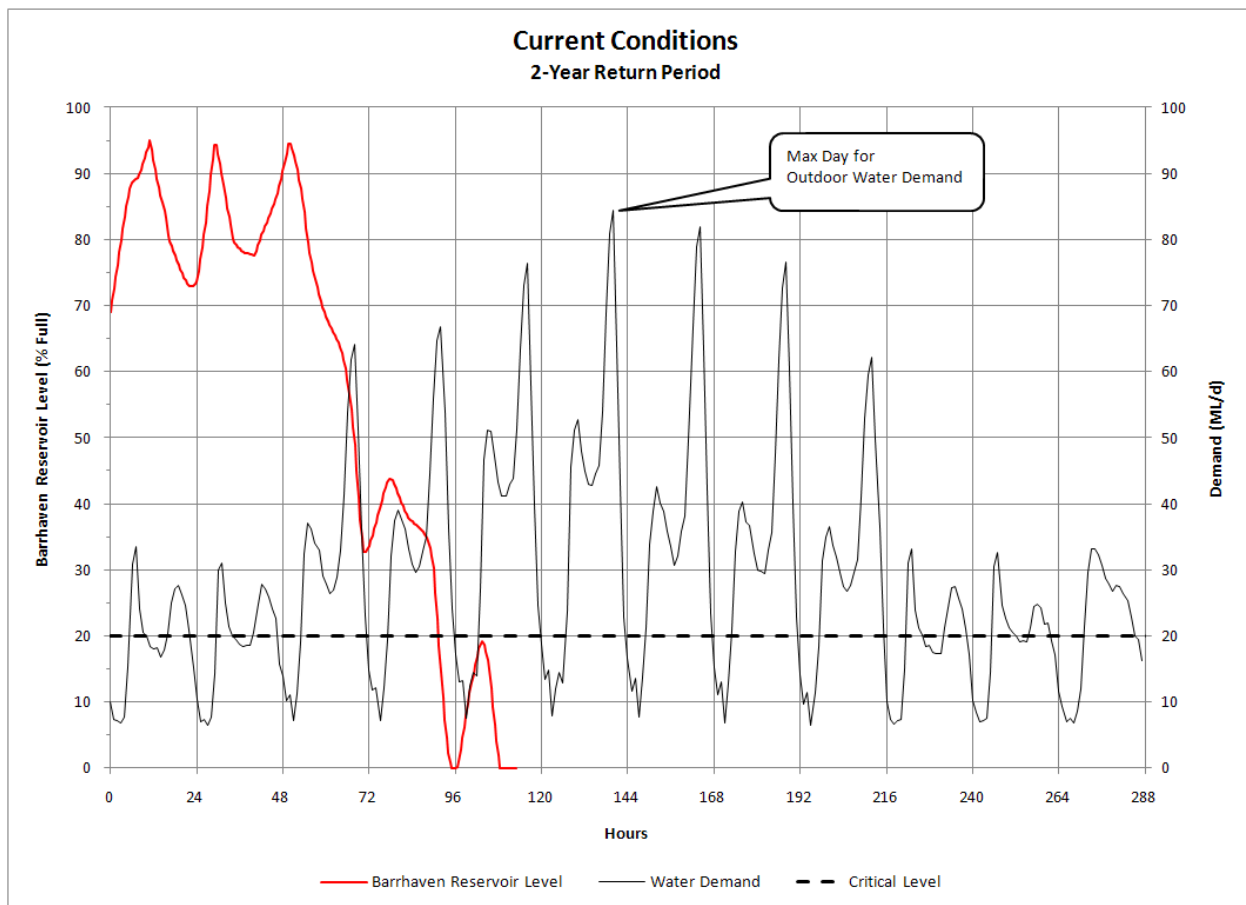
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<sup>4</sup> Barrhaven Reservoir and the Moodie Drive Elevated Storage Tank.

Figure 4 below depicts a peak water demand situation that typically occurs every other year (i.e. a 50-50 chance of this occurring this year). The figure is based on past consumption patterns during the late spring and early summer when people are planting gardens, watering lawns, topping up pools, and washing cars. The solid black line shows demand, the red line shows how the current back-up system is not able to meet this demand, and the broken black line shows the critical depletion level in the reservoirs needed to maintain normal fire fighting reserve requirements.

During the first two days on the left side of the graph, when water demand is in the normal range, the back-up system can keep pace, and the reservoirs are safely in the 70- to 95-per-cent full range. These are the supply and demand conditions in which the system has operated since January 2011. However, you will notice that on the third day of the event as demand increases, modelling shows the back-up system cannot keep pace and levels in the reservoirs start to plunge past the critical level. Specifically, the modeling shows reservoir levels being depleted past the critical 20-per-cent level and reaching empty *before* demand reaches peak consumption levels. This would result in the system depressurizing and a loss of water supply to some or all customers in the zone.

**Figure 4**



## Meeting Fire Fighting Needs

While Figure 4 shows reservoir levels reaching 0%, in actuality the City must maintain a minimum of 20% capacity in the reservoirs in order to meet potential fire fighting needs.

In an effort to minimize the amount of water typically used to extinguish an average structure fire, Ottawa Fire Services will be using a foam wetting agent mixed with water and will be operating a superior tanker shuttle to all structure fires in the impacted areas until the Woodroffe Avenue transmission watermain is re-commissioned. The cost to implement these programs in the affected areas for the proposed duration is approximately \$225,000.00 dollars.

## Consequences of Depleting the Reservoirs

If reservoirs levels drop to critical levels, the distribution system will begin to depressurize and some or all customers will have no water for basic needs such as toilet flushing and showering. Furthermore, contaminated groundwater or soils surrounding the water pipes could enter the system, including *e coli* bacteria and other chemical contaminants from cross-connections within the system. Accordingly, the City would need to issue a *No Water Use* or *Boil Water Advisory*, which would be in effect until the Medical Officer of Health was sure that the water supply was safe for normal use and consumption.

Severe water restrictions would be required to restore water pressure and the water supply. Not only would an outdoor ban be in effect, but indoor conservation measures would be imposed. In communities where this has occurred, limits have been placed on shower length, toilet flushing, and the use of washing machines and dishwashers. Depending on the severity and duration of the pressure shortfall, the City would need to distribute bottled water to customers to satisfy basic drinking water needs.

The *Boil Water Advisory* and indoor water use restrictions would likely be in place for 2-4 weeks while the City repressurized and flushed the system. During this period, the water system would be at high risk of water main breaks due to fluctuating water pressures in the pipes.

## DISCUSSION

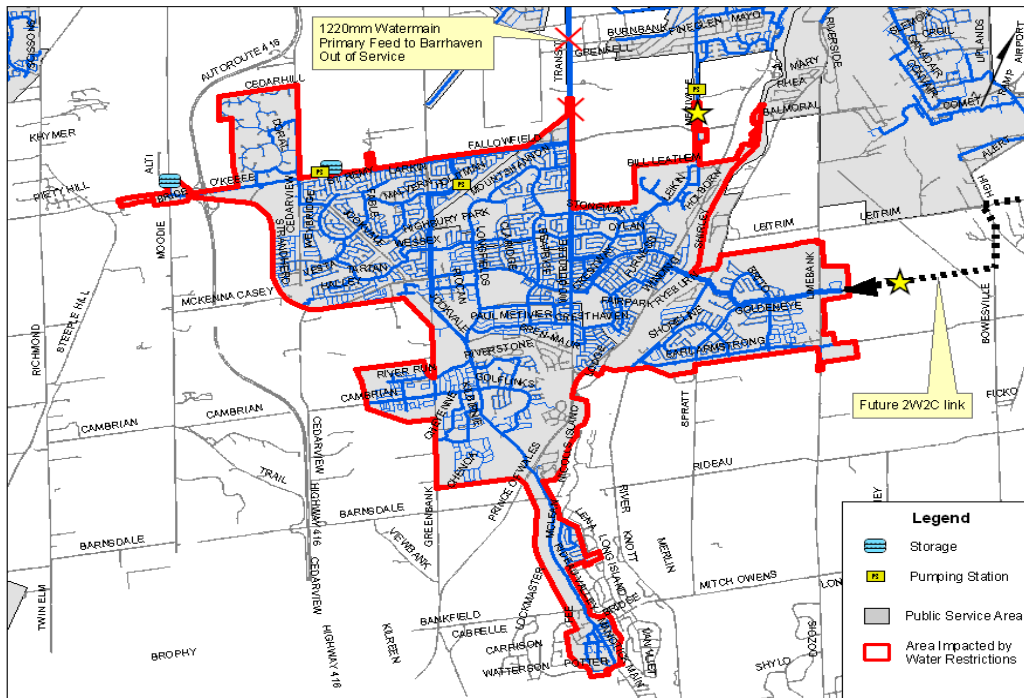
### Outdoor Use Water Ban is Now in Effect

The City has a duty to operate its drinking water system in a manner that protects the safety of the water supply.

Accordingly, the Deputy City Manager of Infrastructure Services & Community Sustainability under Section 77 of the City of Ottawa's Water By-law 2003-500 has declared **a complete ban on outdoor water use in the area shown on Figure 5 until further notice** in order to ensure continued supply of safe drinking water to the area.

Water customers in this area, namely the communities of Barrhaven, Manotick, and Riverside South must comply with this ban or risk prosecution and, more importantly, the loss of their water supply. Outdoor water use includes, but is not limited, to lawn and garden watering using a hose, car washing, pool filling and top-ups, and the use of a hose for any exterior purpose. This does not include capturing water in rain barrels to hand water plants using a watering can.

**Figure 5**  
**Area affected by ban on outdoor water use**



### Voluntary Compliance Measures

In order to encourage voluntary compliance with the outdoor water restrictions, the City is prepared to implement various means to manage this outdoor water demand. These measures are meant to provide additional assurance that the outdoor water demand will not increase during the construction period so that the integrity of the drinking water system can be maintained for the community. The following measures are recommended for Council to approve for implementation now in order to manage this outdoor water demand.

#### Top It Up

There are an estimated 3000 pools and hot tubs in the affected area. The City will provide pool and hot tub filling requirements. Residents will be able to register on-line or by calling 311. The estimated cost for this measure is up to \$200,000.

### Support for Garden Centres

The City is aware of at least 16 retailers in the zone that may sell outdoor plants during the gardening season. Affected retailers will be provided with hauled water daily to maintain their inventory. Businesses will be able to register on-line or by calling 311. This service will commence Thursday April 28. This measure is estimated at \$415,000.

### Rain Barrel Subsidy

The 2011 Water Budget includes \$150,000 for distribution of subsidized rain barrels to residents. This equates to distribution of 2,100 rain barrels at roughly a \$50 subsidy. The proposal is to target this program in the communities of Manotick, Barrhaven, and Riverside South. The City would implement a rain barrel rebate program, based on the following criteria:

- Limit of one rain barrel per household,
- Minimum volume of 180 L,
- Must be child-proof,
- Must be mosquito-proof (West Nile Virus prevention), and
- Does not apply to build-your-own rain barrels.

Residents can get more details about the rebate program on our website at [Ottawa.ca](http://Ottawa.ca).

### Development Agreements

In the instance of development agreements with clauses pertaining to the installation and the maintenance of sod, plants, shrubs and trees where planting has not yet occurred, the developers will be given permission to delay the planting of this vegetation until the end of the outdoor water ban.

Where such planting has occurred and the vegetation is subject to a warranty period within the development agreement, the City will work with the developer to ensure conditions can be met at the least cost.

### Flusher Hydrant Service

The flusher hydrants previously identified in this zone will not be available to the water haulers for the duration of the water restrictions. New flusher hydrants will be established on the periphery of the zone to minimize the length of trips, and to ensure that existing hydrants on the periphery do not become over taxed. A map showing the existing and new flusher hydrants available immediately outside this zone will be sent to all water haulers and will be available on our website.

### Car Washes

The City will be asking the car washes within the affected area to voluntarily suspend their operations for the duration of the water restrictions.



## **Communications**

Communications regarding the ban will be both targeted and broad-based.

Targeted communications will focus on water customers that may incur particular hardship as a result of the ban. These include the following groups: garden centres, landscape and lawn care companies, sports associations, day care providers, condominium and community housing associations, commercial pool owners, pool and hot tub installers, developers and builders, and the heavy construction industry. The City is committed to working with affected groups to mitigate impacts wherever reasonable and possible.

Broad-based communications will be used to inform water customers regarding the following matters:

- The need for the ban to maintain the water supply and protect public health;
- The nature and extent of the ban;
- “What you can do” to protect the water supply;
- The measures in place to help mitigate impacts of the ban; and
- Ways in which customers can implement water efficiency inside their homes and buildings.

Information will be delivered to all water customers through letter mail, earned media, community paper print ads, a radio campaign, digital display boards along main corridors in the community, web and social media content and signage throughout the area.

Information session open to all water customers will be held in the coming days. Councillors and city staff will be available to provide details regarding the ban, to answer questions from the public, and to allow for sign-up to the “Top It Up” program.

The City will also be adding additional 311 staff as needed to handle increased call volumes from residents in the impacted area with questions on the ban,

The City understands the negative impact this ban will have on the 60,000 to 80,000 people living in these communities. Affected residents, businesses and institutions must recognize that the City would not impose this ban were the situation not critical, and their compliance with the ban essential.

The City will provide updates at regular intervals regarding the status of the construction work, mitigating measures available, and any changes in the ban limitations. There will also be daily conference calls with the ward councillors to provide status updates.

Throughout the period of the ban, residents will be updated on the status of the construction and/or the risk levels regularly. This will consist of a minimum of one update per week, including additional updates during heat waves and long weekends to alert residents of the increased risk during these traditionally peak periods.

If reservoir levels reach critical levels, a secondary communications plan will be launched immediately. This will inform residents of the low reservoir levels and remind residents to comply with the ban in order to preserve the safety of the water supply.

In the meantime, the Deputy City Manager respectfully requests the community's patience and cooperation, and assures customers that the City is committed to working with affected groups to mitigate impacts wherever reasonable and possible.

Councillors for the four affected wards will also be given access to funds of up to \$5,000 each for additional measures, like printing and advertising, during the ban. The cost of the communications plan outlined above and to support contingency plans outlined below, if needed, are estimated at \$420,000.

### **Traffic Implications**

The contract to extend the 305 mm watermain and replace the 1220 mm watermain between north of Hunt Club to Vaan has been awarded and construction will underway shortly. This contract will impact traffic on Woodroffe and every effort is being undertaken to reduce impacts on transit. Details are still being finalized with the contractor, but commuter should expect delays and consider using transit or use alternative routes, such as the 416, Prince-of-Wales or Cedarview. More details will be communicated in the coming days.

### **City Operations Impact**

The ban will have an impact on the City operations including washing of vehicles, using alternative flusher hydrants, watering trees, and other activities. An allowance of \$500,000 is being set aside to offset the cost of these impacts.

### **Contingency Plans**

During the ban, Environment Services staff will be monitoring levels in the reservoirs in the affected areas 24-7 and keeping all appropriate City staff, including the fire department and the Security and Emergency Management Duty Officer, up to the minute on the degree of risk. In the event reservoir levels start dropping faster than the system's ability to supply water, critical communication through various means, including emergency public service announcements, will be employed in order to avoid a depressurization.

However, if these measures fail, there is significant risk of a wide-spread water shortage in this zone. Therefore, a contingency plan has been developed to ensure continued supply of drinking water to residents and the ability to continue fire fighting operations. The plan is comprised of the following elements:

#### Distribution of Potable Water

Residents in the impacted areas would require access to an alternative source of potable water. The existing contingency plan consists of the following:

- Procurement of potable water from existing suppliers;
- Providing access points to distribute potable water;
- Transporting potable water to the identified distribution centers;
- Distributing potable water to vulnerable populations; and
- Providing communications and education to impacted residents.

### Providing Water for Hygiene Purposes

If required, the City will aim to provide 24/7 access to facilities outside the affected area to provide potable water and showering facilities to impacted residents. Given the limited capacity of facilities with showers near the impacted area, residents will be encouraged to make alternate arrangements where possible (i.e. family, friends, and workplaces). Additionally, the City will deliver an adequate supply of potable water to the vulnerable population and has plans in place to accommodate this population in a temporary lodging centre in the event of an extended service disruption.

### Ensuring Adequate Fire Supply

Fire Services has established a protocol with Environmental Services that triggers the need to disconnect from the City water supply. If that trigger is reached, Fire Services has contingency measures in place for obtaining an alternate water supply.

### Contingency Communications

In the event of a boil water advisory or a complete water ban, the contingency communications plan will go into effect. It will be critical for the City to quickly and effectively advise residents of the health risks associated with the potentially contaminated water and provide them with solutions to treating and managing their drinking water.

In the event of boil water advisory, various means of communications will be utilized, including a media event, contact with media outlets, updates to digital display boards, social media outreach, targeted radio ad messaging, as well as direct and face-to-face outreach to affected residents.

Daily updates would provide the most current information to residents.

This messaging would escalate in the event of a complete water ban to include information on the complete water ban, as well as information on bottled water distribution.

Updates pertaining to the location of water distribution, as well as information on line-ups and wait times would be provided through various means, including the media, direct and face-to-face outreach, the website and through a Twitter feed similar to the HINI vaccination Twitter outreach. This will include real-time updates throughout the day to which residents can refer for the most up to date information.

## **Enforcement**

In order to minimize non-compliance and help avoid a system depressurization, this report seeks approval of enforcement measures under the ban. This requires an amendment to the City's Water By-law as set out in Document 3 attached to this report. The By-law & Regulatory Services Branch will lead enforcement. The hours of patrols and enforcement will increase or decrease depending upon weather conditions and the level of compliance with the ban. The schedule will include 24-hour service, as warranted. Enforcement staff will also respond to reports registered with 311 and will distribute educational material as part of their enforcement duties.

Initially, the program will focus on educating residents and businesses with respect to the importance of compliance with the ban as well as the potential implications of non-compliance. Charges will be issued as circumstances warrant, with a minimum fine of \$500 for an offence under the by-law. Persons charged under the by-law have the option to pay the fine or plead not guilty and attend Court, as with any other by-law related charge. The cost for this enforcement program, which strategically and efficiently utilizes existing enforcement personnel, is estimated at \$75,000.

## CONSULTATION

Short-term consultations with affected stakeholders are outlined above, and will continue throughout the ban.

## COUNCILLOR COMMENTS

The four impacted Ward Councillors are aware of this report.

## LEGAL/RISK MANAGEMENT IMPLICATIONS

The City's Water By-law 2003-500 and its various requirements are reflected in the broad provisions of the Municipal Act, 2001, that allow municipalities to pass by-laws respecting the "economic, social and environmental well-being of the municipality" as well as respecting the "health, safety and well-being of persons". In this respect, Section 77 of Water By-law currently states: "The General Manager may suspend any or all use of water through a hose or other attachment, or for use for street, lawn or garden sprinkling." It is important to note that this original authority of the former "General Manager", currently rests with the Deputy City Manager of Infrastructure Services and Community Sustainability, following various organizational restructurings, including the one approved by City Council in October 2009.

More specifically, the Safe Drinking Water Act, 2002, also provides for the protection of human health and the prevention of drinking water health hazards by imposing duties, along with a high standard of care, upon the owners and operators of municipal drinking water systems to ensure

the safety of the users of these systems. As such an owner and operating authority, the proposed outdoor water ban is a key element in fulfilling the City's responsibilities under the Act.

In addition, in order to further the objectives of the outdoor water ban, Water By-law No. 2003-500 requires the amendments, set out in Document 3, to include general enforcement provisions and to create offences and fines for violations of bans authorized under the By-law.

Also, at this point in time, operational staff are in the process of recalling from storage all files from the former Regional Municipality of Ottawa-Carleton in relation to this matter. Once that task has been completed, Legal Services will review all of the relevant documents and determine what, if any, legal action is available to the City of Ottawa.

Finally, although the implications of the outdoor water ban may have some negative impacts on both residents and businesses in the designated area, Legal Services is of the opinion that the steps taken by the City to respond to, or avert, an emergency situation are unlikely to give rise to liability. This opinion is premised on the City acting reasonably as well as in good faith, and, in doing so, implementing those actions that are necessary under all of the circumstances.

#### FINANCIAL IMPLICATIONS

Funding requirements for the measures described in this report are estimated as follows:

|                              |                    |
|------------------------------|--------------------|
| 1. Fire Fighting Measures    | \$ 225,000         |
| 2. Top it Up                 | \$ 200,000         |
| 3. Garden Centre Assistance  | \$ 415,000         |
| 4. Councillor Advertising    | \$ 20,000          |
| 5. Enforcement               | \$ 75,000          |
| 6. Communications            | \$ 420,000         |
| 7. Contingency               | \$ 200,000         |
| 8. City Operations Allowance | <u>\$ 500,000</u>  |
|                              | <u>\$2,055,000</u> |

The total cost of the measures is \$2,055,000 which, upon Council's approval, would be funded from the Water Reserve Fund in accordance with *Water Reserve Fund By-law 2003 – 141*. The projected 2011 year-end balance of the Water Reserve Fund was projected to be \$25.844M prior to consideration of the above funding requirement.

Additionally, it is estimated that the mandatory outdoor water ban will reduce 2011 drinking water revenues and sewer surcharge revenues by approximately \$500k - \$850k given estimated reductions in water consumption. As the volume reduction amounts to less than 0.05% of the City's total annual water volume production, and that the majority of water production costs are fixed in nature, there would be minimal savings in Drinking Water Services operating expenditures to offset the estimated revenue reduction.

## SUPPORTING DOCUMENTATION

Document 1 – Woodroffe Watermain Rehabilitation Options

Document 2 – Temporary Water Supply Options

Document 3 – Amendment to Water By-law 2003-500.

## DISPOSITION

Infrastructure Services Department will expedite completion of the constructed works. Environment Services Department will report back to Council upon completion of Phase One of the constructed works. Environment Services Department will lead implementation of all mitigating measures. Office of Emergency Management will lead emergency response planning and response. By-law and Regulatory Services Branch will lead enforcement activities.

## Woodroffe Watermain Rehabilitation Options

| Option | Description  | Discussion / Rationale   | Outcome  |
|--------|--|--|--|
| 1      | Do nothing for the summer – Leave pipe out of service and initiate repairs once 2W2C link is commissioned          | It is not possible to meet summer Peak demand  | This option is not feasible  |
| 2      | Bring deteriorated pipe back in service – and initiate repairs once 2W2C link is commissioned                      | <ul style="list-style-type: none"> <li>• High risk of another watermain failure</li> <li>• Public safety hazard from large sink hole</li> <li>• Risk of de-pressurizing the system and necessitating a Boil Water Advisory until the system is flushed (2-4 weeks)</li> <li>• Inability to meet summer Peak Demand</li> <li>• Outdoor water use ban for the duration of the repair period</li> </ul> | <p>This option is not recommended:</p> <p>Known risk to public health and safety due to road damage, lack of water, lack of fire protection and extended boil water advisory</p> |
| 3      | Advance the construction of the 2W-2C reliability link in order to being repairs on the Woodroffe watermain sooner | The contractor is currently working full out and is scheduled to complete the works by October 2011.   | This option is not feasible  |
| 4      | Spot replacement (open cut) of watermain sections deemed only as critical  | <ul style="list-style-type: none"> <li>• There are 12 sections of watermain that have shown signs of deterioration from 2008 to 2011</li> <li>• The rate of deterioration since 2008 is considered very high</li> <li>• This alternative only potentially saves 2 weeks of construction in comparison to the permanent repair solution (option 7)</li> </ul>   | It is not recommended to replace only critical sections of watermain.  |
| 5      | Spot repairs using Fibrewrap of the 9 sections of watermain deemed heavy or critical and selected moderate         | <ul style="list-style-type: none"> <li>• The Company who provides these services were not able to provide firm timelines for construction; their entire workforce required work visas prior to entry into Canada</li> <li>• Current rate of deterioration shows that more sections of watermains should be replaced now</li> </ul>   | This option is not recommended; it does not provide a cost effective permanent solution and the start of construction is completely dependent on the work visa process           |

| Option | Description   | Discussion / Rationale   | Outcome                           |
|--------|---|--|-----------------------------------|
| 6      | Slip lining with steel pipe of about 1km of watermain from North of West Hunt Club to Vaan Drive; and spot replacements of 2 sections at Knoxdale Road and Slack Road | <ul style="list-style-type: none"> <li>• Engineering review has determined that it is not a feasible option since it is not possible to apply the technology in this situation due to the installation and physical layout of the watermain</li> </ul>                   | This option is not feasible       |
| 7      | <b>Open cut replacement of about 1km of watermain from North of West Hunt Club to Vaan Drive; and spot replacements of 2 sections at Knoxdale Road and Slack Road</b> | <ul style="list-style-type: none"> <li>• <b>Permanent repair solution for those deteriorated sections of watermain</b></li> <li>• <b>Mandatory water restrictions will be required to ensure that basic water services and fire protection are maintained</b></li> </ul> | <b>This option is recommended</b> |



## Temporary Water Supply Options

| Option | Description  | Feasibility   |   | Discussion/Outcome   |
|--------|--|---|---|--|
|        |  | Hydraulic   | Constructability  |  |
| 1      | <b>Complete Water Ban of Outdoor Uses</b>  | <ul style="list-style-type: none"> <li>• Feasible as it allows the system to maintain adequate water levels and pressures.</li> </ul>   | <ul style="list-style-type: none"> <li>• Not applicable</li> </ul>  | <ul style="list-style-type: none"> <li>• Applies to all outdoor water uses. This is recommended as it can be achieved before the onset of late spring to early summer peak water demands.</li> </ul>       |
| 2      | Partial Water Ban  | <ul style="list-style-type: none"> <li>• Uncertainty regarding what outdoor water activities correspond to what demands makes it impossible to identify what outdoor water activities can occur without negatively impacting the system.</li> </ul> | <ul style="list-style-type: none"> <li>• Not applicable</li> </ul>  | <ul style="list-style-type: none"> <li>• Not recommended as this would be ineffective and very difficult if not impossible to enforce.</li> </ul>  |
| 3      | Additional Pumping on Merivale   | <ul style="list-style-type: none"> <li>• Not feasible; suction pressures are too low.</li> </ul>  |   | <ul style="list-style-type: none"> <li>• Not feasible.</li> </ul>  |
| 4      | <b>Extend existing 305mm in front of Sportsplex and connect to 1220mm south of Vaan.</b>                                 | <ul style="list-style-type: none"> <li>• Provides some improvement, but does not remove the need for a water ban.</li> </ul>  | <ul style="list-style-type: none"> <li>• This pipe can be extended by early June.</li> </ul>  | <ul style="list-style-type: none"> <li>• This is recommended to improve hydraulic conditions, although it is recognized that it does not remove the need for a water ban on outdoor water uses.</li> </ul> |
| 5      | Overland or Shallow-Bury Link from 610mm on Hunt Club to 1220mm at Vaan; not including the 305mm extension to Vaan Drive | <ul style="list-style-type: none"> <li>• This is hydraulically feasible as it maintains the minimum Barrhaven Reservoir Level at 25%</li> <li>• Low pressures upstream of Merivale pump (27psi)</li> </ul>  | <ul style="list-style-type: none"> <li>• This option requires significant engineering design to restrain a 610 mm pipe overland.</li> <li>• Cannot be completed sooner than the 305mm extension and diverts resources away from sustainable solution.</li> <li>• Significant hazard created with having an overland pipe under pressure.</li> </ul> | <ul style="list-style-type: none"> <li>• Not recommended.</li> </ul>   |

| Option | Description   | Feasibility  |   | Discussion/Outcome   |
|--------|---|--|---|--|
|        |   | Hydraulic  | Constructability  |  |
| 6      | Overland or Shallow-Bury Link from 610mm on Hunt Club to 1220mm at Vaan; including the 305mm extension to Vaan Drive  | <ul style="list-style-type: none"> <li>• This is hydraulically feasible as it maintains the minimum Barrhaven Reservoir Level at 30%</li> <li>• Low pressures upstream of Merivale pump (28psi)</li> </ul>   | <ul style="list-style-type: none"> <li>• This option requires significant engineering design to restrain a 610 mm pipe overland.</li> <li>• Cannot be completed sooner than the 305mm extension and diverts resources away from sustainable solution.</li> <li>• Significant hazard created with having an overland pipe under pressure.</li> </ul> | <ul style="list-style-type: none"> <li>• Not recommended.</li> </ul>   |
| 7      | Additional pump on 305mm extension, as presented in option 4  | <ul style="list-style-type: none"> <li>• Not feasible; suction pressures are too low.</li> </ul>   | <ul style="list-style-type: none"> <li>•</li> </ul>   | <ul style="list-style-type: none"> <li>• Not feasible.</li> </ul>  |
| 8      | Extend 305mm as in Option 4, but connect to 610mm at Hunt Club  | <ul style="list-style-type: none"> <li>• Not feasible, cannot achieve minimum levels in Barrhaven Reservoir.</li> </ul>  | <ul style="list-style-type: none"> <li>•</li> </ul>   | <ul style="list-style-type: none"> <li>• Not feasible.</li> </ul>  |
| 9      | <b>Extend 305 mm as in Option 4, but connect to 610mm at Hunt Club and provide additional pump on 305mm extension</b> | <ul style="list-style-type: none"> <li>• <b>This is hydraulically feasible as it maintains the minimum Barrhaven Reservoir Level at 35%</b></li> <li>• <b>Low pressures upstream of Merivale pump (25psi) warrant further investigation to confirm if this will affect water supply in other areas.</b></li> </ul> | <ul style="list-style-type: none"> <li>• <b>This option requires additional pumping arrangements similar to what is in place on Merivale.</b></li> <li>• <b>This option requires connection at the Hunt Club intersection.</b></li> <li>• <b>This option is being reviewed.</b></li> </ul>  | <ul style="list-style-type: none"> <li>• <b>This builds on option 4. Further investigation is underway.</b></li> </ul> |

BY-LAW 2011 -

A by-law of the City of Ottawa to amend By-law No. 2003-500 regulating the municipal water supply.

The Council of the City of Ottawa enacts as follows:

1. Section 1 of By-law No. 2003-500 entitled “A by-law of the City of Ottawa regulating the municipal water supply”, as amended, is amended by:

(a) adding the following definition in alphabetical order:

“By-law Officer” means a person appointed by the Council of the City of Ottawa as a Municipal Law Enforcement Officer to enforce the provisions of this by-law.

(b) repealing the definition of “General Manager” and adding the following definition:

“Deputy City Manager” means the Deputy City Manager of Infrastructure Services and Community Sustainability or an authorized representative of the Deputy City Manager.

2. The said By-law No. 2003-500 is further amended by:

(a) striking out the term “General Manager” wherever it appears therein and substituting the term “Deputy City Manager” therefore;

(b) adding, immediately after Section 13, the following section:

13A. No person shall use, or cause or permit to be used, water in a manner contrary to any direction given by the Deputy City Manager during a period when the use of water has been prohibited or restricted pursuant to paragraph (a) of Section 4.

(c) adding, immediately after Section 77, the following sections:

77A. No person shall use, or cause or permit to be used, water during a period when the use of water has been suspended pursuant to Section 77.

77B. (1) This by-law shall be enforced by a By-law Officer.

(2) For the purpose of enforcing the provisions of this by-law, a By-law Officer may, at any reasonable time, enter and

inspect any land to determine if this By-law has been complied with provided that this power of entry does not allow the By-law Officer to enter into any building on the land.

3. Section 103 of the said By-law No. 2003-500 is repealed and the following section substituted therefore:

103. (1) In addition to any other provision of this by-law, any person who contravenes any provision of this by-law is guilty of an offence and on conviction is liable to a minimum fine of \$500.00 and a maximum fine of \$100,000.00 as provided for in subsection 429(3) 1. of the *Municipal Act, 2001*.
- (2) A person who is convicted of an offence under this by-law is liable, for each day or part of a day that the offence continues, to a minimum fine of \$500.00 and a maximum fine of \$10,000.00 and the total of all daily fines for the offence is not limited to \$100,000.00 as provided for in subsection 429(3) 2. of the *Municipal Act, 2001*.

4. The said By-law No. 2003-500 is further amended by adding, immediately after Section 104, the following heading and section:

NOTICE

104A. A notice of restriction under Section 4 or notice of suspension under Section 77 of the By-law may be given by way of a posting on the City's public webpage and/or by any means that, in the opinion of the Deputy City Manager, are sufficient to provide reasonable notice of the subject matter of the notice of restriction or notice of suspension, as the case may be, and that any such method of notice shall be deemed to have been given to the person or persons to which the notice is directed, on the earliest date of any such posting.

ENACTED AND PASSED this 27th day of April, 2011.

CITY CLERK

MAYOR