



**STAFF REPORT  
ACTION REQUIRED**

**2015 Frozen Water Services – Financing and  
Communications Update**

<b>Date:</b>	June 15, 2015
<b>To:</b>	Public Works and Infrastructure Committee
<b>From:</b>	General Manager, Toronto Water Director, Purchasing and Materials Management Division
<b>Wards:</b>	All Wards
<b>Reference Number:</b>	P:\2015\Clusber B\TW\PWI15013

**SUMMARY**

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Toronto experienced a severe cold weather incident during the first few months of 2015 and as a result there was a significant increase in watermain breaks and frozen water services. The purpose of this report is to: (1) amend the 2015 Toronto Water Operating Budget to provide additional funding to ensure regular business continuity to the end of 2015; (2) seek authority to allocate appropriate funding for Purchase Order Amendments on existing contracts and report on emergency sole source contracts used for repairs; (3) address the shortfall in Contract Services Operating Budget as a result of diverted spending so that contracts can be awarded in 2015; and (4) review communications efforts and next steps for future severe cold weather events.

The report also summarizes the cost impact of the volume increase to permanent restoration work to be carried out by Transportation Services in 2016-2018 as a result of the response to frozen water services in 2015.

**RECOMMENDATIONS**

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The General Manager of Toronto Water and the Director of Purchasing and Materials Management recommend that:

1. City Council amend Contract 47018111 for Repairs of Water and Sewer Connections, Mains and Appurtenances Toronto East York District, Tender 317-2014, with OJCR

Construction Ltd., by an additional amount of \$1,400,000.00 net of all taxes (\$1,506,400.00 net of HST recoveries) revising the current value from \$7,237,700 to \$8,637,700.00 net of all taxes (\$8,789,723.52 net of HST recoveries), subject to approval of Recommendations 5 of this report.

2. City Council amend Contract 47018824 for Repairs of Water and Sewer Connections, Mains and Appurtenances Etobicoke York District, Tender 318-2014, with OJCR Construction Ltd., by an additional amount of \$1,500,000.00 net of all taxes (\$1,526,400.00 net of HST recoveries) revising the current value from \$4,571,175.00 to \$6,071,175.00 net of all taxes (\$6,178,027.68 net of HST recoveries), subject to approval of Recommendations 5 of this report.
3. City Council amend Contract 47018816 for Repairs of Water and Sewer Connections, Mains and Appurtenances North York District, Tender 319-2014, with Finch Paving (1993) Ltd., by an additional amount of \$1,200,000.00 net of all taxes (\$1,221,120.00 net of HST recoveries) revising the current value from \$3,613,050.00 to \$4,813,050.00 net of all taxes (\$4,897,759.68 net of HST recoveries), subject to approval of Recommendation 5 of this report.
4. City Council amend Contract 47018992 for Repairs of Water and Sewer Connections, Mains and Appurtenances Scarborough District, Tender 320-2014, with Vipe Construction Ltd, by an additional amount of \$1,300,000.00 net of all taxes (\$1,322,880.00 net of HST recoveries) revising the current value from \$3,647,000.00 to \$4,947,000.00 net of all taxes (\$5,034,067.20 net of HST recoveries), subject to approval of Recommendations 5 of this report.
5. City Council amend the 2015 Operating Budget for Toronto Water with an increase to Contracted Services of \$14,600,000 and a corresponding reduction to the 2015 budgeted contribution to the Toronto Water Capital Reserve.
6. City Council direct the General Manager, Toronto Water to include for consideration as part of the 2016 Budget Process, any additional funding required in 2016 and future years resulting from the impact of the extreme cold weather.

## **Financial Impact**

The four (4) contract amendment requests included in this report will increase the total contract values for all contracts combined by \$5,400,000 net of all taxes (\$5,495,040 net of HST Recoveries).

The 2015 Approved Operating Budget includes an estimate of \$12,942,000 for Contracted Services related to the general repair and maintenance of linear infrastructure. Toronto Water has issued \$27,542,000 in purchase order commitments for the 2015 calendar year. The recommended 2015 budget adjustment to ensure funds available can be summarized as follows:

**Table 1 – 2015 Summary of Budget Adjustment**

Contract Amendments – Use of existing contracts for emergency	\$5,495,040
Sole Source Awards – Emergency contracts issued	\$3,000,000
Additional volume and inflation on annual contracts	\$6,104,960
<b>Total Forecasted Overspending:</b>	<b>\$14,600,000</b>

The 2015 Approved Operating Budget for Toronto Water does not include sufficient funding for the additional requirements related to unanticipated repair, excavation and restoration work not previously foreseen and resulting from the extreme cold weather during the winter of 2015.

In addition to the repairs, there will be a need for permanent restoration of approximately 1,000 excavations resulting from those repairs. It is estimated that this represents an additional financial impact of approximately \$3,000,000 to be incurred over the next three years, starting in 2016. Funding requirements for the permanent restoration of excavations as well as any other work resulting from the extreme winter weather conditions experienced in 2015 will be included for consideration as part of the 2016 Budget process.

The Deputy City Manager & Chief Financial Officer has reviewed this report and agrees with the financial impact information.

## **DECISION HISTORY**

On December 18, December 23, 2014 and February 11, 2015, by authority of Bid Committee, Contracts 47018824, 47018111, 47018816 and 47018992 respectively were awarded to three (3) vendors for the Repairs of Water and Sewer Connections, Mains and Appurtenances in each of the four districts. Each contract was issued to cover the period from January 1, 2014 to December 31, 2014, with one (1) additional option year.

The following are the links to the Bid Committee approvals:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.BD3.6>

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.BD4.2>

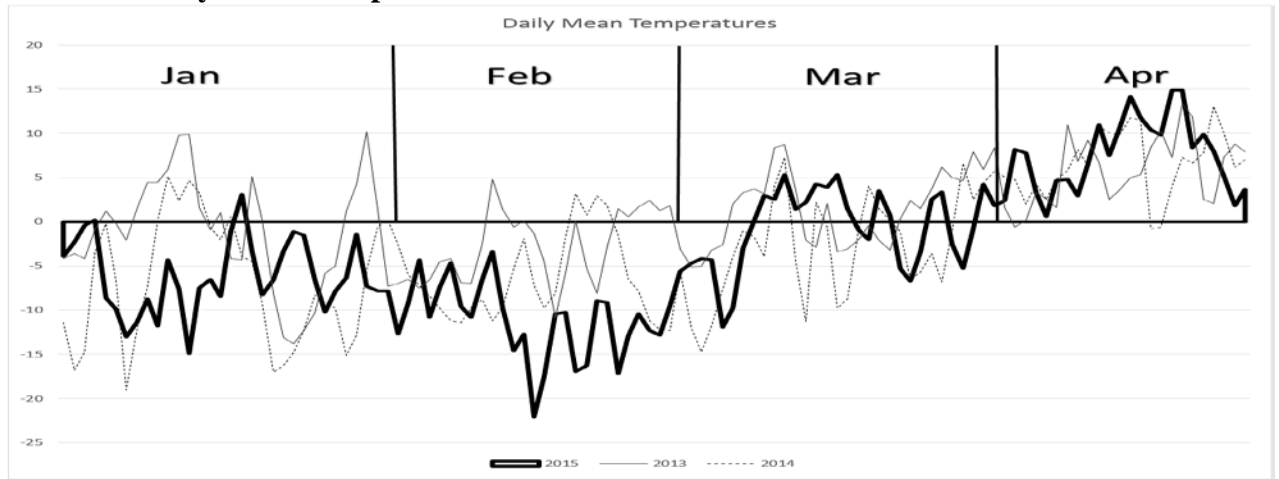
<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.BD4.3>

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.BD12.8>

## **ISSUE BACKGROUND**

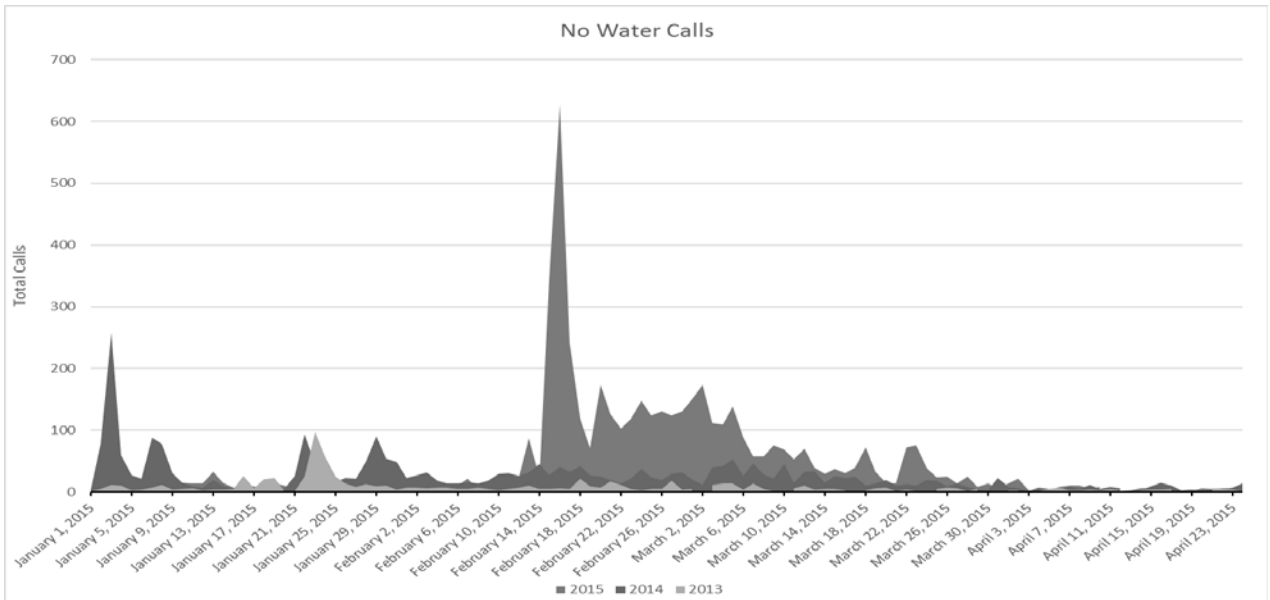
The 2015 winter was extremely challenging as the severe cold weather lasted for many weeks without a day above the freezing mark (see Chart 1). The Daily Mean Temperature for Toronto was below the freezing mark from the third week of January until after the first week of March.

**Chart 1 – Daily Mean Temperatures**



In mid-February 2015, the City of Toronto experienced a significant and sustained drop in temperature that caused private internal plumbing and the City-side and private-side water services to freeze. Over a three-day period, from February 14 to February 16, the severe winter weather resulted in approximately 1,200 'no water' service calls being received by 311 and subsequently directed to Toronto Water (see Chart 2 below). Additionally, after the initial spike, the cold weather continued through February and March freezing many more water services.

**Chart 2 – No Water Calls**



As seen in Chart 2, there was also a severe cold weather incident in 2014 however it differed in that there was no significant spike in calls over a short period of time. While the winter of 2014 was very challenging for residents and staff operationally the incident was more manageable as there was a gradual stream of calls for staff and contractors to address.

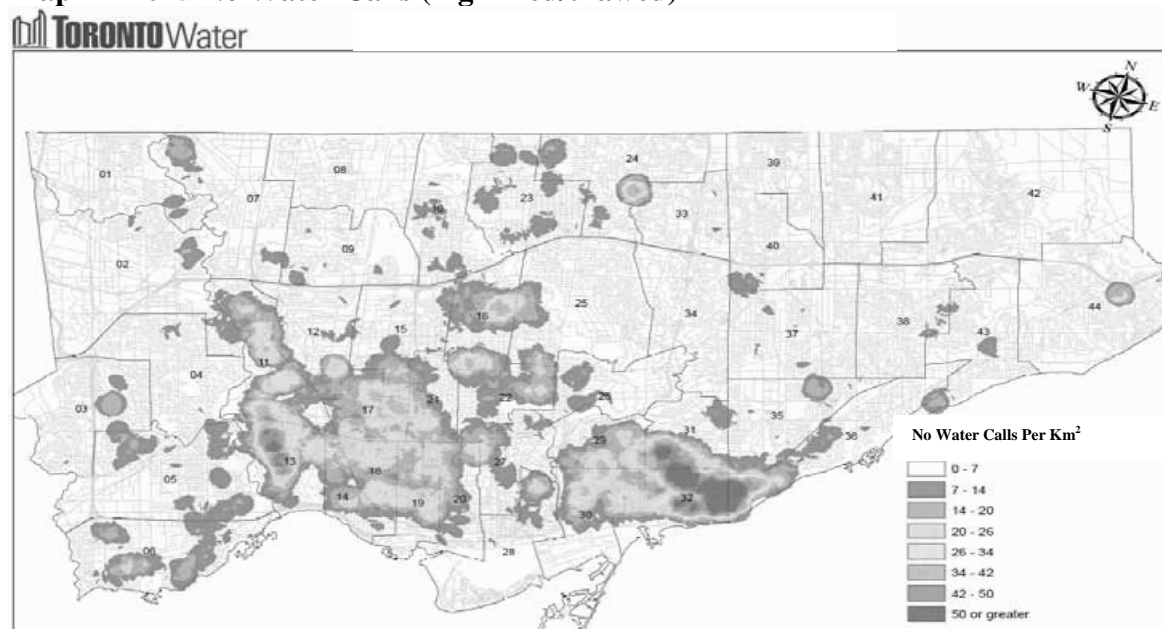
As noted in Table 2 below, at the same time as Toronto Water was responding to an unprecedented number of frozen water services, the number of watermain breaks and service leaks were also growing rapidly, requiring triaging and emergency response.

**Table 2 - Repairs Completed by Toronto Water and Contractors (first quarter)**

Activity	Q1 – 2012	Q1 – 2013	Q1 - 2014	Q1 - 2015
Watermain Break Repairs	342	672	1008	1041
Water Service Leak Repairs/Replacements	376	415	1041	591
Frozen Water Service Repairs/Replacement	2	7	558	914
<b>TOTAL</b>	<b>720</b>	<b>1094</b>	<b>2607</b>	<b>2546</b>

Map 1 below shows the areas of the city where we received the largest number of 'no water' calls. Frozen water services appear to be concentrated in the older areas of the city.

**Map 1 – 2015 No Water Calls (highlined/thawed)**



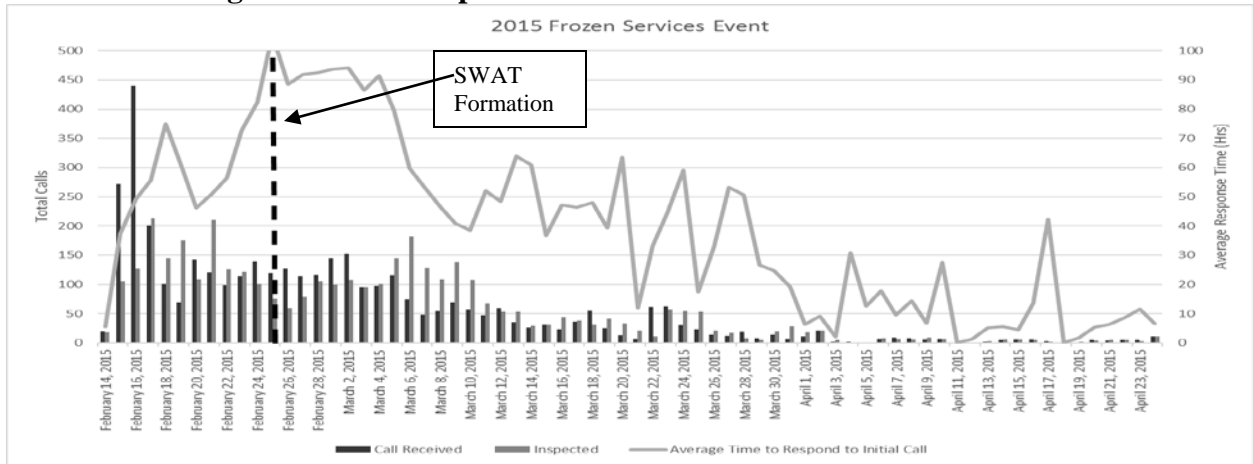
**Customer Response Impact – No Water Calls**

The Toronto Water customer service standard response time for a 'no water' calls during normal operations is four hours. After the February 14-16, 2015 surge in 'no water' calls, the service standard during the first week was extremely unpredictable. Each service call required staff to spend 30 minutes or more at each property working with the resident to identify the problem. Every property had unique challenges and the time required to inspect, determine the cause and determine next steps varied greatly.

As the first week was coming to an end and even with additional resources in the field the ability to respond to calls was not improving. Customer service requests continued and the time required at each property challenged staff to provide accurate response times (see Chart 2 below). Another significant challenge was the initial lack of capacity to call

residents back and advise them of the challenges Toronto Water was facing in providing timely response to investigate the 'no water' call and provide updates on service status.

**Chart 2 – Average Customer Response Time**



The number of 'no water' calls remained high for several weeks due to the long-term severe cold weather. The average time to respond to customer calls did not improve until after the formation of the Frozen Water SWAT Team on February 26, 2015. Both Toronto Water and 311 mobilized additional staff resources and created a dedicated response team that worked together for several weeks until water service was restored to all residents. The goal of the SWAT Team was to dedicate additional staff resources to the customer response challenges faced by Toronto Water and 311 and therefore improve coordination of work and communications between staff and residents.

Table 3 shows the high volume of 'no water' service calls received in 2015 (4,517 from February 14 to April 24, 2015) compared with previous years – both thawing work orders and highlining services for residents nearly tripled in comparison to 2014.

**Table 3 – 2013 to 2015 Comparison of Requests/Response**

Category	January 1 to April 24, 2013	January 1 to April 15, 2014	February 14 to April 24, 2015
No Water Service Requests	809	2709	4517
Thaw Work Orders	7	577	1680
Properties Highlined	0	323	928
Properties Not Highlined	7	254	752
Properties Thawed	0	558	914
Properties Frozen in 2014 and 2015 (water services)			116

A summary of challenges that increased customer service response times includes:

- **Substantial call volumes:** The volume of calls and wait time for residents resulted in significant delays in assessment and coordination for next steps.

- Determining the location of the frozen pipe: Many homes experienced freezing of private internal plumbing and/or freezing of underground water services (private property and on City property).
- Coordinating/installing of temporary water service: Many homes were provided temporary water from a neighbouring home using a “highline” hose. This process could be challenging as it was necessary to gain agreement from the neighbour prior to installing a highline and the subsequent installation of the specialized hose. Also, return visits were often required to replace frozen highline hoses.
- Thawing underground frozen water services: Homes that could not be highlined were excavated at the property line and special thawing equipment was used to thaw the frozen pipe. Thawing each home could take several hours. In addition, the number of homes that could be thawed each day was limited by the number of thawing machines that could be obtained.
- Prioritizing vulnerable residents: There was a need to escalate a number of customer service responses ahead of other residents due to health issues and seniors living alone. In some cases staff would remain with residents who were particularly distressed until a solution was found.

## COMMENTS

### Toronto Water Contract Awards

Toronto Water annually issues four contracts to provide services for sewer main repairs/drain repair and replacement, broken watermains and leaking water services, as the need arises, to supplement operational staff resources. These contracts are intended to meet service needs throughout the entire year. However, to respond to the extreme cold weather, these contracts were used extensively in the winter of 2015 to thaw frozen water services. Table 4 below shows a comparison of work completed by these contractors for the first quarter time period over the past four years. As shown in Table 4, there were 1,332 repairs completed in the first quarter of 2015 by contractors for an increase of 57% year over year.

**Table 4 - Repairs Completed by Contractors (first quarter)**

Activity	Q1 – 2012	Q1 – 2013	Q1 - 2014	Q1 – 2015
Watermain Break Repairs	3	18	69	108
Water Service Leak Repairs/Replacements	119	60	223	310
Frozen Water Service Repairs/Replacement	0	0	558	914
<b>TOTAL</b>	<b>122</b>	<b>78</b>	<b>850</b>	<b>1332</b>

While more operational resources were being put in place during the first week after the spike in 'no water' calls and the use of existing contracts increased substantially, there was also a further need to engage additional contractors on a sole source basis to assist with thawing and repair efforts.

### Toronto Water Sole Sources Contracts

To meet customer needs as well as the demand for emergency response to repair watermain breaks, leaking water services and frozen water services, Toronto Water issued five sole source contracts as follows in Table 5:

**Table 5 – Sole Source Contracts Issued to Support 2015 Winter Pressures**

<b>Vendor</b>	<b>Purchase Order</b>	<b>Purchase Order Value</b>	<b>Description of Service Sole Sourced</b>	<b>Expenditures</b>
QX Locates SS#8591	6041101	\$100,000	Provide dedicated locate services 24 hrs/7 days a week for watermain repairs; water service leaks and frozen water services as needed.	\$90,367.84
Fer-Pal Construction SS#8587	6041106	\$400,000	Provide emergency response services for the assessment of 'no water' calls and rental of highline hoses to provide temporary water supply to properties confirmed to be frozen.	\$350,384.82
Fer-Pal Construction SS#8588	6041109	\$1,000,000	To carry out emergency water service thawing.	\$451,164.95
Co-X-Co SS#8589	6041103	\$250,000	To carry out emergency watermain and water service leak system repairs.	\$229,014.93
Rabcon Contractors SS#8590	6041102	\$1,200,000	To carry out emergency watermain and water service leak system repairs and emergency water service thawing.	\$899,513.86
<b>TOTAL</b>				<b>\$2,020,446.40</b>

Actual expenditure net of all taxes

### Toronto Water Budget Amendment

Toronto Water District Operations issues over 20 Request for Quotations and Tenders each year to support the routine repair and maintenance of linear infrastructure. These services include: (a) the repair of water and sewer connections, mains and appurtenances, water service curb box (shut off valves); (b) temporary restoration of all excavations; (c) the repair and calibration of various testing equipment and small engines; (d) road saw cutting services; (e) excavation services; (f) grass cutting services; (g) water service leak detection; (h) catch basin cleaning; and (i) fill removal (disposal of excavated materials).



In each of the years 2013, 2014 and 2015, Toronto Water has experienced unprecedented extreme cold weather events which have resulted in significant additional costs and emergency purchase orders. To mitigate these costs, Toronto Water has reviewed the annual maintenance program for linear infrastructure and has identified additional preventative work that can be completed to improve infrastructure resiliency and potentially minimize service disruptions during these extreme weather occurrences.

Costs associated with this additional work have been included in the requested amendments herein.

An additional \$6,104,960 is needed to accommodate the increased volumes and an increase in overall bid pricing of approximately 20% on most tenders and quotations issued or renewed in 2015. This has resulted in a shortfall of appropriate funding for the award of these tenders and quotations.

As a result of these significant pressures, Toronto Water is requesting a total budget increase of \$14,600,000 to the 2015 Toronto Water Operating Budget for contracted services. The increase includes a one-time adjustment of \$6,200,000 to cover the contract service costs associated with the frozen water service response. The remaining \$8,400,000 represents recurring costs needed to maintain the current service level and will be included in the 2016 Operating Budget Submission.

The amendments and budget adjustment requested in this report represent the estimated funds required to adjust the District Operations 2015 Operating Budget and to carry the division through to the end of the current contracts, December 31, 2015, based on historic needs. The amendments will ensure business continuity through to the end of 2015.

### **Frozen Water SWAT Team**

The Frozen Water SWAT Team was comprised of staff from Toronto Water and 311. They began work on February 26, 2015 in response to the overwhelming number of 'no water' calls to 311 during the extreme cold weather event throughout February and into early March.

The core functions of the SWAT included:

- responding to **inbound** calls to the new No Water Hotline
- answering customer questions regarding the status of service requests
- scheduling appointments for inspections and highlines
- triaging and escalating inquiries for urgent highline and thaw schedule/appointments (i.e. medical in nature)
- initiating **outbound** calls to customers to schedule appointments for initial inspections/highlines
- call-back to vulnerable customers to confirm appointments
- courtesy calls 24 hours in advance to remind residents of inspection/highline appointment
- follow-up calls to acquire more information on a customer's file
- relaying requests for bottled water to the Bottled Water Team
- administrative support (security access, parking, supplies, access to rooms, etc.).

In the first eleven days from February 26 to March 8 the total incoming calls to the No Water Hotline was approximately 4,300; the average call handle time was six minutes; total outbound calls were approximately 3,500 and the average call time was three minutes. For outbound calls an average of 110 appointments were scheduled daily totaling approximately 1,210 appointment booking.

Please see Tables 6 and 7 below for the total SWAT calls by appointments type and the total number of incoming and outbound calls from February 26 until May 4.

**Table 6 SWAT Calls by Appointment Type**

<b>February 26 – May 4, 2015</b>	<b>TOTAL</b>
Initial Inspection/Highline Connection	1707
Highline Pickups	457
Pre-Thaw Inspections	268
<b>TOTAL APPOINTMENTS</b>	<b>2432</b>

**Table 7 SWAT Calls (Incoming/Outbound)**

<b>February 26 – May 4, 2015</b>	<b>TOTAL</b>
Incoming Calls	9260
Outbound Calls	7859
<b>TOTAL CALLS</b>	<b>17119</b>

In addition to the inbound and outbound calls, SWAT established an escalation group to deal with complex customer service issues, respond to requests from Councillors and staff and to work directly with Toronto Water to schedule escalated cases. In total, approximately 24 staff supported SWAT and managed the incoming, outbound and escalated calls.

**Estimated Total Cost of Extreme Winter Event 2015**

Table 8 summarizes the estimated cost associated with the customer service response, site investigations, thawing frozen water services and the anticipated cost to permanently restore excavated areas as a result of the thawing process:

**Table 8 – 311/SWAT/First Response/Water Service Thawing (includes overtime)**

<b>Service</b>	<b>Description</b>	<b>Costs</b>
311	Initial intake of calls	\$90,382.97
Toronto Water SWAT	Toronto Water call centre established for inbound, outbound and escalated customer service response	\$171,710.33
Toronto Water No Water Investigations	First response to all 'no water' calls includes site investigations and set up of all temporary "highline" connections.	\$497,189.15
Water Service Thawing	Contracted costs associated with emergency response and thawing of frozen water services.	\$6,199,152.66

<b>SUB-TOTAL</b>		<b>\$6,958,435.11</b>
Transportation IDC	Permanent restoration	\$3,00,0000.00
<b>TOTAL</b>		<b>\$9,958,435.11</b>

\*\* Projected expenditure net of all taxes

Thawing water services resulted in 914 excavations that will require permanent restoration by Transportation Services. It is estimated that this represents an additional financial impact of approximately \$3,000,000 and these costs will be included for consideration as part of the 2016 Toronto Water Operating Budget Submission.

### **Communication and Public Education**

Toronto Water annually provides winter-wise water tips to residents including information on insulating pipes and draining outside taps prior to the first freeze. Starting in November this information is provided to residents in a variety of ways including the utility bill, Toronto City Update (e-newsletter), social media and on the website, including a dedicated webpage explaining how to prevent and thaw frozen pipes.

In early February, Toronto Water staff were concerned about a cold weather trend and initiated a media release on February 13 advising residents how to prevent/thaw frozen water services and how to report watermain breaks. From February 20 to March 4 the following media relations and public education activities took place:

- four media releases were sent out;
- three media events were held;
- approximately 57 media requests were responded to;
- four status updates were shared with Councillor's offices
- individual calls from Councillor's offices were responded to by a range of City staff; and
- frozen pipe prevention tips were shared with residents through 311 and the City's twitter feed from February 13 to March 5.

Service delay messages were also placed on the 311 phone line starting on February 15. Throughout February, March and April a range of communication tools were shared with 311, SWAT and front line staff to provide residents with a consistent message. This included updates to the knowledge base, detailed questions and answers and call scripts for 311.

There were also a range of customer service letters distributed by staff to residents that provided tips on how thaw frozen pipes inside the home. For residents with frozen pipes outside the home letters were provided that explained highlining, the thawing process, and utility bill adjustments.

### **Improving Preparedness and Response Time**

The winters of 2014 and 2015 were unprecedented severe weather incidents. To better prepare staff and residents for extreme cold weather events, planning is underway on the following activities:

***(a) Communications Plan***

In early fall, an enhanced extensive public education campaign will be disseminated advising homeowners on the need to protect internal plumbing in advance of severe cold weather. In addition, direct communication will be provided for two groups:

- Properties with a history of frozen services on the City-side: Advise homeowners to run a small trickle of water and adjust water bills to normal consumption pattern. Estimate is approximately \$100 per month (more affordable than thawing water services and permanent restoration). As well, provide enhanced public education on preventing frozen pipes inside the home.
- Properties with a history of frozen services on the private-side outside the building wall: Notify property owners to consider replacing or lowering their private service. As well, provide enhanced public education on preventing frozen pipes inside the home.

***(b) Contact Centre Coordination***

The success of the Frozen Water SWAT Team demonstrated that a different operational model is needed to manage a surge in call volumes both in Toronto Water and 311 during complex and lengthy severe weather incidents. To ensure that capacity is in place to manage significant increases in call volumes during large-scale events, Toronto Water will need to review its operational structure and consider the merits of creating a customer care centre that would provide a central intake point for customer service after a call is received from 311. In addition, Toronto Water will consult with 311 to pursue upgrades to customer service communications systems to provide a more integrated and seamless customer service experience. As well, since the frozen water service incident in February several debrief meetings have been held with 311 and Toronto Water and below are some of the outcomes currently being reviewed:

- The need to identify a trigger that would activate a SWAT.
- During a surge in calls and throughout an incident ensure staff have the ability to not only respond to calls, but also make outbound calls to residents including pro-actively to Councillors in a coordinated and managed way.
- The need for documented processes and procedures for inbound call takers, outbound call takers, escalation group, data management staff, field staff and contractors.
- Regular updates of information tools such as the 311 wiki that provides steps and terminology related to the incident.
- The ability to have in place at all times a core group of staff who can be temporarily assigned to provide SWAT support to Toronto Water operations and residents during a critical event.

***(c) Infrastructure Review***

Toronto Water is reviewing a number of properties that are known to have had frozen services on the City-side and will consider replacement of the water service if it is known to be substandard (above the standard 1.8 metre depth). In some cases, where there are a cluster of frozen water service complaints (consecutive properties on one watermain

segment), there may be a need to investigate if lowering the watermain and water services would help to address the issue. In these cases, the final solution will take several years to implement.

*(d) Additional Contingency Service Contract Provisions*

Toronto Water is reviewing the service contracts that it issues for tender on an annual basis to better prepare for frozen water service requests. Amendments to the scope of work provided by contractors and the amount of money budgeted for winter service repair will be reviewed and included as part of the 2016 budget process.

**CONTACT**

Allison Phillips  
Manager  
Purchasing and Materials Management  
416-397-4801  
[aphilli2@toronto.ca](mailto:aphilli2@toronto.ca)

Jacque Breen  
Manager  
Purchasing and Materials Management  
416-392-0386  
[jbreen@toronto.ca](mailto:jbreen@toronto.ca)

Paul Clements  
Director, District Operations (Acting)  
Toronto Water  
416-395-6248  
[pclement@toronot.ca](mailto:pclement@toronot.ca)

**SIGNATURE**

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Michael Pacholok  
Director  
Purchasing and Materials Management

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Lou Di Gironimo  
General Manager  
Toronto Water