

## **Winter Control Update - December 2019**

### **Background**

The City of Greater Sudbury's winter maintenance service levels are defined in Council approved winter control service policies as well as guidelines within the Minimum Maintenance Standards (MMS), O.Reg. 239-02. Each winter season presents various challenges. For example, significant snow accumulation with minimal melting throughout the season, snow events with mixed precipitation or freezing rain, as well as repetitive freeze thaw cycles that result in increased activity levels in snow removal, snow plowing, and pothole patching.

### **Weather Statistics**

From October to end of December 2019 there has been four major snow events and 3 rain/freezing rain events that has required full deployment of all available City and Contractor snow plowing equipment. Table 1 highlights the statistical information for the 2019 winter season from Environment Canada. Included is the 30 year normal (1981 – 2010) for snowfall for the same months. The total accumulation for the 2019-2020 winter season, up to and including December 2019, is 4.7 feet or 1.43 meters compared to the 30 year normal of 3.2 feet or 0.98 meters. This represents a 46% increase. The annual snow total for the 2019 calendar year is 13.7 feet or 4.17 meters. The 30 year normal for the same period is 7.11 feet or 2.63 meters. This represents a 59.4% increase. Another significant difference seen so far this winter season (season 2019-2020) as compared to the 2018-2019 season is extreme temperature fluctuations above and below freezing, causing melting or freezing periods. While this helps reduce the height of the snowbanks, minimizing sightline issues and snow removal requirements, it causes an increase in maintenance activities for drain opening, sidewalk plowing and sanding, as well as additional plowing and road scraping with a graders and ice blade.

**Table 1 – Weather Statistics**

Month	Snow Accumulation (CMs)	30 Year Normal (CMs)	Percentage Increase/(Decrease) Compared to 30 Year Normal (%)	Snow Event	Rain/Freezing Rain Event
Jan	100.6	59.5	69.1%	4	1
Feb	101.2	51.7	95.7%	5	3
Mar	42.5	34.9	21.8%	1	1
Apr	18.1	16.9	7.1%	-	-
May	12	1.9	531.6%	-	-
Jun-Sep	-	-	0.0%	-	-
Oct	19.4	5.7	240.4%	-	-
Nov	80.8	29.6	173.0%	3	1
Dec	42.5	63.0	-32.5%	1	2
Totals	417.1	261.6	59.4%	14	8

Note: All weather data taken from Environment Canada website for weather station Sudbury A.

## Winter Control Service Categories

### 1) Roadway Snow Plowing/Sanding/Salting

Includes work activities such as plowing, sanding, salting, anti-icing roads and winter stockpile management.

#### Status Update

For the December 2019 reporting period there was one major snow storm and two rain/freezing rain events coupled with several melting periods that has resulted in an increase in plowing/sanding/salting roadways.

#### Challenges

Extreme Temperature Fluctuations – Through the month of December temperatures fluctuated by 26.1 degrees, with the high temperatures approaching zero. These warmer temperatures cause the packed snow on the roads to melt, and to become soft and “mealy”. When vehicles drive through this soft snow, it creates irregularities and deviations in the surface. This requires additional plowing/sanding/salting to keep the roads traversable for vehicles. This activity must be completed before the colder temperatures set in and freeze the soft/mealy snow, freezing the significant irregularities and deviations in the surface of the roadway. The above average snow accumulation seen in November combined with the weather we experienced in December has made this activity particularly challenging as there is deeper snow pack on the roads so

these deviations and irregularities can be very deep, creating significant rutting. Once the snow pack re-freezes, correcting these issues with a snowplow is limited and graders with ice blades are required to scrape the iced formations down to a smoother surface.

Rain/Freezing rain – There were two significant freezing rain events during the month of December. Staff initiated full deployment of all equipment as soon as possible to ensure that all main roads were addressed and to sand the snow packed residential roads that can become slippery under these conditions. Because of the geographical distance and length of road network, meeting public expectations on these residential roads in a freezing rain event is a challenge.

## **2) Snow Removal**

Includes work activities such as bus stop clearing, snow removal with loaders, snow dump operation and snowbank removal in the downtown centres.

### Status Update

Snow removal requirements have been minimal through the month of December. In 2019 Council approved an increase in the snow removal budget of \$43,000 for the downtown core. In consultation with the Downtown BIA, and to enhance snowbank removal services, contract services were utilized to remove portions, or “cut-outs” of the snowbanks around high traffic parking stations in the downtown core as well as full snowbank removal along the on-street parking on the south side of Elm Street. This will be completed throughout the season on an “as needed” basis, approximately one occurrence per month, coordinated with the downtown full snow removal efforts. This activity provides residents better access to parking stations from on-street parking locations and will be re-evaluated at the end of the season for its effectiveness.

### Challenges

Public expectation – When utilizing on-street parking, residents and downtown local businesses have expressed that they want to have the snowbanks removed more often. The current service level is for snow removal at intersections to improve sightlines, for widening when snowbanks impede the ability for a vehicle to pass safely, at select bus stops and in front of churches at Christmas.

## **3) Winter Sidewalk Maintenance**

Includes work activities such as sidewalk plowing and sanding.

### Status Update

For the December 2019 reporting period there was one major snow storm and two rain/freezing rain events coupled with several melting periods that has resulted in an increase in sidewalk maintenance.

### Challenges

Extreme Temperature Fluctuations – Through the month of December temperatures fluctuated by 26.1 degrees, with the high temperatures approaching zero. These warmer temperatures cause the packed snow on the sidewalks to melt and to become soft and “mealy”. When pedestrian traffic travels through this soft snow, it creates irregularities and deviations in the surface. This requires additional sidewalk plowing to keep the sidewalks traversable. This activity must be completed before the colder temperatures set in and freeze the soft/mealy snow. The above average snow accumulation seen in November has made this activity particularly challenging as there is deeper snow pack on the sidewalks so these deviations and irregularities can be very deep, creating significant rutting. This causes a particular challenge on sidewalks, as the availability of equipment to remove the surface irregularities once the melted snow has frozen again is limited.

#### **4) Roadway Snow Plowing with Graders/Loaders/4x4s**

Includes work activities such as snow plowing with graders, 4x4s and loaders, municipal parking lot maintenance and snow fence maintenance.

### Status Update

From the beginning of Winter 2019/2020 until the end of December, staff have addressed four major snow storms. In addition to the snow events, the melting periods that have caused the snow on roads and sidewalks to melt, caused irregularities in the surface and requires additional plowing or scraping with graders equipped with ice blades to keep the roads traversable and smooth for vehicular traffic. A typical winter, staff do not have to complete the amount of road scraping that has been seen to date.

### Challenges

Contractor availability – When this activity is required and there are extreme temperature fluctuations, this work must be performed quickly. Because of these conditions, additional graders are secured from Contractors. Graders, equipped with ice blades are specialized equipment, and not always readily available as Contractors have other priorities and contracts to fulfill.

Timing and Public Expectations - Road scraping with a grader equipped with an ice blade is a slow task involving multiple passes with a grader. With each pass, the grader removes a small layer of ice. This method removes the ice as small shards to the edge of

the road, and minimizes the creation of large ice chunks that require the City to pick up with a loader. In the month of December, there was a 249% increase in 311 calls regarding snow plowing, including ice blading, as compared to the average amount of calls in December between 2015-2018. With the limited amount of graders available, the length of road network requiring this activity and the slow nature of the work, meeting public expectations remains a challenge.

### **5) Winter Ditching/Spring Clean Up**

Includes work activities such as winter ditch maintenance and spring clean up with sweepers/flushers on roads and sidewalks.

#### Status Update

There has been no winter ditching/spring clean up during this reporting period. Minor drainage activities have been completed during melting periods.

#### Challenges

No significant challenges in this reporting period.

### **6) Miscellaneous Winter Maintenance**

Includes work activities such as property restoration (plow damage), pothole patching, winter road patrol, employee standby, equipment standby, health and safety training (snow school), fringe benefits and tool repairs.

#### Status Update

Pothole patching is the only maintenance activity that has been completed under this category during this reporting period. In the summer of 2019 the City completed a significant large patching program which is anticipated to mitigate pothole patching. Over the coming months, staff will continue to monitor this program closely to ensure the 2020 large patching program addresses the areas of greatest concern.

#### Challenges

The extreme temperature fluctuations resulted in an increase in freeze thaw cycles, increasing pothole patching requirements. City and Contracting crews are deployed, as required, to address this issue.

## Financials

This report provides the estimated financial results of the 2019 winter roads operations for the City's fiscal year between January and December 2019. As depicted in Table 2 below, the estimated result for 2019 is an over expenditure of approximately \$6.1 million. The actual year end result may differ from these estimates as certain estimates were necessary to account for outstanding invoices. The actual deficit will be communicated as part of the 2019 Operating Budget Variance Report that will be presented in Q2 2020. The winter control deficit will form part of the year-end position.

**Table 2 – Financial Results**

<b>2019 Winter Summary</b>					
<b>As at December 31, 2019</b>					
	Annual	2019 YTD			% Change YTD
	Budget	Budget	Actual	Variance	
<b>Snow Plowing/Sanding/Salting</b>	7,325,549	7,325,549	8,833,982	<b>(1,508,433)</b>	121%
<b>Snow Removal</b>	699,111	699,111	2,631,431	<b>(1,932,320)</b>	376%
<b>Winter Sidewalk Maintenance</b>	1,069,080	1,069,080	1,242,502	<b>(173,422)</b>	116%
<b>Snow Plowing - Graders/Loaders/4x4s</b>	794,962	794,962	1,847,228	<b>(1,052,266)</b>	232%
<b>Winter Ditching/Spring Clean Up</b>	2,036,020	2,036,020	2,982,196	<b>(946,176)</b>	146%
<b>Miscellaneous Winter Maintenance</b>	6,736,505	6,736,505	7,241,290	<b>(504,786)</b>	107%
<b>Totals</b>	18,661,226	18,661,226	24,778,629	<b>(6,117,403)</b>	133%

**Table 3 – Miscellaneous Winter Maintenance Budget Breakdown**

<b>2019 Miscellaneous Winter Maintenance</b>	
<b>Expense Type</b>	<b>Annual Budget (millions \$)</b>
Employee Benefits	1.47
Asphalt Patching	1.02
Internal Recoveries (HR, Finance, IT)	0.74
Standby (Contractor Services)	0.72
Health & Safety	0.17
Other (Road Patrol, Emergency Response, Tool Repair, Property Restoration, etc.)	0.55
Administration & Supervision	2.08
<b>Total</b>	<b>\$ 6.74</b>

**Table 4 – 2019/2020 Winter Season Financial Summary**

<b>2019/2020 Winter Season Summary</b> <b>October to December, 2019</b>			
	<b>Season Budget</b>	<b>Season Actual</b>	<b>Variance</b>
<b>Snow Plowing/Sanding/Salting</b>	2,498,570	3,617,453	<b>(1,118,883)</b>
<b>Snow Removal</b>	229,171	160,088	<b>69,083</b>
<b>Winter Sidewalk Maintenance</b>	374,178	460,030	<b>(85,852)</b>
<b>Snow Plowing - Graders/Loaders/4x4s</b>	216,185	608,078	<b>(391,894)</b>
<b>Winter Ditching/Spring Clean Up</b>	23,397	114,059	<b>(90,662)</b>
<b>Miscellaneous Winter Maintenance</b>	2,206,789	1,959,960	<b>246,828</b>
<b>Totals</b>	<b>5,548,289</b>	<b>6,919,669</b>	<b>(1,371,380)</b>