

# **Report to Committee**

| То:   | Public Works and Transportation Committee                    | Date: | October 14, 2021  |
|-------|--|-------|-------------------|
| From: | Suzanne Bycraft<br>Interim Director, Public Works Operations | File: | 10-6000-00/Vol 01 |
| Re:   | Update on 2021/2022 Snow and Ice Response Preparations       |       |                   |

## Staff Recommendation

That the staff report titled "Update on 2021/2022 Snow and Ice Response Preparations", dated October 14, 2021, from the Interim Director, Public Works Operations, be received for information.

Suzanne Bycraft Interim Director, Public Works Operations (604-233-3338)

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| REPORT CONCURRENCE               |             |                                |  |  |
|----------------------------------|-------------|--------------------------------|--|--|
| ROUTED TO:                       | CONCURRENCE | CONCURRENCE OF GENERAL MANAGER |  |  |
| Communications<br>Parks Services | $\square$   | - Jh hing-                     |  |  |
| SENIOR STAFF REPORT REVIEW       | INITIALS:   | APPROVED BY CAO                |  |  |

### **Staff Report**

#### Origin

Council Policy 7013 "Roadways – Ice and Snow Removal" establishes the City's activation and response priorities for treatment of specified roadways to provide safe winter driving conditions during adverse weather based on first priority (major arterials, section line roads and bus routes), second priority (major collector roads) and third priority (subdivision interior collector roads) routes.

To ensure operational readiness, Public Works Operations undertakes a number of measures to adequately prepare staff and equipment resources in order to activate the City's response. This report provides information about the City's 2021/2022 snow and ice preparations. Information is also provided concerning anticipated weather patterns, as well as a summary of the 2020/2021 winter season activities.

This report supports Council's Strategic Plan 2018-2022 Strategy #1 A Safe and Resilient City:

1.2 Future-proof and maintain city infrastructure to keep the community safe.

#### Analysis

#### Background

Richmond's geography often results in specific and variable weather patterns that differ considerably from other Metro Vancouver cities. Our coastal environment makes Richmond more susceptible to fog and frost and the weather across Lulu and Sea Islands can vary significantly by area and change quickly. During the winter season, staff are required to continually monitor conditions of the entire area to ensure a speedy and appropriate response, and provide safe roadways to the travelling public.

#### **Operational Preparations**

Operational preparations for the upcoming winter began in mid-September including equipment overhauls, equipment training for staff and meetings to coordinate efforts amongst departments.

The City of Richmond's salt supplies have been secured for the upcoming winter season. There are currently 1,050 metric tonnes available under contract and an additional 2,200 metric tonnes on reserve.

During an event, staff in a centralized control centre closely monitor and record equipment locations, salt distribution and route start and completion times. The automatic vehicle location system using GPS allows staff to monitor vehicle movements in order that staff can respond accurately to enquiries and claims, and to better track expenditures that can be used to forecast costs for future events.

The City has over 45 pieces of equipment available for snow response (Attachment 1). Eight vehicles are outfitted with brine tanks to perform road pre-treatment to prevent frost or ice from

forming on the asphalt roads and to respond during a snow event. The use of brine stretches the salt used for 1 kilometer of roadway with traditional salters to cover 4.3 kilometres of roadway. This has environmental benefits in helping to reduce the overall amount of salt used. Brine making/storage capacity increased last year from 69,000 litres to 115,000 litres. During a snow event, two one-tonne dump trucks with insert salters in addition to three one-tonnes with brine tanks allow treatment of the designated collector roads and roads of local significance in residential subdivisions as part of the third priority routes. This allows the tandem salters and plows to remain focussed on maintaining first and second priority routes.

Road temperature sensors at eight specific locations that are monitored 24-hours a day by the City's Public Works Dispatcher provide early indications of potential road frost or freezing conditions. Each road temperature sensor is strategically located under roadway asphalt throughout the City to provide real time information concerning road conditions. Additional information such as ambient air temperature, humidity, wind speed, rain gauge and road friction/traction are available at several locations. Effective November 1, 2021, sensor locations illustrated in Attachment 2 and public viewing of these road temperature sensors will be available through the City's website at <u>www.richmond.ca/services/rdws/weather/roadtemps.htm</u>. Information on this website will be updated for the public every 30 minutes.

#### Community Involvement

Public involvement within the community is vital during the winter season. The City works jointly with the public and participating community associations on the following two programs:

- Snow Angels Program: This program was introduced in 2010 and connects volunteers with elderly citizens and residents with mobility/health challenges during a snowfall event. Assistance involves shovelling snow from sidewalks and/or walkways. Information on how to enroll in the Snow Angel Program is available on the City's website and can also be obtained by calling Parks, Public Works Dispatch or City Hall. The program is activated in the event of a significant snowfall (defined as an accumulation of 3+ centimetres of snow) and is dependent on the severity of the storm and volunteer resources. The Snow Angels Program is administered by the Parks Programs department and during 2020/2021 winter season registered a record 119 volunteers to look after snow removal for Richmond residents. The program was activated during the February snow event last winter and provided snow removal services to over 40 homes across Richmond.
- **Good Neighbour Program**: This program encourages everyone to clear the walkways around their property and help others who may face challenges. This neighbour-helping-neighbour campaign simply encourages residents to watch for people in their neighbourhood that could use help removing snow from their sidewalks and driveways and offer them a helping hand.

#### Communications Strategy

A comprehensive communication strategy has proven to be valuable in delivering accurate, timely and relevant information to the public. The City's various departments, with the guidance

of Corporate Communications, have established communications protocols and key messaging which reinforce the snow response communications program. Participating departments include Public Works, Parks, Corporate Communications and Marketing, Customer Service, Community Bylaws, Emergency Programs and Richmond Fire-Rescue.

This cross-functional approach ensures each division's important messages are delivered in a coordinated fashion over a variety of the City's communication channels. Pre-determined and circumstantial messaging is delivered before, during and after events, particularly when extreme weather occurs. The communications strategy includes, but is not limited to, using the following channels:

- Social media the City's Twitter, Facebook and Instagram accounts. Posting the City's own messaging as well as sharing information from credible sources, i.e., weather warnings and safety tips;
- Media relations (news releases, media interviews);
- City's website (dedicated web pages, news pages); and
- City's intranet for employees.

#### 2021/2022 Weather Forecast

Richmond-specific weather forecast information is received and monitored daily. The latest long range forecast from the National Oceanic and Atmospheric Administration's (NOAA) Climate Prediction Center predicts the likelihood of a moderate to strong La Niña during the peak November to January season for the second year in a row. La Niña amplifies the polar jet stream, which drives our winter weather and can usher in colder air and more frequent storms. For British Columbia, this typically correlates to above average amounts of precipitation in the winter, increased wind storms and slightly below average to near average temperatures. The Lower Mainland will probably have at least one or two significant snow events with the cooler weather, likely to occur in the second half of the winter (January to March), although it is possible that a cold weather system could cause snow earlier than that. One significant weather variable to consider relates to models predicting a fairly large disruption of the Polar Vortex that could reach record weak values. That means there is a greater chance frigid cold will occasionally spill out of the Arctic bringing intermittent chilling effects throughout the season.

#### 2020/2021 Winter Season Summary

During the past winter season, Richmond experienced 41 frost/ice events and one snow event with a total accumulation of 13 centimetres of snow at YVR. The City pre-treated and/or de-iced 25,860 lane kilometres, and plowed and salted 2,304 lane kilometres of first, second and third priority roads.

#### **Financial Impact**

None. Should there be a severe winter and additional funds required, staff will report back to Council accordingly.

## Conclusion

Preparations for the 2021/2022 snow and ice season are well underway and will be completed in time for the upcoming winter.

Larry Ford Manager, Roads and Construction Services (604-244-1209)

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Att. 1: Snow Response Equipment2: Road Temperature Sensor Locations

| Number of<br>Units | Description   |  |  |  |
|--------------------|---|--|--|--|
| 4                  | Tandem dump trucks with insert and plough attachments                         |  |  |  |
| 3                  | Tandem dump trucks with 5,600 liter brine tank inserts and plough attachments |  |  |  |
| 1                  | Flusher truck (53,000 liter brine capacity)                                   |  |  |  |
| 4                  | Single-axle dump trucks with salt flinks and belly plows                      |  |  |  |
| 1                  | One-tonne flat deck truck with 2,200 liter brine tank insert                  |  |  |  |
| 2                  | One-tonne dump trucks with 2,200 liter brine inserts                          |  |  |  |
| 2                  | One-tonne dump trucks with salt inserts                                       |  |  |  |
| 6                  | F550S with snow plows   |  |  |  |
| 4                  | Mobile snow blowers   |  |  |  |
| 4                  | Backhoes  |  |  |  |
| 2                  | Front-end wheel loader  |  |  |  |
| 2                  | Bobcat skid steers with plow  |  |  |  |
| 3                  | Hydro excavators  |  |  |  |
| 3                  | John Deere Ride-ons with plows  |  |  |  |
| 1                  | Grader  |  |  |  |
| 2                  | Kabota with plow  |  |  |  |
| 1                  | Brine production and handling system  |  |  |  |
| 3                  | Brine applicator inserts  |  |  |  |
| 1,050 tonnes       | Salt  |  |  |  |

## City of Richmond – Snow Response Equipment

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## Attachment 2



## **City of Richmond – Road Temperature Sensor Locations**

#### **Road Temperature Sensors:**

- No. 4 Rd and Alderbridge (Road temperature, rain gauge and road friction)
- Queens North (Road temperature, ambient air temperature, humidity, wind speed/direction and rain gauge)
- No.1 Rd and Steveston (Road temperature, ambient air temperature, humidity, wind speed/direction and rain gauge)
- No.1 Rd and Westminster (Road temperature, ambient air temperature, humidity, wind speed/direction, rain gauge and road friction)
- No. 8 Rd and River Rd ((Road temperature)
- No. 6 Road South (Road temperature, ambient air temperature, humidity)
- Oval (Road temperature)
- No. 3 Rd and Granville (Road temperature)
- O No. 6 Rd and Westminster (Pending)

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