

For Information

DATE: October 1, 2012

REPORT TITLE: **SNOW STORAGE AND DISPOSAL FACILITY IN PEEL REGION**

FROM: Dan Labrecque, Commissioner of Public Works

**OBJECTIVE**

To inform Regional Council of a new project being submitted with the 2013 Transportation Capital Budget to build a snow storage and disposal facility in Peel.

**REPORT HIGHLIGHTS**

- Peel's Performance Standards require the removal of snow as it accumulates on boulevards and bridges before it restricts sightlines, impedes on-street parking, sidewalks and multi-use trails, and causes deterioration of bridge infrastructure. Peel removes an average of 2,000 to 3,000 tonnes of accumulated snow annually. All traditional locations used to store and melt the removed snow are either now unavailable or environmentally inappropriate for use.
- The Region of Peel Salt Management Plan, as updated in 2006, identifies the need and requirements for appropriate snow disposal according to the Transportation Association of Canada's (TAC's) Syntheses of Best Practices Road Salt Management – Snow Storage and Disposal.
- Chlorides and other contaminants in the snowmelt water released untreated into watercourses and soils along the roadside can lead to a loss of plant and animal biodiversity and high chloride levels in drinking water.
- The Region of Peel does not currently own any property that could be utilized for large stockpiles of stored snow making property acquisition necessary.
- Funds have been added to the 2013 Capital Budget to purchase land to create a progressive and environmentally responsible snow storage facility that meets and/or exceeds current best practices and can be used in other seasons for various Regional operations.
- This initiative supports a number of actions and initiatives related to transportation and the environment in the Region's Strategic Plan Goals and Actions and Term of Council Priorities.

**DISCUSSION****Background**

In 1995, road salt was placed on Environment Canada's Priority Substance List for assessment as a toxic substance and underwent a five-year review under the Canadian *Environmental*

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*Protection Act.* Out of that review, emerged the Transportation Association of Canada (TAC) Syntheses of Best Practices to manage salt use.

*The Ontario Water Resources Act, 1990* prohibits the discharge of materials that impair water quality. High levels of chlorides can affect water quality and areas that depend on well water are most vulnerable. With increasing concern for the protection of Ontario's water resources, the Region of Peel wishes to act proactively to find new and improved ways of processing snowmelt water.

As snow piles up on boulevards it starts to restrict sightlines and impedes on-street parking and the use of sidewalks and multi-use trails. Operations staff also removes snow from bridges to reduce chloride saturation that rapidly decreases the structure's life expectancy.

The Region of Peel annually hauls and stores an average of 2,000–3,000 tonnes of snow from its roadways and bridges (Region's Salt Management Plan 2006) and that amount could increase with multi-modal transportation initiatives in the right-of-way such as multi-use trails. Since all of our traditional snow storage areas are no longer available or environmentally appropriate for use, staff has been asked to find a site(s) for snow storage and create an environmentally sound and sustainable solution for disposing of the snowmelt from its winter operations.

### Environmental Impacts of Chlorides

Chlorides negatively affect biodiversity. Biodiversity is the richness and variety of plants and animals found in nature in a balanced ecosystem and its preservation is essential to a healthy environment. The decline of biodiversity reduces the pool of biological resources available to future generations. A reduction in biodiversity is a reduction in sustainability.

Chlorides that are released untreated into soils along roadsides inhibit seed germination and root growth in grasses and wildflowers. This can result in salt-tolerant plants such as the invasive Phragmites (European Common Reed) taking over the sites.

Chlorides released untreated into watercourses can affect the number and types of fish species and shock loads of chlorides released with spring melt can cause peak concentrations high enough to cause serious harm to aquatic life. In a presentation on Chloride Concentrations in Ontario's Rivers and Streams to the Multi-Stakeholder Working Group on Road Salt Management in 2007, the Ministry of the Environment showed that the highest chloride concentrations are found in small streams that drain urban watersheds including those found in Peel Region, namely Sheridan's Creek and Fletcher's Creek. The best way to control chloride levels is through limiting the source inputs.

### Current Regional Practices

The Region of Peel has taken a proactive role in mitigating the impacts of salt on our environment by creating and following a Salt Management Plan for winter operations. Some examples include:

- introducing new technologies such as Advanced Road Weather Information Systems and Global Positioning System (GPS)/Automated Vehicle Locator (AVL);
- annual training for field staff on the importance and concepts of salt management;
- lowered application rates;
- the use of liquid brine for pre-wetting and anti-icing; and,
- innovative programs such as Natural and Living Snow Fences.

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However, the use of chlorides in the form of road salt is still required and remains the most efficient and cost effective way to keep roads free of snow and ice.

### Best Practices

Snow storage treatment facilities have been built in the Towns of Richmond Hill and Halton Hills, and the Cities of Toronto and Ottawa using standards from Transportation Association of Canada's Syntheses of Best Practices Road Salt Management and provide excellent models for the Region to follow.

All use a 3-step "treatment train" approach. Snow is brought to a centralized location for proper disposal and treatment before releasing the snowmelt back into the environment.

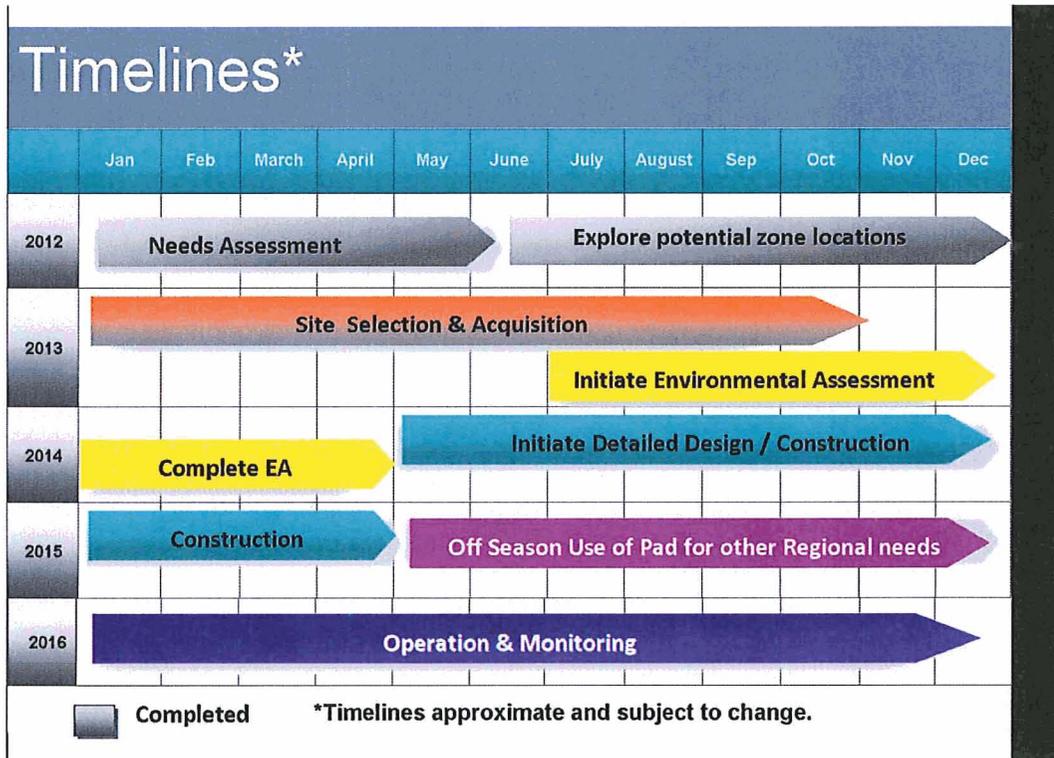
- Step 1** An impervious paved asphalt pad is built that prevents leaching of chlorides to the groundwater. Snow removed from the boulevards and bridges is piled high and allowed to melt slowly and naturally. As the snow melts solids settle to the bottom and are removed by staff in the spring. At the Richmond Hill site, over two tonnes of solids were removed from the pad in one winter.
- Step 2** The asphalt pad is sloped at a maximum two percent grade and snowmelt is directed to an oil-grit separator that removes petroleum products and sediments. The total suspended solids captured at this stage are in the 80-95 percent range.
- Step 3** The oil-grit separator discharges water into a constructed pond and wetland. This allows the remaining sediment to settle out of the water column providing additional water quality benefits. Vegetation anchors the sediment and inhibits resuspension. Contaminants and heavy metals are also partially removed via root uptake.

### Proposed Direction and Timelines

Two million dollars has been included in the 2013 Capital Budget to purchase land to create a snow storage facility. If the budget is approved, staff will work with the Region's Real Property Asset Management Division (Real Estate) to acquire a site. The site will be selected based on availability, proximity to operational needs, groundwater vulnerability, and land use. If property is purchased, we will commence an Environmental Assessment (EA) to 30 percent detailed design. Timelines for this initiative are proposed as outlined below:

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**External Partnerships**

The Cities of Mississauga and Brampton, and the Town of Caledon have been approached to partner on the creation of a new facility. If this project goes forward, staff will continue to meet with the local municipalities to explore partnership opportunities.

**Other Potential Uses**

Following the spring melt of piled snow from the paved pad, there is an opportunity for other Regional services to utilize the pad for:

- storage of construction materials for Regional Public Works' construction projects;
- crushing and reuse of concrete and other rubble brought to the Recycling Centres, once crushed, the finished product could be offered to the public at no charge as clean fill; and
- crushing and recycling of concrete removed from Regional curbs and bridges to potentially be re-used in other Region projects such as base material for road widenings, parking lots or other applications.

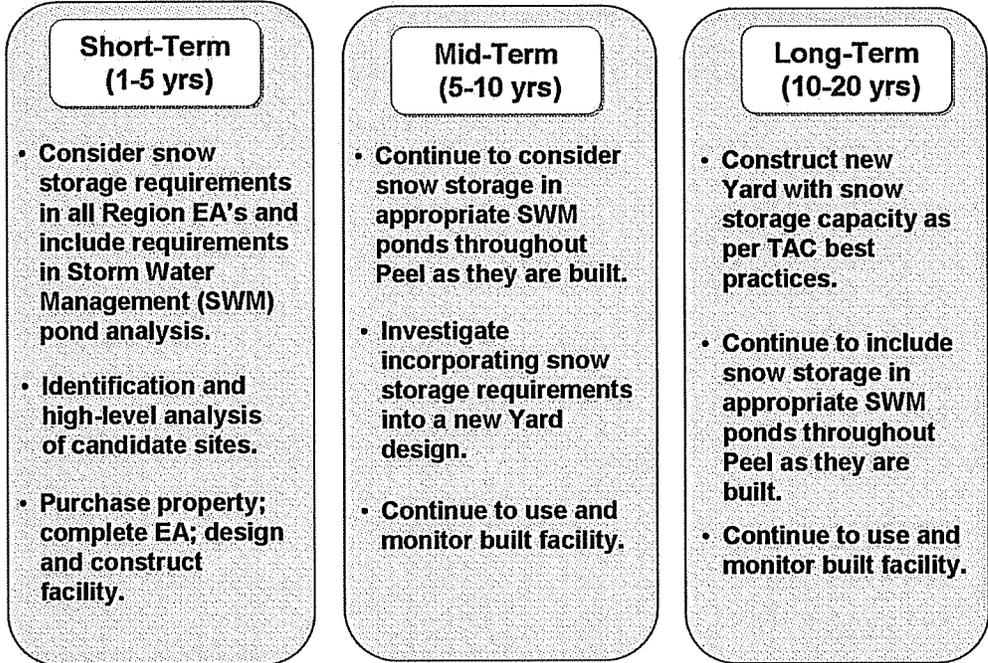
**Staged Approach**

- Due to property costs, noise levels associated with snow removal vehicles and other factors, it is not reasonable to build a snow storage facility in every community in Peel. The immediate need is to build one facility as soon as possible which will be permanent and monitored over the mid to long term period. Simultaneously with the process of completing the facility, staff will screen for opportunities to build future facilities in conjunction with storm water management ponds required for Roads Capital projects. Any future Public Works Yard will include snow storage with salt containment ponds as per TAC's best practices and Peel's Salt Management Plan.

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**Staged Approach**



**FINANCIAL IMPLICATIONS**

Two million dollars has been included in the 2013 Transportation Capital Budget, Project 13-4007, to purchase land for a snow storage facility. Once the land is acquired, the EA will commence and be completed to 30 percent detailed design. An additional \$500,000 dollars has been added to the Budget in 2015 to complete design. Further funds will be required to construct the site. A construction estimate will be calculated based on the design and a request for additional funds will be submitted to Council for approval. All funds will come from the Capital Financing Stabilization Reserve (R0210).

**CONCLUSION**

There is an urgent operational need to find areas for snow storage since current locations are either now unavailable or environmentally inappropriate. Purchase of property to create a new snow storage facility will open the door to create a progressive and environmentally responsible solution.

This project supports the Region's Strategic Plan and long-term vision for the communities in Peel. The Strategic Plan themes that align to this project are:

- **Environment** – Protect, enhance and restore the environment
- **Public Safety** – Ensure a safe Peel community
- **Service Excellence** – Strive for continuous excellence as a municipal government

The Term of Council Priorities that support the Strategic Plan themes include:

- **TOCP #1 Reduce greenhouse emissions (GHG)**
  - This project will give high consideration to the travel time and distance required to move the snow from its source to the storage location
- **TOCP #4 Improve storm water management**

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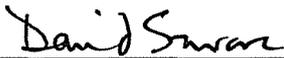
- This project will propose a process to reduce chlorides and other contaminants from snow melt before release into storm and/or ground water systems
- **TOCP #9 Increase active transportation**
  - Active transportation facilities are compromised when residents can't walk safely and easily in the winter.

This project offers the Region with an opportunity to showcase innovation, enhance the environment and create a new best practice in treatment of snowmelt water.



Dan Labrecque  
Commissioner of Public Works

**Approved for Submission:**



D. Swarc, Chief Administrative Officer

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