



# **TOWN OF ST. MARYS**



# **SALT MANAGEMENT PLAN**

**January 2015**

<b>TOWN OF ST. MARYS – SALT MANAGEMENT PLAN</b>
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## TOWN OF ST. MARYS – SALT MANAGEMENT PLAN

### 1.0 INTRODUCTION

#### 1.1 Overview

Within the Town of St. Marys there are approximately 55 kilometers of Town roads within the framework of a classification system. The combined road systems provide for the safe, efficient and affordable means of surface transportation for road users. People rely on the roadway network throughout the year for transport to the workplace, to recreation and leisure facilities, for the transport of goods and services, and for emergency and security services.

Snow and ice conditions on the road system have a dramatic impact on public safety, roadway capacity, travel time and economic costs. User safety remains the most important priority within winter maintenance operations, practices and strategies contained in this Salt Management Plan.

Although there is ongoing research into the use of alternatives to road salt in winter maintenance, salt continues to be a cost-effective de-icer. However, due to the adverse effects that salt has on the environment, the Salt Management Plan strives to minimize the amount of salt entering the environment by including best salt management practices, and using new technologies to ensure its most effective use over the road system. At the same time, the Operations Department will continue to search out and encourage the use of viable and cost-effective new technologies and chemicals to reduce the environmental impacts of winter maintenance activities.

In 2001, Environment Canada released an assessment report stating that road salts are entering the environment in large amounts and are posing a risk to plants, animals, birds, fish, lake and stream ecosystems and groundwater. Based on the assessment, Environment Canada is considering "toxic" designation only means that it is harmful to the environment if used in excessive amounts. Environment Canada has stated that they will not ban road salts, but rather will encourage users to develop their own salt management strategy. ***It must be noted that Health Canada stated that road salts are not harmful to humans.***

Environment Canada had two years, from December 1, 2001, to develop control measures for the use of salt and then provided users with another 18 months to initiate necessary operational changes. Environment Canada has encouraged provincial and municipal salt users to develop their own Salt Management Plans.

Given the environmental concerns regarding road salt, the Operations Department has developed this Salt Management Plan. This will address growing concerns about the effect road salt is having on our natural environment and at the same time continue to provide for road safety by better managing our use of salt.

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### **1.2 Purpose of the Salt Management Plan**

The Salt Management Plan is intended to set out a policy and procedural framework for ensuring that the Town of St. Marys continuously improves the management of road salt used in their winter maintenance operations. The Plan demonstrates the Operations Department commitment to reducing the environmental effects of excessive salt use, consistent with Environment Canada's stated objections.

Any modifications to winter maintenance activities must be carried out in a way that provides roadway safety and user mobility consistent with the weather conditions experienced during the snow and ice control season.

The Plan is dynamic – allowing the Operations Department to phase in new approaches and technologies in a way that is responsive to municipal fiscal demands and the need to ensure that roadway safety is not compromised.

### **1.3 Responsibility**

Effective road salt management is the responsibility of everyone within the Town of St. Marys involved in winter road maintenance. Cooperation from all Town staff, from senior levels to the operator, is required to ensure road safety is maintained while the Plan is implemented, monitored and updated.

### **1.4 Salt Management Policy**

- To comply with all applicable federal and provincial legislation regarding the storage and use of snow and ice control products

- To use road salt in an environmentally responsible manner, and minimize the negative environmental effects of handling, storage and application of salt on the environment.
- In providing the stated Level of Service, the Operations Department will conserve the use of salt by utilizing the most cost-effective technologies and practices.

### **1.5 Implementation**

The Salt Management Plan is activity based and follows an Environmental Management System framework. It includes the following elements:

- Periodic review and analysis of industry practices
- Implementation and documentation of Plan
- Education and training of staff
- Monitoring and analysis of operations
- Management review and revisions
- Environmental review
- Policy and practices revision

The implementation and improvement of the Salt Management Plan will promote the continuous development of practices and procedures to improve winter maintenance activities and procedures while striving to reduce the effects of road salt on our environment. The Plan is a dynamic document.

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### **1.5 Implementation (continued)**

It will be reviewed and refined on an on-going basis and embraced at all levels. All personnel are responsible for ensuring that the Plan is implemented, monitored, improved and updated.

Managers and Supervisors are encouraged to review the policies and procedures in the Plan by other parties involved in snow and ice control activities including:

- Employees of the Town of St. Marys
- Private operators; and
- General contractors

## **2.0 WINTER MAINTENANCE STANDARDS**

### **2.1 Introduction**

This chapter documents the Operations Departments snow and ice control standards.

The major activities related to winter maintenance are:

- Salt and sand storage;
- Salt spreading;
- Blended sand spreading;
- Snow plowing; and
- Snow removal and disposal

## 2.2 Level of Service Policies (LOS)

For the purposes of road patrolling, snow plowing, sanding, snow and ice control and snow removal and disposal, all Town roads have been classified. The municipality has two classes of roads within its road network based on posted speed and traffic volumes.

The Operations Department has based their Level of Service standards on their road network classifications.

The winter control Level of Service standards are designed to meet the needs of the community from the perspective of driver safety and the provision of emergency service. These Level of Service standards are driven by both the technical requirements of winter operations and the need to address the socio-economic concerns of small urban municipality.

<b>TABLE 2.1 ROUTINE PATROLLING FREQUENCY</b>	
<b>Class of Highway</b>	<b>Patrolling Frequency</b>
3	Once every 7 days
4	Once every 14 days

Typically, the patrol shifts provide coverage Monday to Friday from 3:30 a.m. to 4:00 p.m. The Saturday/Sunday coverage is between 5:00 a.m. to 6:00 a.m.

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The Town has established a minimum level of service for clearing snow accumulation and for treating icy roadways on various classes of highways. These levels of service standards are illustrated in Tables 2.2 and 2.3.

<b>TABLE 2.2 SNOW ACCUMULATION</b>		
<b>Class of Highway</b>	<b>Depth</b>	<b>Time</b>
3	8 cm	12 hours
4	8 cm	16 hours

<b>TABLE 2.3 ICY ROADWAYS</b>	
<b>Class of Highway</b>	<b>Time</b>
3	8 hours
4	12 hours

### **2.3 Equipment**

The Town of St. Marys maintains a variety of equipment including plows, spreaders and combination units. The newer equipment has been purchased with electronic controllers.

### **2.4 Snow and Ice Control Materials**

#### **2.4.1 Salt**

The municipality purchases and uses a provincial standard grade of bulk road salt. All salt is stored and loaded indoors on impermeable floors.

#### **2.4.2 Abrasives**

A mixture of sand and salt is used to prevent freezing of the sand in the stock pile. Sand is mixed with salt at the yard at a rate of 15:1 salt by volume at the rate recommended by the supplier, to prevent freezing of the pile. All blended sand is stored inside on impermeable floors.

### **2.5 Storm Response**

During the winter season the Operations Department has an early shift. 3:30a.m till 12pm., Monday to Friday. An inspection of the road network is done with an assessment of required action to be taken. Depending on snowfall amounts additional staff may be "called" in to assist in the snow-clearing program. The day shift ends at 4:00 p.m. and between the hours of 4:00 p.m. and 3:30 a.m. there is no regular road maintenance scheduled by the Operations Department.

### **2.6 Training**

The Operations Department will review its winter operations each fall with all employees. Training courses related to winter maintenance and operations will be explored.

**TOWN OF ST. MARYS – SALT MANAGEMENT PLAN****2.7 Snow Removal, Storage and Disposal**

The Operations Department at this time removes snow from the downtown core area from time to time based on accumulated volumes.

General guidelines are to remove the snow accumulation once the snow at the curb reaches 60 centimeters on average, however a snow removal event will depend on predicted weather and availability of equipment.

The Town of St. Marys constantly monitors the build up of snow in the downtown core area and all efforts will be made to keep the core area free from snow build up to encourage business operations remain normal through the winter. This snow is trucked to a designated disposal site at the Municipal Operations Center at 408 James St S. There are also several other locations in the Town of St. Marys where snow is loaded onto trucks and dumped at the designated site. When necessary, snow banks in urban areas are also blown onto the lawn behind the sidewalks to improve site lines and roadside snow storage.

Currently the Operations Department has one snow disposal site, which is located at the Municipal Operations Center located at 408 James St. S. This site is a clay base lot with a ditch around its perimeter to control run off. All run off water is collected in a water retention pond before it is discharged to the area water course at a controlled rate.

**2.8 Technology Transfer Review**

Municipal staff regularly attends various conferences including the Ontario Good Roads Association Snow and Ice Colloquium and regional and provincial committees and working groups.

**2.9 Communications**

The Municipality uses a variety of methods to inform the public about their winter maintenance activities including: local newspaper, notice through the water bills, and our Town web site.

**2.10 Vulnerable Areas**

The unique topography of St. Marys has two substantial water courses flowing through the Town. The Thames River, which flows from the north to the south, and Trout Creek, which flows from the east to the Thames River. These water courses have been identified as vulnerable areas of concern.

The Town of St. Marys is also reviewing its source water protection area. This is the area that has been identified as recharge zone for the underground aquifer



for the municipal drinking water system. This study is still taking place but is identified as an area to the east of the three well sites that currently exist.

### **2.11 Record Keeping**

The municipality keeps operator logs and tracks solid material purchases and bulk usage. Data from the electronic controllers is not used at this time.

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### 3.0 SALT MANAGEMENT PLAN GOALS

#### 3.1 Introduction

This chapter of the Plan presents the goals for each of the key operational practices and strategies related to the effective management of road salt during winter maintenance activities. Some of the goals are general and apply to the Operations Department. All goals recognize that the Plan is dynamic and will take time to implement.

#### 3.2 Salt Management Goals

The following table summarizes the Salt Management goals for each of the key operational practices and strategies identified in the Salt Management Plan.

<b>SALT MANAGEMENT GOALS</b>
<b>Level Of Service (LOS)</b>
<ul style="list-style-type: none"> <li>• Review the LOS policy in light of other similar road authorities and the minimum maintenance strategies identified in the Salt Management Plan.</li> <li>• Revise the LOS policy if required</li> <li>• Obtain management endorsement of the revised LOS Policy</li> <li>• Implement the revised policy</li> <li>• Review routes after changing LOS policy</li> <li>• Train and inform staff, management and the public on the intentions and expectations in service delivery</li> <li>• Monitor and report on compliance with the LOS policy annually</li> <li>• As new technologies are implemented or LOS is changed, affected spreader and plow routes will be reviewed</li> </ul>

#### 3.3 Equipment

Currently the Town of St. Marys has three pieces of equipment with sand and salt spreading capabilities. All three have electronic regulated ground speed controllers.

The Operations Department has also reviewed pre-wetting and anti-icing equipment. At this time the Operations Department feels that pre-wetting or DLA is not beneficial to our operations or cost effective at this time.

As equipment is upgraded with electronic regulated ground speed controllers all data will be down loaded and stored to provide a record-keeping program for future reference.

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### 3.4 Equipment Washing

All equipment is washed in doors at the Municipal Operations Center in a designated wash bay. The silt and debris is collected out of the water before it goes through an oil water separator and then discharged to the sanitary sewer system.

### 3.5 Material Application Rates

Application rates of material are determined by the amount and type of winter event. Standard applications rates are changed on an on going basis by the supervisor or patrollers or plow operators as needed.

### 3.6 Sand/Salt Blends

**Equipment operators are allowed to vary the amount and type of material depending on conditions. It has been found that this is the most cost effective method of reducing salt usage.**

### 3.7 Salt and Sand Storage

In the Fall of 2004 the Town of St. Marys was able to put into use for the first time a facility that would provide 100% cover for its sand and salt storage. This unique building also incorporated a loading bay for trucks to pull into for material loading, which also was 100% undercover.

This building was designed to store a complete sand volume for a winter season. Salt is delivered on a regular "as needed" basis to minimize storage requirements. Building and site drainage were addressed as the site was developed in 2006.

With this new building in place the Operations Department reduced the salt in the sand/salt stockpile from 15:1.

**3.8 Weather Forecasting**

At this time the Operations Department uses EC Doppler Radar, Environment Canada Weather and weather forecasts to prepare for storm events. Annual training in the understanding and the use of weather information will be done each fall.

**3.9 IRT's (Infra Red Thermometers)**

Every winter patrol/supervisor truck will have a truck mounted IRT installed. The Operations Department will provide annual training in use of IRT's.

**3.10 Training**

Incorporate salt management principles into training programs in accordance with Transportation Association of Canada (TAC) Salt Management Synthesis of Best Practices for Training. Provide the training in the fall of each year to Managers, Supervisors and Operators.

**TOWN OF ST. MARYS – SALT MANAGEMENT PLAN****3.11 Snow Removal and Disposal Criteria**

Use TAC's Salt Management Synthesis of Best Practices for Snow Storage and Disposal Sites as a guide for the selection of new disposal sites and management of our current site.

**3.12 Technology Transfer Review**

To ensure the latest technologies are studied, reviewed, tested and adopted as appropriate. To participate in other conferences and forums geared to development of Road Salt Best Management Practices.

**3.13 Communications**

Inform the municipal Council, public and local regulatory agencies about the actions being taken by the municipality to manage road salt use, and the winter maintenance program annually, through a brochure or website. Notify Environment Canada upon completion and updating of the Salt Management Plan.

**3.14 Vulnerable Areas**

Monitor Environment Canada's approach to addressing vulnerable areas. Work with other agencies (Conservation Authority, Ministry of Natural Resources and Ministry of the Environment) to identify vulnerable areas. Identify strategies to reduce salt impacts to salt vulnerable areas.

**3.15 Material Usage Record Keeping**

Salt and sand delivery records and end-of-season residual will be logged to allow for year-end reconciliation of bulk material use. Record-keeping training will be provided annually.

**3.16 Storm Response Record Keeping**

To develop a standard methodology to report/summarize storm or "event" responses. To train all supervisors and operators in proper record keeping.

**3.17 Salt Reduction Project**

During the winter of 2001/2002 the Public Works Department conducted a pilot project to reduce the use of salts on 400 meters of road within the Town of St. Marys. Since that initial project the program has been expanded to 10 km of roads in this municipality that can safely function with reduced amounts of salt for winter maintenance operations.

The Town of St. Marys reviewed streets with low volumes of traffic and with flat topography before a decision was made to include the street as part of the program. Salt will be used on the streets that have been identified for this program at a reduced rate or as needed for safety reasons.

**TOWN OF ST. MARYS – SALT MANAGEMENT PLAN****4.0 CONCLUSION**

The Operations Department is committed to ensuring that the municipal roads are safe and properly maintained in accordance with their level of service policies. While doing so, the Operations Department has committed to reducing the environmental impacts of snow and ice control chemicals such as salt. The Operations Department has developed the Salt Management Plan to identify how they will implement a managed salt strategy over the next decade. They will continue to monitor improvements in snow and ice control practices and revise the Plan as improved Best Management Practices become available.