



**Salt Management Plan
November 23, 2021**



Table of Contents

Section	Description	Page
1.0	Introduction	3 - 5
2.0	Policy Frame Work	6 - 7
3.0	Operational Frame Work	7 - 8
4.0	Monitoring and Updating the Salt Management Plan	8 - 10
5.0	Performance Measures	10
6.0	Closing	10
	Acknowledgements	11
Schedule A	Risk Management Plan	



1.0 Introduction

The Township of Selwyn Public Works Department will strive to ensure optimal use of salt and sand on the Township of Selwyn roads and sidewalks to minimize salt impacts to the environment.

1.1 Overview

The Township of Selwyn performs winter maintenance on approximately 320 kilometres of roads and approximately 17 kilometres of sidewalks.

The Township of Selwyn is the most populated municipality in the County of Peterborough, with an approximate population of 17,500. The Township has close to one third of all the households' in the County of Peterborough.. Residents rely on the roadway networks throughout the year for transport to the workplace, to recreation and leisure facilities, for the transport of goods and services and for emergency services.

Snow and ice conditions on the road system have a dramatic impact on public safety, road 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 and efficient de-icer. Due to the effects that salt has on the environment, this Salt Management Plan strives to minimize the amount of salt entering the environment by utilizing industry standards in salt management practices, and using technology to ensure effective use over the road and sidewalk system. The Township will continue to search out and use viable and cost-effective technologies and products 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. Environment Canada determined that a strategy was required to manage the release of road salt into the environment. Health Canada stated that road salts are not harmful to humans.

Environment Canada has released a "Code of Practice for the Environmental Management of Road Salts". The Code recommends that organizations which use more than 500T road salt prepare and maintain a salt management plan to better manage road salt use and report on progress. The Township is required to have a salt management plan in accordance with Policy R-1 in the Trent Source Protection Plan which was developed under the Clean Water Act. More specifically, Policy R-1 requires:



- a) That a salt management plan is in place that contains provisions to ensure that the activity is not a significant drinking water threat;
- b) Where multiple road authorities operate within a vulnerable area, cross-boundary considerations will be addressed on an ongoing basis by all road authorities responsible for the application of road salt;
- c) Annually report on activities undertaken as part of the salt management plan to the Risk Management Official.

Scope:

A salt management plan is required as part of the Drinking Water Source Protection area for the Vulnerable Area identified as the Intake Protection Zone for the Lakefield Municipal Surface Water System (see attached map – Schedule A). In addition, the Plan will apply to all Township roads and sidewalks.

1.2 Purpose

This Salt Management Plan is intended to set out framework for ensuring that the Township continuously improves the management of the road salt used in its winter maintenance operations.

This Salt Management Plan demonstrates the Township's commitment to reducing the environmental effects of excessive salt use, and is consistent with recommendations set out under the Environment Canada's Code of Practice for the Environmental Management of Road Salts and the Trent Source Protection Plan.

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.

This Salt Management Plan is meant to be a dynamic document in an effort to allow the municipality evaluate and phase in changes, adopt new approaches and technologies in a way that is responsive to fiscal demands and to ensure that roadway safety is not compromised.

As specified in the Code of Practice for the Environmental Management of Road Salts, this Plan is to be endorsed by the Corporation of the Township of Selwyn Council.

1.3 Legislative Authority

The framework presented in the Plan is consistent with fulfilling the Township's obligations under provincial and federal legislation.



1.4 Responsibilities

Public Works Manager

- Has a Corporate responsibility for the Township's Public Works Department
- Responsible for ensuring that the Salt Management Plan is developed, maintained, and implemented consistently across the Township.
- Responsible for authorizing the purchasing of the winter maintenance equipment and materials in compliance with the Salt Management Plan.

Shop Supervisor / Mechanic

- Responsible for purchasing, maintaining, and calibrating the winter maintenance fleet in compliance with the Salt Management Plan.

Public Works Supervisor

- Responsible for developing and maintaining the Salt Management Plan and ensuring that it is implemented consistently across the Township.
- Responsible for overseeing the maintenance and upgrading of the winter maintenance facilities in compliance with the Salt Management Plan.
- Responsible for monitoring the environmental impacts associated with the Salt Management Plan.
- Responsible for ensuring that winter maintenance activities are carried out in compliance with the Salt Management Plan.
- Responsible for record-keeping in compliance with the Salt Management Plan.

Winter Maintenance Personnel

- Responsible for completing winter maintenance duties in accordance with the policies and procedures set out in the Salt Management Plan as directed by the Public Works Supervisor.

1.5 Vision

The Public Works Department will continue to be an exceptional example of an environmentally responsible user of sand and salt to provide safe road and sidewalk conditions during the winter months.

1.6 Mission

The Public Works Department will strive to ensure optimal use of road salt / sand mix, on Township roads and sidewalks while striving to minimize salt impacts to the environment.

1.7 Mandate

The Public Works Department must provide safe winter conditions for vehicles and pedestrians as required by level of service standards.



2.0 Policy Framework

The major activities related to winter maintenance are:

- Salt and sand storage
- Salt and sand spreading
- Salt and sand loading
- Snow storage and disposal
- Salt vulnerable areas

2.1 Salt and Sand Storage

The Township has two sand dome storage facilities that hold approximately 5000 tonne of salt sand mix (approximately 5% salt added). One is located at the Smith Depot site at 1280 Centre Line, the other is located in Ennismore on Cashel Road. There is one salt storage facility at the Smith Depot that holds up to 75 tonne of salt. All storage facilities are covered to negate the amount of salt that is exposed to the environment.

2.2 Salt and Sand Spreading

There are ten (10) tandem plow / sander trucks in the fleet. Three have manual spreaders and seven (7) tandems with ground speed electronic control spreaders. There are two sidewalk plows with manual spreaders and one (1) $\frac{3}{4}$ ton with a manual plow and sander.

All Township winter maintenance equipment have GPS systems that record location, speed, plow up, plow down, and sander on and off. The ground speed electronic spreader controls, records the application rate on the GPS units. As the truck slows down so does the rate of sand application.

The units are calibrated annually to ensure accuracy. The rate of application is based on weather conditions and the forecast.

2.3 Sand and Salt Loading

Spreaders are loaded inside whenever possible. When loading outside of the storage structure, care is taken to minimize spillage of salt onto the loading pad. Deliveries of salt are arranged to ensure that material is placed inside the covered storage facility upon delivery.

2.4 Snow Storage and Disposal

As a result of snow plowing operations, snow accumulates at the side of roads as windrows or mounds. The Township starts snow removal operations when these windrows reach volumes that create a nuisance or hazard to pedestrians and motorists and to maintain capacity for subsequent snowfalls. It is estimated that the Township stores approximately 1000 tonne of removed snow at 1510 County Road 18. The site is inspected annually



2.5 Salt Vulnerable Areas

The Township is located within the Otonabee River Watershed and supports a number of natural environmental features. With help from other local agencies and Environment Canada, the Township will work to identify salt vulnerable areas including a portion of the Intake Protection Zone for the Lakefield Municipal Surface Water System as designated by the Trent Source Protection Plan and identified on route sheets which are reviewed with winter maintenance personnel. Within this Vulnerable Area, salt application rates will be decreased, and the removal of plowed snow will be prioritized to minimize contaminated run off. Alternative de-icing technologies are continuously being reviewed for effective and safe use in identified vulnerable areas.

2.6 Pre-wetting

Pre-wetting is currently not used with our service. Public Works Management can monitor if this procedure would be beneficial to the current program.

2.7 Magnesium Chloride and Storage

Magnesium Chloride is currently not used with our service. Public Works Management can monitor if this procedure would be beneficial to the current program.

3.0 Operational Framework

3.1 Overview

This section of the Salt Management Plan discusses the operational practices and strategies related to the effective management of road salt during winter maintenance activities.

3.2 Weather Monitoring

The road patrol and supervisor vehicles have mobile road temperature sensors that read the surface and air temperatures of the road they are travelling over. This information enables staff to make informed decisions as to when and where winter operations should commence or end.

The Township currently documents and saves forecasts a minimum of three times a day. Forecasts give specific weather state and precipitation forecasts on:

- Air temperature
- Wind speed and direction
- Types of precipitation
- Dew point

Road Patrollers use several weather reporting services such as Environment Canada, The Weather Network, local forecasts and Internet sources.



3.3 Winter Event

Winter weather can offer various combinations of precipitation, pavement temperatures, wind, and visibility. A successful winter operation can employ numerous practices.

The Township of Selwyn does not apply salt only to the roads. Approximately 5% of salt is added to the sand as it is deposited into the storage facilities to prevent sand from freezing and create traction for vehicles. When conditions are right, another 1% to 2% of salt may be added to help with removing ice and snow.

'Snow only' plowing is used whenever conditions allow to reduce the use of sand and salt mixture applied.

4.0 Monitoring and Updating the Salt Management Plan

An annual review of the Salt Management Plan by management and staff will occur each winter season. As a result of this review, the Salt Management Plan will be updated to include any changes in department policy, strategies and new techniques or equipment to be implemented in the upcoming season.

4.1 Vehicles Global Positioning Systems (GPS)

The Township has GPS installed in all winter maintenance vehicles. The use of GPS allows staff to ensure all roads have been covered and at what time. It provides vehicle tracking and monitoring, twenty-four hours a day, seven days a week.

GPS tracking enables Township staff to monitor these vehicles. Electronic spreaders keep track of locations and application rate of material spread. This contributes to the Township's ability to control the amount of road salt used on the road surface to ensure the committed Level of Service is being met for the community.

The system can also provide total winter material loading information within the GPS that allows for the recording and analysis of:

- Truck speed
- Vehicle location
- Start and finish times
- Plow activation status
- Winter material accumulations tracking
- Spreader controls (on or off and application rate)

4.2 Equipment Calibrations

There are seven tandem plows that are equipped with electronic spreader distribution systems. The vehicles are calibrated at the beginning of the season and again at the other times when necessary.



The ground speed electronic spreader controls are calibrated at a rate of 420 kg per kilometre. Operators can make judgement calls to increase or reduce application rate at different road geometries, for example, hills, curves and intersections.

4.3 Equipment Upgrading

It is intended that the municipally owned winter maintenance fleet be capable of delivering appropriate levels of sand and salt material within a full range of climatic conditions. As the fleet is replaced within the municipality's vehicle replacement program, the new combination units are equipped with pavement infrared thermometers and with electronic ground speed controllers with capability for the addition of anti-icing, and GPS for vehicle locations and spread rate data.

4.4 Improved Record Keeping

All Township staff involved in winter maintenance activities, including Manager, Supervisors, Lead Hands, and Equipment Operators are required to record all activities including material usage and location. This information is used to calculate and keep track of salt usage and distribution.

A chart will be maintained to keep track of salt and sand purchasing with annual comparisons.

4.5 Operation Training

To be eligible to operate winter maintenance equipment the operator must have a valid DZ driver license or higher.

Several Public Works Operators have attended Ontario Good Roads Association's Snow School or parts of the Association of Road Supervisors of Ontario Winter Operations Series.

4.6 Future Initiatives

The Public Works Department will continue to monitor new operating techniques on Township roads and sidewalks while maintaining safe surfaces for pedestrian and vehicular traffic and striving to minimize salt impacts to the environment. The following initiatives will be explored and possibly implemented based on available resources:

- Thorough implementation of Township's Winter Operations Plan including staff training for the source water protection areas and smart use of salt.
- Perform an annual review of transportation infrastructure that receives winter maintenance services. Specifically priority plow (and salt/sand) routes to identify opportunities for improvement and propose changes in service while considering all road segments' planning classification (Arterial, Collector and Local) MMS class, gradient, zoning, and proximity to points of interest (schools, vulnerable sector community, churches and community buildings). Environmental Vulnerability of the surrounding area must also be considered.



- Engage with post-secondary institutions that are currently performing research on winter maintenance practices. Contribute and participate in these research opportunities.
- Review winter maintenance routes
- Share and learn from the established groups such as the Ontario Good Roads Association, about innovative winter operation practices and applied materials to reduce negative environmental impacts and ensure future Public Works yards are designed and constructed in accordance with the Transportation Association of Canada's Best Practices related to the effective management of road salt.

5.0 Performance Measures

Performance measures should be used to determine whether the objectives of this Salt Management Plan have been met. Achievement, year over year, will be measured against the benchmark year of 2021.

Some of the indicators should include:

- Monitoring the severity of the winter season
- Total annual cm of snow accumulation
- Total number of days with measurable snowfall
- Total number of days with freezing rain
- Total number of continuous winter event responses
- Total number of spot winter event response
- Total number of winter event hours
- Tonnes of salt purchased annually
- Total number of complaints received regarding winter operations

6.0 Closing

With the need to develop and implement the Township's Salt Management Plan, the trial of new materials, equipment, and technologies has provided positive steps towards reducing salt usage, while maintaining the same level of service the public has come to expect.

The Public Works Department will continue to measure and evaluate these benefits for operational improvement, cost savings, and environmental benefits on a yearly basis or as need dictates.



Acknowledgements

Rick Dunford, Manager of Public Works

Signature *Rick Dunford* Date: Nov. 24/01

Scott Shewfelt, Public Works Supervisor

Signature *Scott Shewfelt* Date: Nov 24/01

Janice Lavalley, CAO

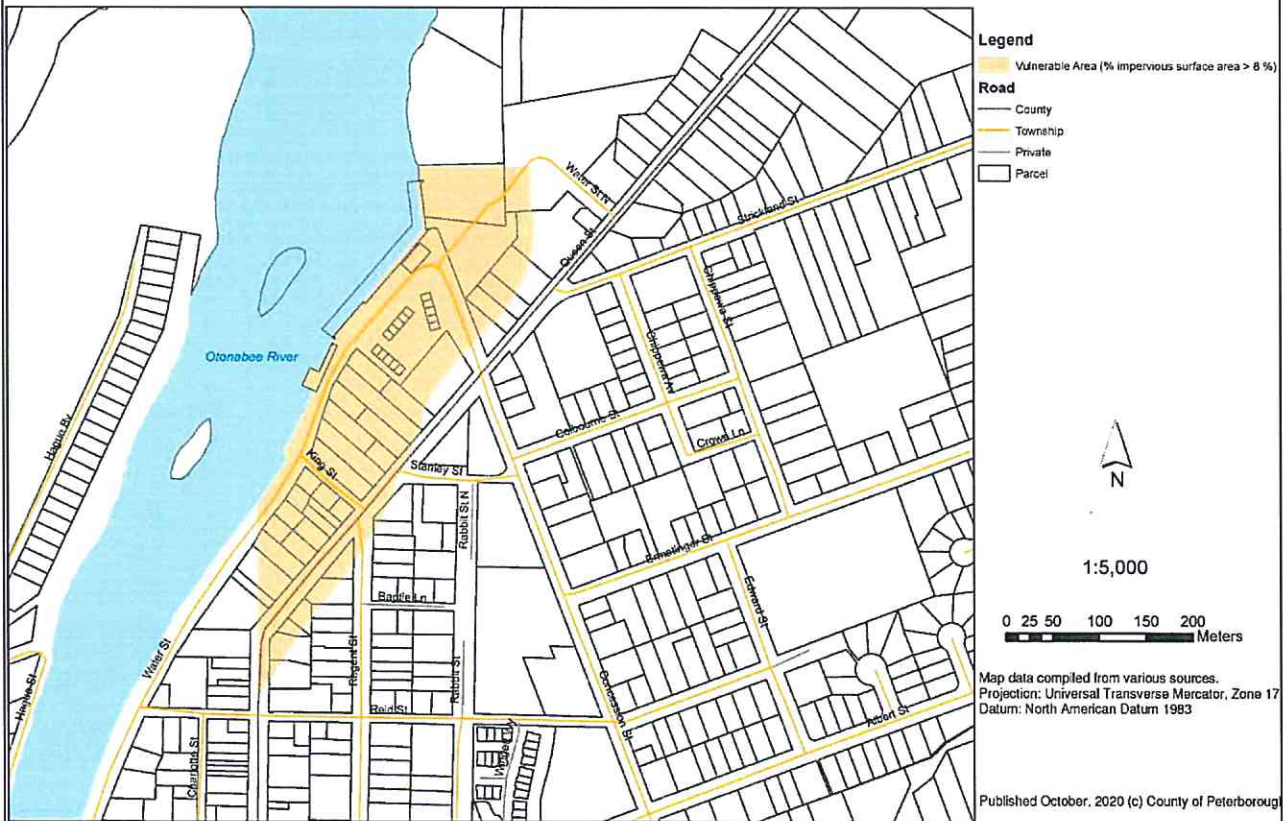
Signature *J Lavalley* Date: Nov 30/2021

DRINKING WATER SOURCE PROTECTION

Act for Clean Water
Otonabee-Peterborough Source Protection Area

Schedule A

Vulnerable Area for Road Salt Application within the Intake Protection Zone for the Lakefield Municipal Surface Water System



This map is illustrative only. Do not rely on this map for legal administrative purposes. Do not rely on it as being a precise indicator of routes, locations of features, or as a guide to navigation. This map may contain cartographic errors or omissions. The information on this map adheres to the County of Peterborough's Declaration and Terms of Use & Disclaimers as outlined on the Peterborough County website, <https://www.ptbcountry.ca/eng/governing/terms-of-use-disclaimers.asp>.