

Road Construction and Maintenance

(Including Road Salts, Dust Control, Snow Removal)

What is the Issue?

At many Summer Villages the increased number of seasonal and permanent residents has resulted in requests from property owners for the development of new roads, and the upgrade and maintenance of existing roads to better standards. Road maintenance, including the application of road salts, and chemicals applied to roads for dust control, may pose risks to the aquatic ecosystem. The removal and collection of snow from roads in winter, if done improperly, can also cause problems for the lake.

Council needs to find a way to balance their responsibility to their constituents for providing safer roads, with protecting the lake. In the end, both are important to creating a desirable environment for Summer Village residents.

Background

Summer Village Councils are responsible for road construction and maintenance within their municipal boundaries. They are also responsible for the safe storage and application of dust control substances and road salts, and the proper placing of snow dumps.

Road Construction and Maintenance

To promote good lake stewardship, the Summer Village administration must be responsible for ensuring that road construction and maintenance practices, including snow removal activities, protect the water quality of the lake and that they do not harm the habitat of the fish and wildlife living at the lake.

Practices that promote the proper placing and use of snow dump areas, and the safe storage and application of road salts and other chemical substances are becoming more commonplace as we understand the importance of proper management in these areas.

Following the Guidelines

Summer Villages are required to follow guidelines when constructing and maintaining roads, pathways, and associated culverts and drainage ditches.

Application of Dust Control Substances and Road Salts

Summer Villages may apply dust control substances for obvious reasons during the summer months. They may also apply salt during the winter to provide traction, and melt ice and snow.

Calcium chloride, commonly used for dust control, poses a low risk to the environment when properly applied.

Snow accumulations, however, on municipal roads may contain contaminants such as suspended solids, organic chemicals, phosphates, dissolved salts, heavy metals, oil, and trash. These contaminants can be harmful to terrestrial and aquatic environments. Summer Village councillors should find ways to reduce or eliminate the impacts of winter road maintenance on the lake.

Information on Road Salts

Sodium chloride (NaCl) is the most common road salt, although other salts such as Potassium Chloride (KCl) and Calcium Chloride (CaCl₂) are sometimes used. Road salts do not pose a risk to humans; however, exposure to high levels of chloride can be harmful to plants and wildlife, and road salts can affect lake water quality. These salts can inadvertently get into the water by various means, including:

- When the snow and ice on roads and in snow dumps melts and runs off the land, ending up in the lake.
- From stormwater runoff.
- From transportation yards, where large volumes of salt, mixed with sand, are often stored without adequate protection against leaching into groundwater. (Groundwater around lakes is often close to the surface and drains into the lake underground, without being seen).

Environment Canada has carried out comprehensive scientific assessments on road salts and has stated that road salts pose a serious threat to the aquatic environment, ground water table, vegetation, and wildlife.

Most municipalities in Alberta have developed a Snow and Ice Control Policy and Procedure manual, and a Salt Management Plan, to comply with provincial and federal requirements to keep salt and other harmful substances from entering the water.

What Does the Law Say?

Approvals Are Required

If road construction or maintenance will have any immediate or potential effect on the lake, it will require an approval.

Provincial Approval

Approval will be required from Alberta Environment under provisions of the Water Act and/or the Environmental Protection and Enhancement Act. If any work is to happen on the bed or shore of the lake, or cause potential erosion or silting of this area, it will require a permit from the Public Lands and Forests Division of Alberta Sustainable Resource Development, to meet conditions of the Public Lands Act.

Before starting any major project in the Summer Village, contact the local office of one of the above agencies. They will advise what permits are required. Usually, you need to submit only one application for approval to satisfy both agencies.

Federal Requirements

The deposit of a harmful substance of any type, including road salts and dust control substances from runoff, into water or in a place where it may enter water frequented by fish, is contrary to the federal Fisheries Act. Environment Canada administers this section of the Act.

Provincial and Federal Resources for Snow Removal and Road Salt Use

Alberta Environment restricts snow dumping into watercourses or onto ice covered water bodies, including lakes. Salt Management Plans usually identify snow dump locations. Sites should be inland, and selected and designed to maximize treatment, minimize safety hazards, and control the rate and location of snowmelt discharges. Alberta Environment currently requires a snow

dump to be set back a minimum of 200 metres from any water body. Alberta Environment has developed a document titled *Salt Contamination Assessment and Remediation Guidelines* (May 2001), for municipalities to follow when designing their salt management strategy.

Environment Canada has released a *Code of Practice for the Environmental Management of Road Salts* (April 3, 2004). And, the Transportation Association of Canada also released a *Synthesis of Best Practices - Road Salt Management*. Both documents advise road maintenance agencies, public or private, to develop and implement a Salt Management Plan for their operations. Salt storage methodology is addressed in both documents.

What Should I Do?

Doing It Right

Councillors can become more aware of the affects of road construction and maintenance on the lake environment. If the Summer Village is planning to construct a new road they should consider engaging a professional engineer to design it, to ensure the road and associated road ditch system does not create flooding or erosion problems. The professional engineer can assist the village with any approval requirements related to the works.

If the Summer Village is considering road maintenance work and have concerns that the operation of the proposed work may adversely affect adjacent property or the downstream receiving water bodies, they should consider engaging a qualified individual, preferably a professional engineer, to assess the impact of the proposed maintenance.

Council can seek out opportunities to reduce impacts on the lake due to contamination and pollution from stormwater runoff from road construction, the application of road salts and dust control substances, and the collection of snow. The best place to start is by contacting the local Alberta Environment office.

Create Policies

To ensure that proper procedures are followed, Council could develop a Snow and Ice Control policy that addresses snow removal storage areas that will eliminate or reduce the risk of contaminants entering water bodies during the melt. See the information under [Provincial and Federal Resources for Snow Removal and Road Salt Use](#), in the **What does the Law Say** section of this chapter.

Additional policies or plans may be required for your Summer Village. If there isn't one already, consider developing a Road Maintenance Policy and Procedure manual for the application of road salts and dust control substances, as well as the safe storage of salt in your community. Policies may be made to utilize chip gravel for traction control purposes, as opposed to chemical applications.

Some Helpful Information to Consider in Decision Making and Planning:

Dust Control (Calcium Chloride)

Calcium Chloride stabilizes roadbeds and suppresses dust by maintaining proper moisture levels. Calcium Chloride is environmentally safe. It has a low toxicity to plants and animals, it does not leach easily into soils and only small quantities are required for effective dust control. When spraying calcium chloride, operators should avoid road shoulders, watercourses and bridge decks.

Road Salt (Sodium Chloride)

Road salt is the fastest, least expensive, and most effective method for the management of ice and snow. Road salt should be stored in an enclosed structure for three reasons:

- To prevent the formation of lumpy salt that is difficult to handle.
- To eliminate the possibility of contaminating water bodies and wells with salt runoff.
- To eliminate salt loss through dissolving in runoff or leaching into the soil.

Who Can I Contact?

For more information on road construction and maintenance, contact your regional Alberta Environment office. Dial 310-0000 first, for a toll free call.

For information on what permits are required when working around water, contact the regional offices of Alberta Environment and Public Lands and Forests Division.

Are There Any Resources Available?

- **Salt Contamination Assessment & Remediation Guidelines** at: <http://www3.gov.ab.ca/env/protenf/soilgrndwater/documents/SaltContAssess&RemediationMay01.pdf>
- **Snow Disposal Guidelines for the Province of Alberta – February 1994** at: <http://www3.gov.ab.ca/env/protenf/publications/snowdisposalguidelinesfeb94.pdf>
- **Environmental Impacts of Road Salts** at: http://www.ec.gc.ca/science/sandegan02/article3_e.html
- **Road Salts – Reducing the risk of road salts to the environment, while keeping our roads safe** at the Environment Canada web-site at: http://www.ec.gc.ca/issues/roadsalt_e.htm
- **Dust Control for Unpaved Roads** at the National Guide to Sustainable Municipal Infrastructure web-site at: http://www.infraguide.ca/bestPractices/PublishedBP_e.asp#sw
- Transportation Association of Canada, (TAC) web-site at: <http://www.tac-atc.ca/english/index.cfm> has a series of Best Practices including:
 - **Salt Management Plans** at: <http://www.tac-atc.ca/english/information/services/readingroom.cfm#syntheses>
 - **Snow Storage and Disposal** at: <http://www.tac-atc.ca/english/information/services/readingroom.cfm#syntheses>
 - **Design and Operation of Road Maintenance Yards** at: <http://www.tac-atc.ca/english/information/services/readingroom.cfm#syntheses>
- Alberta Infrastructure and Transportation at: <http://www.trans.gov.ab.ca/home/index.asp>
- **Code of Practice for the Environmental Management of Road Salt, April 2004** on the Environment Canada web-site at: http://www.ec.gc.ca/nopp/roadsalt/cop/en/rs_main.htm
- Environment Canada List of Canadian Programs, Initiatives and Guidelines Related to Road Salts (June 2001) http://www.ec.gc.ca/nopp/roadsalt/pdfs/list_e.pdf
- For information on the scientific assessment of road salts, contact the Transportation Research Board at: www.trb.org