

CHAPTER 9

DEALING WITH SNOW & ICE

Snow removal and ice control work includes all work in connection with snow removal, snow hauling and disposal, maintaining drainage systems in the winter months, and applying sand, de-icing, and anti-icing chemicals. Proper snow and ice control will reduce the discharge of de-icing agents, anti-icing agents, and sediment to watercourses.

Primary goals for this chapter are:

- Maintain public safety and open roads
- Prevent or minimize delivery of sediment and chemicals to streams



9-A Snow and Ice Removal

9-B De-icing/Anti-icing and Sanding

9-A SNOW & ICE REMOVAL

Introduction:

It is important to keep dirty snow and ice out of watercourses since water quality can be degraded from the sand and de-icing chemicals entrained in the ice. Containing the snow and ice at disposal areas and planning ahead all lead to cleaner streams and healthier fish.



9-A-1 Snow and Ice Removal

Description: Snow/ice removal consists of plowing snow and ice from bridges, roadways, and shoulders. Activities also include the truck haul of snow to disposal areas, opening drains covered by snow and ice, and opening roads that are normally closed for the winter season.

Environmental Concerns:

- Discharge of sediment (sand and cinders) and deicing agents (salt, CMA) into watercourses or the storm water drainage system.
- Discharge of fuel or oil from leaking snow removal equipment into watercourses.

Best Management Practices:

1. Develop winter management and operation plans that identify critical areas, with levels of service for roads and methods for maintaining levels of service during winter weather.
2. Inspect snow and ice control vehicles and equipment for fuel and oil leaks prior to using. [See: 6-C Maintenance Yard: Vehicle & Equipment Maintenance]
3. Where possible, avoid blowing or pushing ice, snow, abrasives, or other debris into watercourses, the storm water drainage system, or where a storm water drainage system inlet can be blocked.
4. Stop sidecast sweeping within 50 feet of structures over water, where possible.
5. Clean inlets prior to first rain as feasible. [See: 3-D Winterizing Roads]
6. Modify blade angles or blower hoppers in sensitive areas.

Permits Possibly Required:

None required

9-B DE-ICING, ANTI-ICING & SANDING

Introduction:

These practices include applying anti-icing agents to the road in advance to prevent ice from bonding to the surface, as well as applying de-icing agents after ice has formed to “de-ice” the road surface. De-icing agents typically include sand, salts, while anti-icing agents include magnesium chloride and potassium acetate. Anti-icing is the preferred practice, when feasible. It is important to keep these agents out of watercourses to protect water quality.



9-B-1 Sanding

9-B-2 De-icing and Anti-icing Chemicals

Description: Sanding activities put sand on road and bridge surfaces to provide for safer driving surfaces. Winter weather will determine the rates of application for sand. The County should recycle sanding material into shoulders. It has been estimated that anywhere from 10-50% of the sand applied is re-used or trapped. The majority of the sand is removed from the road by plows, up to 60 feet off the road. The County should capture sand around bridges, and near streams where possible.

Environmental Concerns:

- Discharge of sediment (sand and cinders) into the watercourses or storm water drainage system.
- Adding fine sediment to salmon spawning gravels or rearing habitat, which can reduce the chance of survival for eggs and juveniles.
- Impact of particulates from sand and cinders on air quality.

Best Management Practices:

1. Place barriers in site-specific locations along streams or direct drainages to route sanding/anti-icing material away from watercourses, where appropriate and practical. [See: Appendix B-8 Water & Runoff Diversions]
2. Identify and create facilities to capture sanding material where appropriate.
3. Reduce quantity of sand applied where appropriate.
4. Where necessary, sweep after storms to remove sand and cinders. [See: Appendix B-9.9 Sweeping]
5. Use road abrasives that have been washed, or screened, or graded to reduce silt and clay to insignificant levels.
6. Where possible, store sand in covered stockpiles in area where frozen crust will not form on the stockpile. [See: 6-D-4 Outdoor Storage of Raw Materials]

Permits Possibly Required:

None required

DE-ICING & ANTI-ICING CHEMICALS

9-B-2

Description: Magnesium chloride, potassium acetate, and calcium magnesium acetate (CMA) are applied as anti-icers to prevent water from bonding to the pavement. Salts (sodium chloride, calcium chloride, and potassium chloride) are applied as de-icing agents once ice has formed. Winter weather will determine rates of application for sand and anti-icers.

Environmental Concerns:

- Discharge of de-icing agents into the watercourse or storm water drainage system.
- Chemical depletion of oxygen in stagnant water (by CMA) or increase of conductivity in quality of stream water (by salts).
- Salt damage to trees adjacent to a road or in a location affected by runoff.

Best Management Practices:

1. Minimize the application rates of sand where sand could wash off into the streamcourse.
2. Use anti-icing products on bridges and roads where permitted and during freezing fog in lieu of sanding, when optimum conditions exist, where adjacent water bodies support a 100:1 dilution factor, or where there is a vegetative buffer between the road and water body and there is no standing, shallow water.
3. Seek use of alternative de-icing agents that are environmentally friendly.
4. Calibrate spreaders routinely. Do not over-apply de-icing agents.
5. Maintain accurate records of the locations for salt application and quantities of salt used. Follow recommended salt application rates.
6. Wash equipment used in the application of de-icing agents at a wash area that discharges to a sanitary sewer system or water recovery system using detergents.
[See: 6-C-3 Maintenance Yard: Pressure Washing]
7. Store de-icing agents in covered areas, bunkers, or storage buildings. Do not store de-icing chemical where they will come in contact with storm water runoff. [See: 6-D Maintenance Yard: Material Use & Storage]
8. See ODOT video, “CMA: A Valuable Tool for Winter Operations” (18 min.).

Permits Possibly Required:

- Chemical use may be addressed as part of the County’s Storm Water Management Plan and Permit, if needed.