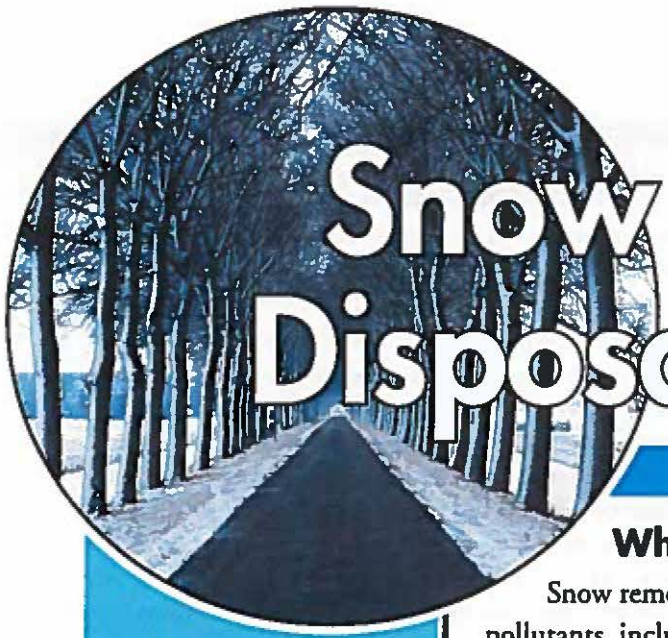

Streets and parking lots

Snow Storage and Disposal Techniques

What's the Problem?

Snow removed from roads and parking lots may contain various pollutants, including road salt, sand, litter, nutrients, animal waste, and automotive pollutants such as metals and oil. If not stored properly, contaminated snow melts can enter surface and ground water areas. Disposing of snow on land where contaminants and debris can be gradually released, contained, or collected is recommended to prevent contamination of surface waters or of land that drains directly into surface waters, groundwater, or storm drains.

Managing Snow Piles

During plowing operations of large areas, such as parking lots, it may become necessary to accumulate large piles of snow. The following guidelines can minimize the environmental impact from the snow melt of large piles:

- Pile snow on grassed areas or other porous surfaces to help prevent surface water contamination.
- Pile snow where there is an adequate depth of soil (approximately 30 inches) between the ground level and the water table. The soil and vegetation will act as a filter for pollutants in the melting snow.
- Avoid plowing snow into surface waters (stream beds, rivers, lakes, wetlands
- Avoid piling snow on or near storm drains.

Low-cost solutions

Identify all surface water areas, and areas leading to groundwater, in snow-plow routes (rivers, lakes, streams, wetlands, storm drains, and wellheads) and avoid dumping snow in these areas.

Avoid dumping snow in areas with highly pervious soils. Spread snow piles in the spring to increase area, breakup crust, and maintain volume of melt water.

SEMCOG

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Ours to Protect

Source: Michigan Department of Transportation

Storage and/or Disposal Site Selection

If a community determines that a separate storage or disposal site is necessary to collect and maintain large piles of snow off-site, a variety of factors should be considered when choosing an appropriate site:

- Estimate snow disposal capacity to ensure number and size of sites are adequate.
- The best sites include ways for meltwater to be managed using best management practices for storm water control (i.e., directed into a detention basin).
- Protect drinking water supplies by maintaining minimum distances from snow storage areas to wells. Well isolation distances are specified in part in Act 399 and Act 368 Part 127 Rules. Distances of wells from snow storage must be at least 150 feet from any private water supply wells, at least 150 feet from a type IIa non-community water supply well*, at least 200 feet from a type IIb non-community water supply well, at least 200 feet from any municipal or community water supply wells, and should not be located in a wellhead protection area.
- Choose sites in upland areas to minimize environmental impacts.
- Sites should not have steep slopes or highly erodible soils.
- Avoid areas with fractured bedrock near the surface as contaminants can be easily channeled to groundwater at these sites.
- Avoid dumping snow into landfills or gravel pits due to potential for contaminated leachate and lack of filtration of meltwater.

Storage and/or Disposal Site Maintenance

Once a site is selected, it should be properly maintained throughout the season, and appropriately restored once the season has ended.

- A dike or berm should be placed securely on the downgradient side of the snow disposal site to direct meltwater and surface runoff (i.e., to detention basins).
- A silt fence may need to be installed to prevent litter from blowing offsite or into waterways.
- Remove sediment and debris from the site during the snow season and after spring thaw.
- To filter pollutants out of the meltwater, a vegetative buffer strip should be maintained during the growth season between the disposal site and adjacent waterbodies or storm drains that discharge to surface water.
- Restore the soil of the site if needed. Regrade the site if channels have formed from snowmelt and reseed with appropriate vegetation.

Drift Control Strategies

To help prevent the amount of snow that needs to be plowed from roadways or parking lots, which reduces runoff potential, install snow fences to contain the snow to the roadsides and keep it from blowing onto roadways and parking lots. Snow fences can greatly reduce mechanical snow removal activities and costs while improving driver visibility during high winds.

- Consider the volume of snow that needs to be contained on the roadsides. Both capacity and height should be considered when selecting the proper fence.
- Doubling the fence height will increase snow storage capacity up to four times.
- Fences four-eight feet in height should be used depending on the amount of snow being blown onto the roadway. An eight-foot-tall fence can contain up to 40 tons of snow. In areas where extreme amounts of blowing snow occur, higher fences up to 12 feet may be needed.
- Snow fences too close to the road can increase the amount of snow on the road! The distance between fences and the road should be at least 35 times the height of the fence.
- Although fences should be perpendicular to the prevailing wind direction, the angle can vary by as much as 25 degrees without affecting performance.
- Porosity refers to the open area of a fence. A porosity of 40-50 percent is recommended to maintain the largest drifts.
- A bottom gap should be left when installing the fence that is 10-15 percent of the fence height. A gap between the bottom of the fence and the ground increases the height and capacity of a snow fence and reduces the amount of snow deposited close to the fence.

In addition to the traditional snow fences used to contain blowing snow, numerous communities have implemented living snow fences, using vegetation to trap and contain snow to roadsides. Living snow fences include rows of trees and shrubs that, if planted in the right location, can cause snow to accumulate in a more convenient area and can also improve driver visibility during and after snowstorms.

- Trees and shrubs suitable for drift control should have relatively dense foliage that extends to ground level. Coniferous species are recommended for their dense foliage, fast-growing nature and resistance to drought, road salt, frost, and disease. The best spacing for coniferous trees is approximately eight feet with rows spaced 8-10 feet apart. Three rows are recommended to reduce the possibility of gaps forming when trees die.
- A strip of tall grasses 12 feet wide will actually trap the snow and hold it. Native grasses are an attractive addition to farmsteads and field borders because they remain upright during the winter and provide wildlife with excellent cover for the winter and nesting habitat in the spring.

Using Standing Corn Stalks as a Living Fence

Iowa DOT is using standing corn-snow fences to save about 75 percent of the cost of erecting snow fences. In several Iowa counties, farmers are paid 50 cents more than market price to leave four-to-six rows of corn standing in areas where there are major problems with drifting snow on the roadway. This natural snow fence also helps improve visibility during snowstorms. Farmers benefit by a fair price for their corn, which is often picked by nonprofit groups in the spring. If the corn is given away at that time, the farmers may deduct the value of the corn as a charitable donation.

Top left photo: Remove debris and sediment, such as sand, from the site during the snow season and after spring thaw.

Top right photo: A strip of tall grasses will remain upright throughout the winter and actually trap the snow and hold it.

Back photo: The best sites to dispose of snow are sites that allow meltwater to be managed in vegetated areas.

Snow Storage and Disposal Techniques

Resources

*Type IIa water supplies have an average production during the maximum month equal to or greater than 20,000 gallons per day. Type IIb water supplies produce less than 20,000 gallons per day during the peak month. Michigan Department of Environmental Quality, Drinking Water Program, www.michigan.gov/deqwater.

Alaska Department of Environmental Conservation, Snow Disposal Area Siting Guidance.

The American Association of State Highway and Transportation Officials (AASHTO), Center for Environmental Excellence.

Michigan Department of Environmental Quality.

Strategic Highway Research Program, National Research Council. Snow Fence Guide.

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