



Alaska Department of
Environmental
Conservation

Division of Water

Nonpoint Source
Pollution Control

www.dec.state.ak.us/water/wnpspc/index.htm

Anchorage Office:
555 Cordova Street
Anchorage, AK 99501
907-269-7692
FAX 907-334-2415

**DEC Stormwater
Information**

<http://www.dec.state.ak.us/water/wnpspc/stormwater/stormwater.htm>

Snow Disposal Area Siting Guidance

PURPOSE: To provide guidelines regarding snow disposal site selection, site preparation and maintenance.

APPLICABILITY: These Guidelines are issued by the Department of Environmental Conservation, Division of Water. They apply to public agencies and private businesses disposing of snow in the State of Alaska.

BACKGROUND

Finding a place to dispose of collected snow poses a challenge to communities, municipalities and businesses as they clear roads, parking lots, bridges, and sidewalks. Snow removed from roads and parking lots has been shown to contain various pollutants, including road salt, sand, litter, animal waste, and automotive pollutants such as metals and oil. For instance, a 2006 study of fresh fallen snow collected from roads in Juneau and Anchorage exhibited a visual sheen, indicating the presence of oil or grease. These samples also showed exceedences of state water quality standards for cadmium, lead, zinc, and mercury (ADEC 2006). These substances are not normally characteristic of freshly fallen snow but are a result of particular land uses related to urbanization and human activities. As snow melts, these pollutants can be transported into surface water or groundwater.

The purpose of these guidelines is to help DEC respond to inquiries about snow disposal requirements and to assist communities, municipalities and businesses select, prepare, and maintain appropriate snow disposal sites.

RECOMMENDED GUIDELINES

These guidelines address: (1) community planning for snow management, (2) disposal site selection; (3) disposal site characteristics; and (4) disposal site preparation and maintenance in order to minimize the potential for negative environmental impacts.

1. COMMUNITY SNOW MANAGEMENT PLANNING

- a. Evaluate snow removal and disposal for the community or site. Adopt snow removal and disposal goals and objectives for the community. Translate the goals and objectives into an action plan that clearly delineates steps that will be taken under different snow and ice scenarios; target problem areas (such as aufiesing that leads to overflows).

- b. Develop plowing and removal/ redistribution plans so citizens know what to expect under certain conditions. Determine if snow storage capacity adjacent to sites that are routinely cleared are adequate. If not, estimate the additional needed capacity.
- c. Map surface water drainage system of the community. Examine existing drainage maps to determine where meltwater runoff will go; identify sensitive water bodies. Identify any structures (berms, settling basins or ponds) that are in place to control or handle snowmelt runoff. Evaluate the effectiveness of current structural and maintenance practices in treating snowmelt runoff.
- d. Assess current practices used in your community. Identify problem areas that could be prevented by providing adequate runoff treatment. Develop an action plan to manage them better.

2. SITE SELECTION PROCEDURES

If community or site planning identifies a need for snow storage or disposal areas, sites should be selected through a comprehensive process. The following steps should be taken:

- a. Estimate how much snow disposal capacity is needed for the season so that an adequate number of disposal sites can be selected and prepared.
- b. Identify sites that could potentially be used for snow disposal such as community or municipal open space (e.g., parking lots) based on mapping and knowledge of soils, slopes, flow patterns and receiving waters.
- c. Prioritize the identified sites with the least environmental impact (using the site selection criteria, and local or GIS maps as a guide).
- d. Consider acquisition of sites to be dedicated to snow storage. It is preferable to have permanent sites used solely for snow disposal. Permanent sites can be engineered to minimize environmental impacts and may also be less costly in the long run than having a number of temporary sites not specifically designed for the purpose of snow disposal.

3. DISPOSAL SITE SELECTION CRITERIA

The key to selecting effective snow disposal sites is to locate them adjacent to or on pervious surfaces in upland areas away from water resources and wells. At these locations, the snow meltwater can filter in to the soil, leaving behind sand and debris which can be removed in the springtime. Site characteristics that should be considered:

- a. Choose sites located in upland locations that are not likely to impact sensitive environmental resources first.
- b. Choose site that have a flat slope, are well away from surface water bodies, outside of the floodplain and well above the groundwater table.
- c. Choose sites with well-drained soil to allow filtration, adsorption and microbial activity.

Site characteristics and practices that should be avoided:

- a. Avoid dumping of snow into any ice covered or open waterbody, including streams, rivers, lakes, the ocean, reservoirs, ponds, or wetlands. If areas near waterbodies are used, a vegetated buffer should be maintained between the site and the waterbody.

- b. Do not dump snow within areas where groundwater is used for drinking water. Select your site so there is no danger of groundwater contamination by chlorides from road salts. Where wellhead protection areas have been defined for public water supply wells, snow disposal sites should not be located in the protection area. In areas where wellhead protection areas are not designated, such as near private wells, it is recommended that disposal sites be located at least 150 feet upgradient of private and class C wells and 200 feet from Class A or B public water systems.
- c. Avoid dumping snow in sanitary landfills and gravel pits. Snow meltwater will create more contaminated leachate in landfills posing a greater risk to groundwater, and in gravel pits, there is little opportunity for pollutants to be filtered out of the meltwater because groundwater is close to the land surface.
- d. Avoid disposing of snow on top of storm drain catch basins or in stormwater drainage swales or ditches. Snow combined with sand and debris may block a storm drainage system, causing localized flooding. A high volume of sand, sediment, and litter released from melting snow also may be quickly transported through the system into surface water.
- e. Snow disposal sites should not be located in sections of parks or playgrounds that will be used for direct contact recreation after the snow season. Accidental ingestion of soils contaminated with metals can be detrimental to human health, especially in children. Areas in parks, such as parking lots, which are not used for public recreation, can serve as disposal sites.

4. SITE PREPARATION AND MAINTENANCE

In addition to carefully selecting disposal sites before the winter begins, it is important to prepare and maintain these sites to maximize their effectiveness. No matter where the site is located, management measures need to be employed to reduce water quality impacts of meltwater on surface and groundwaters and to reduce the amount of meltwater leaving the site. The following maintenance measures should be undertaken for all snow disposal sites:

- a. A silt fence, earthen berm or equivalent barrier should be placed securely on the downgradient side of the snow disposal site. These types of structures can be used to direct meltwater and surface runoff to settling ponds or detention basins and to minimize the possible seepage of contaminants into groundwater. If earthen berms or channels are used to contain or direct the flow of melt water they should be stabilized to prevent soil erosion during high flows.
- b. 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.
- c. Debris/litter should be cleared from the site and properly disposed prior to and at the end of the snow season.
- d. Restore the soil if needed. Regrade if channelization from snowmelt or flowing water has occurred. Reseed with appropriate vegetation.
- e. Monitor the quality of snowmelt and the receiving water, especially if it is likely to infiltrate into the local groundwater system.

- f. Consult with your local community or municipality for technical guidelines on snow site management and operations.

FOR MORE INFORMATION

If you need more information, please contact Greg Drzewiecki, (907) 269-7692.

References:

- Alaska Department of Environmental Conservation (ADEC). 2006. Evaluation of Snow Disposal into Near Shore Marine Environments. Prepared by CH2MHill. June.
- Carlson, Robert F., David L. Barns, Nathanael Vaughan, Anna Forsstrom. 2003. Synthesis of Best Management Practices for Snow Storage Areas. University of Alaska, Fairbanks. Department of Civil and Environmental Engineering. Alaska Department of Transportation and Public Facilities Research & Technology Transfer. FHWA-AK-RD-03-04. September.
- Emmons and Olivier Resources & Center for Watershed Protection. 2005. Issue Paper "G" - Cold Climate Considerations for Surface Water Management. Prepared for Minnesota Stormwater Manual Sub-Committee.
- Massachusetts Department of Environmental Protection. 2001. Bureau of Resource Protection - Snow Disposal Guidance. Guideline No. BRPG01-01
<http://www.mass.gov/dep/water/laws/snowdisp.htm>
- Minnesota Stormwater Steering Committee. 2005. The Minnesota Stormwater Manual Version 1.0 November <http://www.pca.state.mn.us/water/stormwater/stormwater-manual.html>
- Municipality of Anchorage. 2005. Design Criteria Manual. Chapter 2 Drainage. June.
- Wheaton, S.R. and W.J. Rice, 2003. Siting, design and operational controls for snow disposal sites. In *Proceedings - Urban Drainage and Highway Runoff in Cold Climate*, March 25-27, 2003, Riksgränsen, Sweden, pp.85-95.