

**STATE OVERSIGHT OF  
ROAD SALT STORAGE IN  
MIDWESTERN AND NORTHEASTERN U.S.**

**OWRC / SCCGW  
SALT STORAGE WORKGROUP**

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## TABLE OF CONTENTS

	<u>Page</u>
Purpose .....	1
Background.....	1
Oversight Limited to Storm Water Programs/Responding to Unauthorized Discharges	
Ohio .....	2
Vermont .....	2
Minnesota.....	2
Indiana .....	3
Pennsylvania.....	3
New Jersey .....	3
New Hampshire.....	3
Water Supply Protection Rules	
New York.....	4
Illinois .....	4
Connecticut .....	5
Massachusetts .....	5
Ground Water Protection Rules	
West Virginia .....	6
Kentucky .....	7
Salt Storage Rules	
Michigan.....	7
Wisconsin.....	8
Maine .....	9
Summary.....	10
List of Tables	
Table 1 .....	11
Table 2.....	12
Appendices	
A – Minnesota .....	13
B – New Jersey .....	14
C – Illinois.....	15
D – Connecticut.....	16
E – Main .....	17

## STATE OVERSIGHT OF ROAD SALT STORAGE IN MIDWESTERN AND NORTHERN U.S.

### Purpose

To review and summarize the means by which Ohio and other northern states employ rules and guidance to oversee salt storage.

### Background

Many Ohio organizations, including highway agencies, counties, cities, townships, distributors, and snow removal companies, stockpile salt to be spread on roads, walkways, and parking lots to melt ice and snow. This storage is beneficial and necessary to ensure the safety and mobility of Ohio citizens, as well as the unimpeded mobility of goods and services; however, if not stored properly, the salt can contaminate water resources, and the owner or operator can be held liable for damages.

Recently, several salt storage piles in Ohio have been identified as the source of high chlorides in public or private ground water supplies. In response, the Ohio Water Resources Council (OWRC) established a State Coordinating Committee on Ground Water (SCCGW) workgroup to:

- Develop guidance on how to best site, design, and operate a road salt storage pile to prevent contamination of water resources. The workgroup provided a final draft document, *Recommendations for Salt Storage: Guidance for Protecting Ohio's Water Resources*, to the OWRC on October 5, 2012.
- Review and summarize the means by which Ohio and other northern states employ rules and guidance to oversee salt storage. This document provides the draft summary.

The brine that is created when rainfall or melted snow runs off of a salt pile is considered by Ohio and other states to be contaminated storm water that is subject to storm water permitting requirements. Consequently, every state likely employs its storm water program to some degree to oversee road salt storage. Elements of storm water program oversight typically include:

- **Municipal Separate Storm Sewer System Permit (MS4):** For salt piles in designated urban areas, best management practices can be required, but there are no specific siting or design criteria.
- **Industrial Multi-Sector General Storm Water Permit:** For salt stored at an industrial site, this would require that salt be properly covered/enclosed.
- **Discretionary Authority:** A National Pollutant Discharge Elimination System (NPDES) permit can be required for any salt storage site, regardless of location, if a storm water program is aware of pollution. For a new site, a permit-to-install (PTI) can be required to ensure adequate protection of water quality resources. When complaint investigations or routine audits for existing facilities indicate impacts to water resources due to poor management practices, programs can take action to address any problems identified.

- **Characterization and Abatement of Unpermitted Discharges:** characterization and abatement of an unpermitted discharge from a salt facility can be required under state law. For example, in Ohio, ORC 6111 prohibits unauthorized discharge of pollutants to waters of the state, including runoff from salt storage, and grants the Director of Ohio EPA authority to require abatement/characterization.

This document summarizes how states either 1) clarify this basic approach, or 2) establish specific requirements through other programs.

The basic approach is all that is used in seven of the reviewed states (Ohio, Vermont, Minnesota, Indiana, Pennsylvania, New Jersey, and New Hampshire). State clarification is described in the section below and summarized in Table 1.

Nine states (New York, Illinois, Connecticut, Massachusetts, West Virginia, Kentucky, Michigan, Wisconsin, and Maine) employ other regulatory programs to oversee salt storage to some degree. In some of the states, these programs supplement the basic approach; however, states with comprehensive salt storage rules may not have a need for storm water program oversight. See the following sections and Table 2 for descriptions and a summary of the use of other programs. Additionally, two of the nine states have also clarified aspects of storm water program oversight of salt storage.

## **Oversight Limited to Storm Water Program/Response to Unpermitted Discharges**

### **Ohio**

The draft OWRC document, *Recommendations for Salt Storage: Guidance for Protecting Ohio's Water Resources*, states that Ohio EPA's Division of Surface Water (DSW) will require permit-to-install (PTI) for all new outdoor storage (i.e., without permanent cover) that is in place for more than seven days.

### **Vermont**

The Vermont Storm Water Program (Vermont Dept. of Environmental Conservation-Watershed Management Division) has ordered owners/operators of state-owned salt storage facilities to cover their salt and place it on an impervious pad. No such directive has been issued for county, municipal or private facilities.

### **Minnesota**

The Minnesota Pollution Control Agency encourages all public and private entities storing salt to follow the Salt Institute's (<http://www.saltinstitute.org/>) recommended BMPs. Minnesota has tried to establish requirements for salt storage in the past; however, those efforts were met with significant "pushback" from industry and cities and were never completed.

[Chapter 7](#) of the Minnesota Storm Water Manual has a section dealing with salt piles ([Protecting Water Quality in Urban Areas, Best Management Practices When Dealing with Storm Water Runoff from Urban, Suburban and Developing Areas](#)). Guidance for salt storage/maintenance is also provided in [Winter Parking Lot and Sidewalk Maintenance Manual](#) (See Appendix A for details).

## Indiana

The Indiana Ground Water Quality Standards (327 IAC 2-11-2 (e) and (f)) allow the Dept. of Environmental Management to act immediately when particular concentrations are exceeded in drinking water wells, including 250 mg/L for chloride and 500 mg/L for TDS. Indiana can also act when a non-drinking water well is rendered unusable.

## Pennsylvania

The Pennsylvania Dept. of Environmental Protection has established requirements for exposed salt storage piles under its NPDES Industrial General Permit:

- For piles less than 3,000 tons, the applicable recommendations and BMPs from the Salt Institute's *Salt Storage Handbook* must be incorporated. At a minimum, these piles must be covered by a permanent structure and on an impermeable base.
- For piles greater than 3,000 tons, the applicable recommendations and BMPs from the Salt Institute's *Voluntary Salt Storage Guidelines for Distribution Stockpiles* must be incorporated. At a minimum, these piles must be covered at all times with canvas, polyethylene or other synthetic material, except when receiving salt, building the stockpile, or loading out to customers, and then only the working face may be exposed. These piles must be on an impermeable base.

## New Jersey

MS-4 program requirements have been established for Tier A municipalities (generally located within the more densely populated regions or along the coast), but not for commercial facilities. The Dept. of Environmental Protection (DEP) has begun to address this discrepancy by focusing on five large commercial salt piles that have been largely unregulated in the past. The DEP is working with industry to develop protective permit requirements for the five sites. A key issue is cover- how should a requirement to keep a tarp on the piles be developed to reflect that piles need to be uncovered to some degree when salt is being added or removed?

Tier A municipalities must construct a permanent structure that is completely roofed and walled and anchored to a permanent foundation with an impermeable floor. The criteria for determining if a fabric-framed structure can be considered to be "permanent", housekeeping requirements, and recommendations for siting and other issues are provided in Appendix B.

## New Hampshire

New Hampshire has rules that prohibit any discharge of non-domestic wastewater containing regulated contaminants above ambient ground water standards. Owners/operators of deicing material facilities that cause brine to infiltrate into the ground or ground water must register with New Hampshire's Dept. of Environmental Services (DES) under the Groundwater Discharge Permit and Registration Rules (Env-Wq 402). In some instances, a permit is required.

The approach is considered to be reactionary rather than preventative, as the requirements do not apply until there is evidence of a discharge to ground water; however, there is a level of awareness that contamination could lead to significant costs for environmental remediation and facility upgrades, which encourages implementation of best management practices. If there are sensitive receptors nearby, drinking water or ground water monitoring may be required.

New Hampshire has issued a four-page fact sheet addressing storage and management of deicing materials (WD-DWGB-22-30). Topics covered include siting, building design and construction, housekeeping, and storm water collection.

## **Water Supply Protection Rules**

### **New York**

In limited areas, New York's regulations addressing various point and non-point sources in specific municipal water supply watersheds (such as NYC's reservoirs) may require structural cover for salt storage, though details are not provided. The NY water regulations may enable the state to require structural cover in specific cases if a site is determined to be the cause of ground water or drinking water standard violations.

The New York Dept. of Environmental Conservation contact (Kevin Roberts) believes that this approach keeps the cost of storage structures lower than if they were universally mandated, and allows municipalities to use the latest approaches that might not have been considered if regulations had been adopted with design details.

### **Illinois**

Illinois has rules for protection of ground water around potable water supplies (35 Ill. Adm. Code 615 and 616; 415 ILCS 5 Sec. 14.2). The rules address siting and operation for certain types of facilities, including deicing agent storage when the amount is greater than 25 tons.

De-icing agent storage is prohibited within 200' of all potable wells except community supply wells that draw from an unconfined aquifer. In this case, the setback is 400'. The prohibition can be waived for community public supply wells by the State Pollution Control Board with input from the Illinois EPA, and for non-community wells, by the well owner. Illinois EPA can veto a waiver for a non-community public or private well.

Outside of 200' and 400', storage is not prohibited; however, it could still be regulated. All of the design, operating, and monitoring requirements (see Appendix C) apply if a new facility is within 1000' of a community well and the community has shown that the radius of influence exceeds 200-400'. They also apply if a facility is located within 2500 feet of a community well that is within 1000' of a public waterway.

With one exception, all of the basic design, operating, and monitoring requirements (see Appendix C) apply if a new potable well is installed such that an existing indoor facility comes to be located in an expanded setback as described above. The exception is that requirements related to the loading pad do not apply.

If a new potable well is installed such that an existing outdoor facility comes to be located in an expanded setback, there are requirements for a pad, covering the salt with a tarp, pile management, housekeeping, and storm water control (see Appendix C).

## Connecticut

Connecticut has clarified aspects of its storm water program regarding salt storage and also employs an aquifer protection program to protect ground water resources from various sources, including salt storage.

According to Ranelli (OLR Research Report, 2000) almost all facilities that store salt must have a general permit for water discharge. Under the *General Permit for the Discharge of Storm Water Associated with Industrial Activities* (effective October 1, 2011), permittees must ensure that storage piles of deicing materials (including pure salt, salt alternatives or either of these mixed with other materials) meet these requirements:

- For piles in place for more than 180 days per year, storage must be in a permanent, roofed structure by October 1, 2013.
- For piles in place for less than 180 days, a waterproof cover may be used to prevent exposure to precipitation (except for exposure necessary to add or remove materials).
- In areas with a groundwater classification of GA (existing private supply or potential private or public supply) or GAA (public supply), an impervious liner shall be employed.

Deicing agent storage is one of a number of activities subject to Connecticut's Aquifer Protection Area Program. When agents are stored in an aquifer protection area for a public water system that draws from sand and gravel deposits and supplies more than 1000 people, the storage must be registered and permitted, and best management practices must be followed. The requirements do not apply when the deicing agent is stored in weather-tight, waterproof structures for retail sale or use on parking areas or access roads to parking areas. Consequently, businesses that store deicing agents in small household size quantities for retail sale are not regulated by the Program. Additionally, businesses that use, but do not sell, deicing agents on parking areas or access roads to parking areas for their own use are also not regulated. These businesses must comply with storage of deicing agents in weather-tight, waterproof structures so as to prevent infiltration to groundwater.

Connecticut has guidance for salt storage facility siting, design, and operation (See Appendix D).

Connecticut law requires the Department of Energy and Environmental Protection (DEEP), in consultation with the Departments of Transportation and Public Health, to adopt regulations regarding the storage and application of road salt to minimize the contamination of water supplies. The law has been in effect since 1985, but to date, the DEEP has not adopted the regulations.

## Massachusetts

In Massachusetts, deicer storage is regulated by both law (General Law Chapter 85, Section 7A) and rule (drinking water regulations, 310 CMR 22.20 and 22.21). Two departments, the Massachusetts Highway Department (MassHighway) and the Massachusetts Department of Environmental Protection (DEP), are involved. Key aspects include:

- Storage is forbidden by law in a manner or place that would subject a water supply or ground water supply to the risk of contamination and within 200 yards of an established

river or estuary unless stored in solid frame storage shed (with exceptions for water-dependent marine cargo facilities).

- Storage is prohibited by drinking water rule within source water protection Zones I and II<sup>1</sup> of public water supply wells unless it is within a structure designed to prevent the generation and escape of contaminated runoff or leachate.
- Uncovered or uncontained storage is prohibited by drinking water rule through local bylaw within Zone A at new reservoirs and at reservoirs increasing their withdrawals.<sup>2</sup>
- Anyone using more than one ton of deicing chemicals a year must, by law, report annually to the DEP on the amount used and the amounts currently stored.
- MassHighway has a Salt Remediation Program under the Hazardous Materials Investigations Unit that responds to private and public water supply salt complaints. If a resident on a private well is on a documented sodium-restricted diet of less than 1,000 mg/l day and the sodium in the drinking water exceeds 20 mg/l, MassHighway will investigate. DEP gets involved in investigation and remediation when a public water supply Zone I or II contains elevated sodium, defined as greater than 20 mg/l. Source removal is the main goal, sometimes accompanied by limited soil removal and ground water monitoring.
- In the past, MassHighway has administered a program to assist municipalities with the construction of storage sheds. In 1990s, through a Transportation Bond Bill, MassHighway reimbursed 31 municipalities with \$100,000 for constructing proper facilities. Reportedly, 201 of 351 Massachusetts communities have used state funds to construct storage facilities.
- The state refers to the Salt Institute's *Salt Storage Handbook* for BMPs.

## **Ground Water Protection Rules**

### **West Virginia**

West Virginia has clarified aspects of its storm water program regarding salt storage and also employs a ground water protection program to protect against salt storage impacts.

The WV Dept. of Environmental Protection regulates salt piles through its storm water program as follows:

- Municipal: MS4 General Permit
- Highway Garage: Highway Garage General Permit

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<sup>1</sup> Zone I varies according to pumping rate but default radii are generally 100-400 feet; Zone II is the primary recharge area to a well under the most severe pumping and recharge conditions that can be realistically anticipated, i.e., 180 days of pumping at approved yield, with no recharge from precipitation.

<sup>2</sup> Zone A is the area within 400 feet of the streambank on the mainstem (200 feet on tributaries) of a Class A stream (Class A waters are waters designated as a source of public water supply, and must meet specific water quality criteria). It also includes area around a reservoir, up to the bank

- Private (less than 50,000 tons): Multi-sector General Permit (Sector U)
- Private (greater than 50,000 tons): Individual Permit

There are specific conditions written into Sector U for salt piles:

- Cover at all times except when salt is being added or removed.
- Store on an impervious pad.
- Liners for retention ponds and diversion ditch must meet 10-7.
- Monitor storm water semi-annually for total suspended solids, chloride, cyanide, and total iron.

The terms of the Multi-Sector Storm Water General Permit require storm water pollution prevention and ground water protection plans. Specific contents are detailed in the permit and guidance.

Ground water protection plans are required ([47CSR58](#)) for all facilities having the potential to impact ground water. The plans cover all processes and materials that “may reasonably be expected” to affect ground water quality. Structures and practices must be in place to prevent ground water contamination including, at minimum, quarterly inspections and maintenance, and usually spill cleanup procedures. Ground water monitoring may be required if there is potential for contamination.

West Virginia does not have siting criteria but requires that issues such as sensitive waters be detailed and addressed within the storm water and ground water plans.

## **Kentucky**

Kentucky 401 KAR 5:037 requires anyone engaged in activities that have the potential to pollute ground water to prepare and implement a ground water protection plan. Storing or related handling of deicing materials is one of a number of activities covered. An exemption is available if there is no reasonable potential to degrade the ground water considering the hydrogeologic sensitivity, the quantities and properties of the material, the uses of the material, and current and potential ground water use. The requirements also do not apply to retail marketing or normal use of products packaged for personal use or activities conducted entirely in enclosed buildings with a sufficiently impervious floor with either no floor drains or with all drains connected to an on-site, permitted disposal or treatment system.

## **Salt Storage Rules**

### **Michigan**

Salt is considered a polluting material under the Michigan Dept. of Environmental Quality (DEQ)-Water Quality Bureau’s Part 5 rules for spillage of oil and other polluting materials. Two documents have been produced that specify the requirements and provide guidance at the same time: *Guide to Salt Storage Requirements for Small Commercial Snow Removal Services* and *Salt and Brine Storage Guidance for Road Agency Maintenance and Other Facilities*. Key aspects of the rules/guidance are:

- The rules apply when greater than five tons of salt or sand/salt mixture (>1% salt) is stored.

- Pollution Incident Protection Plans (PIPPs) are required.
- Salt spills greater than 50 lbs. must be reported.
- Storage facilities are not to be within 50' of surface water or in a 100-year floodplain unless they are constructed to be effective during a 100-year flood.
- Storage and handling areas must be designed and operated to prevent unauthorized releases of salt or salt-contaminated storm water to water resources or public sewer systems.
- Salt must be stored in an enclosed building or covered with a waterproof tarp at road agency maintenance facilities. This is only recommended for small commercial snow removal facilities.
- Impervious surfaces ( $< 1 \times 10^{-7}$  cm/sec for road agency maintenance facilities) are recommended for all salt storage and handling. For road agency maintenance facilities, the pad must slope and be curbed to direct salt-contaminated runoff to an appropriate collection area to prevent it from reaching ground or surface water.
- Recommendations on housekeeping, self-inspection, etc. are provided for small commercial snow removal companies.
- Options are provided for dealing with uncontaminated and contaminated storm water runoff. For small commercial snow removal services, "contamination" is defined by contact with salt. For road agency maintenance facilities, 10,000 mg/L chloride is the cutoff.

## Wisconsin

The Wisconsin Dept. of Transportation (WDOT) – Bureau of Highway Maintenance regulates salt storage. The purpose of the rules (Trans 277, Wisconsin Administrative Code) is to prevent contamination of water resources. Key provisions include:

- The rules apply to salt or sand/salt mixtures greater than 1,000 lbs.
- Storage is prohibited within 50' feet of a lake or stream. Setbacks of 250' and 1200' apply for private and municipal wells, respectively, per well rules.
- Storage must be on an impermeable pad designed to prevent run-on from contacting salt
- The materials must be stored in a structure with roof and walls sufficient to prevent precipitation from contacting salt and wind from carrying salt into waters of the state. However, a pile is exempt if it is covered by a tarp that meets specifications, the pile is open only at the working face to the minimum dimensions reasonably necessary, and the pile is open only when salt is being removed. Outdoor piles of mixed sand/salt with sand comprising 95% or greater by weight need be covered only April 1 – October 1.

- Discharge to waters of the state must be prevented through containment of precipitation reasonably expected to contact salt. A permit is required for any discharge to surrounding terrain, a sewer system, or surface water.
- All facilities must be registered, including name, contact information, facility location, and storage capacity.
- Any allegations of contamination and changes in facility status, ownership, etc. must be reported. The DOT annually updates salt storage facility records and assists the DNR's Source Water Protection Program in locating facilities for GIS mapping.
- Records of maximum and minimum salt quantities, facility changes, and complaints received concerning contamination must be kept.
- The DOT inspects annually (subcontracted to a private company), within 30 days when contamination is known or suspected, and when operations are discontinued. If repairs or changes are needed, the DOT sends a letter to the DNR describing the infractions and also forwards a copy to the owner's/operator's insurance company.
- The DOT issues compliance directives when rules are not met or special orders for further investigation or remedial action in the event of contamination. The DOT has no "big stick" to force entities to follow the rules, but if contamination results, then the penalties and fees associated with Wisconsin's water quality laws apply. The DOT believes that this, in conjunction with the insurance company letters noted above, results in about 98% compliance.

## **Maine**

The Maine Sand and Salt Pile Program is a cooperative effort of the Dept. of Transportation (DOT) and Dept. of Environmental Protection (DEP). The DEP is responsible for environmental and siting issues, including new sand/salt pile registration, while DOT handles facility construction and municipal or county funding issues.

All sand/salt piles registered with the DEP have been given a project priority number between 1 (immediate and substantial impact on local drinking water supplies) and 5 (minimal impact on local drinking and surface water). Criteria for establishing project priority number are listed in Appendix E.

Project priority number determines applicability of the siting and operation rules and is also used by the DOT in the allocation of funds for the construction of public (state, county or municipal) storage facilities. The amount of funding depends on the number of winter miles maintained. Cost-share ranges from 25% to a maximum of 100%, with the typical being between 40% and 70%.

Key aspects of the program include:

- Sand/salt piles that are less than 100 cubic yards in size are exempt from registration, and siting and operational requirements.
- Owners/operators of Priority 1, 2 or 3 sand/salt piles were required to construct a storage facility by October 1, 2003. Towns are eligible for funding for the construction of

a municipal storage facility for these piles, but not for Priority 4 and 5 piles. Owners/operators of State, federal, and private Priority 4 and 5 sand/salt piles must comply (municipal and county Priority 4s and 5s are exempt) with the DEP Rules Chapter 574, "Siting and Operation of Road Salt and Sand-Salt Storage Areas". The requirements, which also apply to and new facilities and Priority 1, 2, and 3 facilities without a constructed facility, are listed in Appendix E.

If a well has been contaminated by a private sand/salt pile, owners are directed to the civil courts for remedy. If a well has been contaminated by a public sand/salt pile, 23 M.R.S.A. §3659 (Protection of Private Water Supplies) requires homeowners to apply to the political subdivision for a determination of the cause and an assessment of damages. The subdivision has 90 days to respond. The town, county, or state may offer to replace the water supply or pay a designated sum of money. If agreement cannot be reached on the cause or a settlement, an action may be filed in Superior Court within one year of receiving the first written response from the political subdivision.

### **Summary**

The brine that is created when rainfall or melted snow runs off of a salt pile is considered by Ohio and other states to be contaminated storm water that is subject to storm water permitting requirements. Consequently, every state likely employs its storm water program to some degree to oversee road salt storage. Elements of storm water program oversight typically include the MS-4 Program, the Industrial Multi-Sector General Storm Water Permit, and discretionary authority to require PTIs or characterization and abatement of unpermitted discharges.

This basic approach is all that is used in seven of the 16 reviewed states (Ohio, Vermont, Minnesota, Indiana, Pennsylvania, New Jersey, and New Hampshire). However, nine states (New York, Illinois, Connecticut, Massachusetts, West Virginia, Kentucky, Michigan, Wisconsin, and Maine) employ other regulatory programs to oversee salt storage to some degree. See Table 2 for descriptions and a summary of the use of other programs.

Table 1. States Whose Oversight of Salt Storage is Limited to their Storm Water Programs and Responding to Unauthorized Discharges	
STATE	KEY PROVISIONS
Ohio	Will require PTI for all new outdoor storage that is in place for more than seven days.
Vermont	Has ordered owners/operators of state-owned facilities to cover their salt and place it on an impervious pad.
Minnesota	The Winter Parking Lot and Sidewalk Maintenance and the Minnesota Storm Water manuals have sections dealing with salt storage.
Indiana	Ground water quality standards allow the State to act immediately when water wells are contaminated.
Pennsylvania	NPDES Industrial General Permit requires a structure for salt storage less than 3,000 tons but allows for cover by a tarp for storage greater than 3,000 tons.
New Jersey	MS-4 program requires Tier A municipalities to storage salt in a permanent structure. The State is currently negotiating with the salt industry to develop permit requirements for five large commercial piles that have been largely unregulated to date.
New Hampshire	The State requires a ground water discharge permit for any salt storage facility that contaminates ground water.

**Table 2. States that Employ Other Programs to Supplement (or Replace) Storm Water Program Oversight**

<b>STATE</b>	<b>STORM WATER PROGRAM</b>	<b>OTHER PROGRAMS</b>
New York	No clarification of basic approach.	Regulations addressing various point and non-point sources in specific municipal water supply watersheds may require structural cover for salt storage.
Illinois	No clarification of basic approach.	Rules for protection of ground water around potable water supplies cover siting, design, and operation of salt storage when the amount is greater than 25 tons.
Connecticut	Under the General Industrial Permit, salt piles in place for more than 180 days per year must be in a permanent, roofed structure by October 1, 2013. A waterproof tarp is allowed for piles in place for less than 180 days. Also, an impervious liner is required in areas with a ground water classification of existing or potential public or private supply.	The Aquifer Protection Area Program requires registration, permitting, and BMPs when salt is stored in a protection area for a public water system that serves more than 1,000 people and draws from sand and gravel deposits.
Massachusetts	No clarification of basic approach.	Drinking water rules address siting and design of facilities within source water protection Zones I and II and Zone A at reservoirs increasing withdrawals.  Also, General Law prohibits storage that would subject a water supply to risk of contamination and within 200 yards of a river or estuary unless it is in a structure.  The State also has a Salt Remediation Program that responds to water supply complaints related to salt storage.
West Virginia	Municipal: MS4 General Permit  Highway Garage: Highway Garage General Permit  Private (< 50,000 tons): Multi-Sector General Permit  Private (> 50,000 tons): Individual Permit	Ground water protection rules require protection plans for salt storage facilities.
Kentucky	No clarification of basic approach.	Ground water protection rules require protection plans for salt storage facilities.
Michigan	No clarification of basic approach.	Salt storage is subject to Part 5 rules for spillage of oil and other polluting materials. The requirements apply when greater than five tons of sand/salt mixture is stored and address siting design and operation. Spills greater than 50 lbs. must be reported.
Wisconsin	No clarification of basic approach.	Salt storage rules apply to sand/salt mixtures greater than 1/2 ton and address siting, design, and operation. The rules require facilities to be registered. Any allegations of contamination must be reported. The DOT inspects facilities annually.
Maine	No clarification of basic approach.	Salt storage rules require registration. All sand/salt piles are prioritized to determine applicability of rules and for public facilities, eligibility for construction funding.  The rules apply to sand/salt piles greater than 100 cubic yards in size and address siting, design, and operation.

## Appendix A – Minnesota

[Chapter 7](#) of the Minnesota Storm Water Manual has a section dealing with salt piles ([Protecting Water Quality in Urban Areas, Best Management Practices When Dealing with Storm Water Runoff from Urban, Suburban and Developing Areas, March 1, 2000](#)). To prevent brine from entering surface or ground water, the following practices should be used to minimize the opportunity for water to contact salt.

- Salt piles should be on impervious surfaces.
- All salt piles should be covered with polyethylene if they are not in a shed. Cover outside sand/salt piles with tarps and use diversion berms to minimize run-on.
- All sand/salt piles should be moved to areas not subject to flooding and placed in salt sheds or covered during the nonfreezing spring and summer months.
- Any runoff from stockpiles should be contained for disposal or added back to a winter sand pile.
- Wash water from trucks used for salting and sanding is very high in chlorides. To avoid groundwater contamination, this water should not be discharged to septic system drainfields. Wash water should be contained for disposal, or discharged into sanitary sewers. Earthen basins are generally ineffective in storing salt brine runoff unless they are sealed and do not have a discharge.

Guidance for salt storage/ maintenance is also provided in a Minnesota document entitled [Winter Parking Lot and Sidewalk Maintenance Manual](#) *June 2006. Revised 2010*

- Store salt where it is protected from rain, snow and melt water.
- Store on an impervious surface.
- Cover all piles, ideally indoors.
- Sweep loading areas back into the pile to reduce leaching.
- Contoured pads (bowl-like) for pretreated salts, reduces runoff from the pile.
- Store away from lakes, rivers, ditches, storm drains and wetland edges.

## Appendix B- New Jersey

A Tier A municipality's fabric-framed structure is considered to be "permanent" if:

- It is designed to withstand at least 110 mph winds
- It is covered by a PVC or other similar fire-rated material with at least a 20-year warranty.
- Appropriate materials are placed around the interior to protect the side walls during loading and unloading.
- The design prevents storm water run-on and run through.
- It is on an impermeable slab.
- The structure is not open-sided; it must have a roll up door or other means of sealing the access from wind-driven rainfall.

The housekeeping practices are required for Tier A municipality de-icing storage facilities are:

- Prevent/minimize the spillage during loading and unloading.
- Remove of spilled materials using dry cleaning methods followed by reuse or proper disposal.
- Regular sweeping of storage and loading/unloading areas.
- Minimize tracking of materials from storage and loading/unloading areas.
- Minimize the distance that materials are transported during loading/unloading.

The following is not required for Tier A municipal de-icing storage facilities, but should be considered when siting a new permanent structure:

- Locate at least 200 hundred feet from streams, wells, reservoirs and ground water sources.
- Avoid wellhead protection areas.
- Top elevation of the pad and access way should be higher than the 100-year storm level.
- Divert storm water away from storage area.
- Place wind barriers to reduce the possibility of windblown particles entering nearby areas.
- The storage structure should have a paved, impermeable access way.
- Work with neighboring municipalities, public complexes, and/or highway agencies to construct joint use facilities.

## Appendix C- Illinois

The basic design, operation, and monitoring requirements for deicing agent storage that are located within the applicable distances of water supplies are:

- Bituminous or concrete storage and loading pads.
- Roof and walls capable of protecting and containing the de-icing agents.
- Loading pad curbing/roof with diversion of runoff away from the loading pad.
- Routine inspection of the surrounding area to identify any releases, with clean-up as necessary.
- Routine maintenance of the facility and loading pad.
- A ground water monitoring program that leads to corrective action if necessary.

If a new potable well is installed such that an existing outdoor facility comes to be located in an expanded setback, there requirements are:

- Piles on a paved pad, covered by a tarp, and re-shaped (conical) as often as necessary to prevent leaching.
- Direction of surface drainage to prevent flow through the base of the pile.
- Storage where drainage will not enter water supplies, farm lands or streams.
- Design and operation of the pile to control wind dispersal by means other than wetting.
- Daily inspection of the surrounding area to identify any releases, with clean-up as necessary.

## Appendix D- Connecticut

Per Connecticut guidance, in order to prevent a new salt storage facility from becoming a source of pollution, it should not be located in any of the following:

- Within a 100-year flood plain
- Within 250 feet of a well that is utilized for potable water
- Within an Aquifer Protection Area
- Where adjacent surface water bodies are tributary to public water supply reservoirs, unless it is not feasible to locate the facility in a less sensitive area
- In areas where the groundwater has been classified as GAA or GA, unless it is not feasible to locate the facility in a less sensitive area.

Also,

- Salt should be stored on an impervious surface under a roof.
- Mixtures of salt and sand should also be stored on an impervious surface under a roof, or kept covered by a waterproof material such as polyethylene.
- It is preferable to discharge storm water runoff to surface waters rather than to groundwater resources that are host to potable water wells.
- Runoff to the facility from rainfall should be diverted around the facility by berms, swales, or drains.
- Obtain necessary general permits for storm water discharges.

## Appendix E- Maine

Project priority number under the Maine Sand and Salt Pile Program is based on:

- Ground water monitoring data from nearby wells, or, if no wells, the presence or absence of a public water system;
- Extent of visible damage to trees or wetlands;
- Whether the pile is located in an area zoned for commercial, industrial or similar use, or, in the absence of zoning, the likelihood that new houses with wells will be built near the sand/salt pile;
- Distance to the nearest public water supply well or intake; and
- Whether the pile is located over a significant sand and gravel aquifer.

The Maine requirements (DEP Rules Chapter 574, "Siting and Operation of Road Salt and Sand-Salt Storage Areas") for State, federal, and private Priority 4 and 5 sand/salt piles, which also apply to and new facilities and Priority 1, 2, and 3 facilities without a constructed facility, are:

- Maintain at least 300' separation from any well that does not serve the storage area; avoid locating over source water protection areas and significant sand and gravel aquifers (delineated by Dept. of Conservation as the primary recharge area for a sand and gravel aquifer capable of yielding more than 10 gpm).
- All storage, mixing, and loading must be on an asphalt pad that is at least 3' thick, and there can be no migration off of the pad.
- Run-on must be controlled.
- Cover is either by a building or a well-secured, durable, waterproof product (e.g., tarp or asphalt treated sand). Salt must be completely protected at all times from rain and snow and rainfall except for a working face at times of access and for not more than 72 hours following the last access. The salt must be covered by May 31 of each year and not rebuilt until Sept. 1.
- Spills during mixing, loading, and unloading must be cleaned up as soon as practicable.
- Owners/operators must have a written O&M plan.