

# Chloride Pollutant Minimization Plan for The City of Oak Forest

7/19/2024

Prepared by the City of Oak Forest



The City of Oak Forest is a member of the  
Chicago Area Waterways Chloride  
Workgroup



## 1.0 Introduction to Chloride Issue in CAWS/LDPR

This Pollutant Minimization Plan (PMP) has been prepared by the City of Oak Forest to reduce the environmental impacts from the organization's chloride related operations. The City of Oak Forest is a discharger covered under the Time Limited Water Quality Standard for Chloride for the Chicago Area Waterways System and Lower Des Plaines River watersheds. This PMP has been prepared to meet the requirements laid out in the Time Limited Water Quality Standard (TLWQS) for Chloride. The term of this PMP covers the first 5-years of the TLWQS period and will be updated following the re-evaluations at Years 4 ½, 9 ½, and 14 ½.

Chloride is a permanent pollutant. It does not degrade over time and continues to accumulate in the environment. Proactive measures to reduce the amount of chloride discharged can help reduce the impacts from chloride on receiving waterways and the environment. Chloride impacts aquatic life, vegetation, and infrastructure. As the chloride concentrations increase and our waters become saltier, aquatic and plant biodiversity decreases and native species are overtaken by salt tolerant invasive species.

Chlorides are commonly found in road salt, fertilizers, water softeners, dust suppressants, and certain industrial processes. Chloride-based deicers, like rock salt, are used on parking lots, sidewalks, and roads to provide safe surfaces to the public during the winter months. These deicers are one of most common sources of chloride in the Chicago region.

The water quality standard for chloride for the Chicago Area Waterway System (CAWS) was updated as part of the rulemaking process related to changing the designated use of the CAWS. The chloride standard was updated from 1,500 mg/L during the winter and 500 mg/L during the summer to 500 mg/L all year round. The change in the chloride water quality standard took effect in 2018. Because portions of the CAWS were not going to meet this new standard due to the need to maintain public safety on roads, highways, sidewalks and parking lots during the winter months, a joint submittal and supporting individual petitions were submitted between 2015 and 2018 to the Illinois Pollution Control Board for a variance from the chloride standard. The joint petition laid out best management practices that can be achieved by the petitioners to reduce their chloride use while maintaining public safety during winter storms. In addition to the CAWS, portions of the Lower Des Plaines River watershed were included as it receives water from the CAWS.

On November 4, 2021, the IPCB issued an Opinion and Order for a Time Limited Water Quality Standard (TLWQS) for Chloride for portions of the CAWS and Lower Des Plains River watersheds. The TLWQS for Chloride watersheds are defined in the Opinion and Order as the Des Plaines River watershed from the Kankakee River to the Will County Line (except for the DuPage River watershed) and the CAWS watershed (except the North Branch Chicago River watershed upstream of the North Shore Channel and those portions of the watershed located in Indiana). This is a watershed-based approach to reduce the chloride concentrations in the CAWS and Lower Des Plaines River. The TLWQS for Chloride requires all dischargers covered under the TLWQS for Chloride to create PMPs and implement specific best management practices based on their operations to reduce their chloride discharges.

## 2.0 Organization Info, Facilities' Specific Info

### 2.1 Facility overviews/descriptions

Agency Name: City of Oak Forest		
Facility Name: Public Works		Permit Number: ILR400408
Facility Address: 15440 S. Central Avenue		
City: Oak Forest	State: IL	Zip Code: 60452

The City of Oak Forest is responsible for the winter road maintenance of 152 lane miles of city side streets and 93 cul-de-sacs. All road salt used for winter maintenance is stored in a 2,800 square foot, 1,100 ton capacity salt dome. The salt dome is located at the City’s Public Works facility.

**2.2 Chloride Sources**

Currently, the City of Oak Forest only uses rock salt for snow and ice removal. Brine and pre-wetting techniques will be introduced for the 2024-2025 winter season.

All road salt is stored in a salt dome at the City’s Public Works facility, as described above.

**2.3 Level of Service for Winter Maintenance Activities**

Oak Forest aims to clear all primary roads to bare pavement and maintain a clear bare driving track on either side of the center line on secondary streets within 12 hours of the end of a snowfall, and courts and cul-de-sacs within 18 hours of the end of a snowfall. The City has eight (8), 5-ton trucks and two (2), 1-ton pickup trucks to use for plowing and spreading salt.

**3.0 Chloride Monitoring Data**

Chloride monitoring data will be collected for the CAWS and Lower Des Plaines River watersheds per the IPCB order. The data will be maintained by the workgroups. Chloride will be collected by MWRD for the CAWS watershed and provided to the workgroups as part of the annual reporting as required by the IPCB order. The Lower Des Plaines Watershed Group also maintains a USGS monitoring station in the Des Plaines River at Channahon, IL that collects continuous conductivity data to estimate chloride concentrations.

**4.0 Chloride Reduction BMPs for POTWs, MS4s, CSOs, Industrial Sources, IDOT/Tollway**

As part of the Chloride TLWQS, specific BMPs were identified for POTWs, MS4s, CSOs, Industrial Sources, and IDOT/Tollway to reduce the chloride impact on the watershed. These BMPs will be implemented over the 15-year term and additional BMPs evaluated at 5-year intervals during the 15-year term. The BMPs identified are outlined below:

**Workgroup BMP**

Variance BMP	Currently Implementing	Will Implement (Target Year)	Agency Description of Current Implementation
The permittee must participate in a Chlorides workgroup for the CAWS or LDPR, depending on the watershed within which the facility’s discharge is located.	X		The City of Oak Forest has been a member of the Area Waterways Chloride Workgroup since 2021. Oak Forest Public Works staff attended 3 workgroup meetings during the 2023-2024 season.

### Salt Storage and Handling BMPs

Variance BMP	Currently Implementing	Will Implement (Target Year)	Agency Description of Current Implementation
Store all salt on an impermeable pad that must be constructed to ensure that minimal stormwater is coming into contact with salt unless the salt is stored in a container that ensures stormwater does not come into contact with the salt.	X		All salt stored by Oak Forest is stored in a permanent dome structure on a concrete pad to prevent contact with stormwater. The dome structure has a storage capacity of about 1,100 tons.
Cover salt piles at all times except when in active use, unless stored indoors.	X		The City stores salt indoors at all times in the salt dome.
For working areas, provide berms and or sufficient slope to allow snow melt and stormwater to drain away from the area. If snow melt and stormwater cannot be drained away from the working area, channeling water to a collection point such as a sump, holding tank or lined basin for collection, discharge at a later time, use for prewetting, and use for make-up water for brine must be considered.	X		All of the paved surfaces around the salt dome are graded to drain away from the structure.
<b>MS4/CSO Only</b> - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.	X		All salt stored by the City of Oak Forest is stored in a fully-enclosed permanent dome structure on an impervious concrete pad to prevent contact with stormwater.
<p>Good housekeeping practices must be implemented at the site, including:</p> <ul style="list-style-type: none"> <li>• cleanup of salt at the end of each day or conclusion of a storm event;</li> <li>• tarping of trucks for transportation of bulk chloride;</li> <li>• maintaining the pad and equipment;</li> <li>• good practices during loading and unloading;</li> </ul>	<p>X</p> <p>X</p> <p>X</p> <p>X</p>		<p>- The City cleans their work area at the end of each storm event. Trucks are cleaned indoors.</p> <p>- When receiving salt, the trucks are tarped during transportation.</p> <p>- The City routinely maintains the salt dome and concrete pad around the structure.</p> <p>- The City sweeps the area around the loading area at the entrance of the salt dome.</p>

<ul style="list-style-type: none"> <li>cleanup of loading and spreading equipment after each snow/ice event;</li> <li>a written inspection program for storage facility, structures and work area;</li> </ul>	X	Target year of 2025	- After snow and ice events, the City brings trucks in their indoor wash bay.
<ul style="list-style-type: none"> <li>removing surplus materials from the site when winter activity finished where applicable;</li> </ul>	X		- Remaining salt after winter activities are finished is stored within the salt dome with doors shut.
<ul style="list-style-type: none"> <li>annual inspection and repairs completed when practical;</li> </ul>	X		- The City regularly inspects its facilities. Plows and trucks are inspected routinely and calibrated as needed.
<ul style="list-style-type: none"> <li>evaluate the opportunity to reduce or reuse the wash water.</li> </ul>	X		- The City's wash water is sent to the sanitary sewer system.

#### Winter Maintenance Operations BMPs

Variance BMP	Currently Implementing	Will Implement (Target Year)	Agency Description of Current Implementation
Calibrate all salt spreading equipment at least annually before November 30th. Records of the calibration results must be maintained for each piece of spreading equipment.		Target year 2025	
Pre-wet road salt before use, either by applying liquids to the salt stockpile, or by applying liquids by way of the spreading equipment as the salt is deposited on the road.		Target year 2025	
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	X		Oak Forest currently has a portion of the truck fleet with temperature monitoring equipment. The City plans to install the equipment on all of the trucks in the future.
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.		Target year 2025	

Track and record salt quantity used and storm conditions from each call-out.	X		The City tracks and records salt quantities through call-out logs. The streets superintendent closely monitors how much salt is being used by each truck and looks for anomalies with any individual's use. The City plans to create and begin implementing more detailed logs that document application rates, miles of road treated, etc.
Develop a written plan for implementation of anti-icing, with milestones. The plan should consider increased use of liquids (e.g., carbohydrate products) beginning with critical locations such as bridges over streams.		Target year 2025	
Provide employees involved in winter maintenance operations with annual training before November 30th on best management practices in the use of road salt in operations, including the practice of plowing first and applying salt only after snow has been cleared.	X		The City's roadway deicing operators receive annual specific training on best management practices for snow and ice removal and use only the amount of deicing chemical needed for each weather event. 25 people attended October 10, 2023, Public Roads Deicing Webinar through Conservation Foundation.
Be responsible for complying with all applicable BMPs even when deicing practices are contracted out and ensure that contractors are properly trained and comply with all applicable BMPs.	N/A		Oak Forest currently does not utilize contractors for deicing work
Complete an annual report, as required by paragraph 3(B) of this order, which is standardized in an electronic format and submitted to the IEPA's website and to the watershed group.	X		The City of Oak Forest will complete and submit an annual report each year to the IEPA and the workgroup by June 1.
Obtain and put into place equipment necessary to implement all salt spreading/deicing measure specified in this BMP, such as any new or retrofitted salt spreading equipment necessary to allow for pre-wetting and proper rates of application.		Target year 2025	Currently, the City only applies dry salt for deicing, with plans to introduce brine tanks for their trucks in the next 2024/2025 winter season. The City has also expressed interest in pre-wetting salt, and will investigate this option as well as other BMPs with the creation of their winter maintenance plans.
<b>MS4/CSO/IDOT/TOLLWAY Only</b> - Install equipment to measure the pavement temperature on the winter maintenance fleet for a sufficient number of vehicles to		Target year 2025	

<p>provide sufficient information to adjust application rates for the most efficient levels. Develop and complete a plan to equip the winter maintenance fleet before the first re-evaluation.</p>			
<p><b>MS4/CSO/IDOT/TOLLWAY Only -</b>          Before the first re-evaluation, develop a method for conducting a post-winter review to identify areas of success and areas in need of improvement. Items to be completed as part of the review must include, but are not limited to, an evaluation of each salt spreader’s application rate, variations in application rates, and discussion of the variation compared to the recommended rates. Once developed, the review should occur annually in the spring/early summer following each winter season.</p>		<p>Target year 2025</p>	

**5.0 Plan to Implement BMPs**

The City of Oak Forest will implement the following BMPs to take steps towards compliance with chloride standards for the watershed.

**BMP:** A written inspection program for storage facility, structures and work area.

**Plan to Implement BMP:** The City of Oak Forest plans to create a winter maintenance plan / SOPs, which will outline standard procedures and steps for deicing practices, as well as procedures for inspecting storage facilities and working areas.

**Schedule for Implementation:** The City of Oak Forest plans to write the winter maintenance plan in time for it to be implemented for the 2024-2025 winter season.

**BMP:** Calibrate all salt spreading equipment at least annually before November 30th. Records of the calibration results must be maintained for each piece of spreading equipment.

**Plan to Implement BMP:** Oak Forest currently have mechanics that perform routine maintenance on the plows and spreading equipment as needed, although not on an annual basis. The annual calibration requirement has been identified and will be implemented in the City’s winter maintenance plan.

**Schedule for Implementation:** The City’s winter maintenance plan is scheduled to be written in time for it to be implemented for the 2024-2025 winter season.

**BMP:** Pre-wet road salt before use, either by applying liquids to the salt within the trucks, or by applying liquids by way of the spreading equipment as the salt is deposited on the road.

**Plan to Implement BMP:** The City is planning on experimenting with using pre-wetted salt in the 24/25 winter season. Oak Forest is also planning on meeting with neighboring communities including Homewood to learn new BMPs relating to applying liquids to the dry salt.

**Schedule for Implementation:** Application of pre-wetted salt will be used beginning in the 24/25 winter season. At the end of the season, the efficacy of the pre-wetted salt material and application rates will be evaluated and adjusted.

**BMP:** Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.

**Plan to Implement BMP:** The City of Oak Forest plans to create a winter maintenance plan / SOPs, which will outline standard procedures and steps for deicing practices, as well as a protocol for varying salt application rates based on several factors.

**Schedule for Implementation:** The City's winter maintenance plan is scheduled to be written in time for it to be implemented for the 2024-2025 winter season. The City will be introducing brine and/or beet juice as a deicing agent for the 24/25 winter season, and will record rates which will be evaluated at the end of the winter season.

**BMP:** Develop a written plan for implementation of anti-icing, with milestones. The plan should consider increased use of liquids (e.g., carbohydrate products) beginning with critical locations such as bridges over streams.

**Plan to Implement BMP:** The City of Oak Forest plans to create a winter maintenance plan / SOPs, which will outline standard procedures and steps for deicing practices. In addition, the City is planning on introducing brine and/or beet juice as deicing agents for the 2024-2025. The City will also consider other liquid deicing agents to implement in their system with the creation of the winter maintenance plan.

**Schedule for Implementation:** The City's winter maintenance plan is scheduled to be written in time for it to be implemented for the 2024-2025 winter season. Brine and/or beet juice will both be introduced for the 24/25 winter season, so by the next season, application rates can be appropriately adjusted and analyzed.

**BMP:** Obtain and put into place equipment necessary to implement all salt spreading/deicing measure specified in this BMP, such as any new or retrofitted salt spreading equipment necessary to allow for pre-wetting and proper rates of application.

**Plan to Implement BMP:** The City of Oak Forest plans to create a winter maintenance plan / SOPs, which will outline standard procedures and steps for deicing practices. In this plan, the City will identify equipment needed to implement these practices, and create a purchasing plan and schedule.



**Schedule for Implementation:** The target year for completion of the winter maintenance plan is by the 2024-2025 winter season. After the plan has been created, the budget, purchase plan and schedule can be mapped out in 2025.

**BMP:** Install equipment to measure the pavement temperature on the winter maintenance fleet for a sufficient number of vehicles to provide sufficient information to adjust application rates for the most efficient levels. Develop and complete a plan to equip the winter maintenance fleet before the first re-evaluation.

**Plan to Implement BMP:** The City plans to create a winter maintenance plan, which will identify standard procedures for their current deicing practices, as well as highlight practices that will be added to the City's BMP. The City will identify equipment and materials needed to implement the new practices and plan according to budget and other constraints a schedule to purchase required materials and equipment.

**Schedule for Implementation:** Oak Forest plans to create the winter maintenance report in time for the 2024-2025 winter season. Once the plan has been created, a budget and schedule for purchasing materials and equipment will be set up, with a target date of 2025.

**BMP:** Before the first re-evaluation, develop a method for conducting a post-winter review to identify areas of success and areas in need of improvement. Items to be completed as part of the review must include, but are not limited to, an evaluation of each salt spreader's application rate, variations in application rates, and discussion of the variation compared to the recommended rates. Once developed, the review should occur annually in the spring/early summer following each winter season.

**Plan to Implement BMP:** The City of Oak Forest plans to create a winter maintenance plan / SOPs, which will outline standard procedures and steps for deicing practices, as well as a method for conducting post-winter reviews.

**Schedule for Implementation:** The City's winter maintenance plan is scheduled to be written in time for it to be implemented for the 2024-2025 winter season.

## 6.0 Other Chloride TLWQS Required Milestones

The City of Oak Forest will implement these specific milestones (not included in the above BMPs) as outlined by the Chloride TLWQS.

Milestone	Agency Completion Date	Agency Completion Details
6 MONTHS AFTER EFFECTIVE DATE: Petitioner establishes a mechanism for tracking of de-icing salt usage for each facility.	Salt usage is currently tracked in callout logs.	Callout logs for the 2023-2024 winter season are provided in Appendix 1. The City plans to add more details to the call log such as application rates and miles of road treated per truck for the next winter season.
July 1st OF EVERY YEAR (BEGINNING WITH YEAR 2): Discharger must submit an Annual Report for the previous year beginning on May 1 and ending on April 30 of the following year to the Agency and the chlorides workgroup on. The report shall be on salt usage for deicing and steps taken to minimize salt use and makes the report publicly available.	By July 1 of each year, beginning in Year 2 (2023).	The City of Oak Forest will submit an annual report to the workgroup and IEPA. The first annual report was submitted in June 2024.
July 1st of YEAR 3, YEAR 8 and YEAR 13: The chlorides workgroup submits a Status Report to the IEPA which includes an analysis on the following: chlorides monitoring data; report on the chloride workgroup's outreach strategy, which includes outreach efforts to expand coverage of the TLWQS, and outreach and training for nonpoint sources; identification of any new BMPs, treatment technology or salt alternatives; identification of the impediments and potential solutions of those impediments faced by dischargers and those granted coverage under the TLWQS that prevent them from completing the training and making all capital purchases necessary to implement the required BMPs; and identification and description of any assistance (financial, technical, or otherwise) that the chloride workgroup may be able to provide.	By July 1 of year 3 (2024), the workgroups will submit a Status Report to the IEPA.	
July 1st OF YEAR 4 ½: Chlorides workgroup submits to the Board its first proposed re-evaluation pleading consistent with the Board's order granting the TLWQS.	By July 1 of year 4 ½ (2025) the workgroups will submit a re-evaluation to the IEPA and IPCB.	

**Appendix 1 – Callout Log for 2024-2025 Winter Season**

## City of Oak Forest Snow Events: 2023-2024 Winter Season

<b>Date</b>	<b>Amount of Dry Salt Used (tons)</b>
Saturday, January 6, 2024	14
Wednesday, January 10, 2024	10.5
Friday, January 12, 2024	78
Saturday, January 13, 2024	24.5
Wednesday, January 17, 2024	40
Thursday, January 18, 2024	56
Friday, January 19, 2024	140
Monday, January 22, 2024	63
Monday, January 22, 2024	154
Friday, January 26, 2024	143.5
Sunday, February 4, 2024	68
Tuesday, February 13, 2024	70
Tuesday, February 20, 2024	40
Total	901.5