

Chloride Pollutant Minimization Plan for City of Chicago Department of Streets and Sanitation

11/9/22

Prepared by City of Chicago DSS

DRAFT



Chicago Area Waterways
CHLORIDE WORKGROUP



City of Chicago DSS 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 City of Chicago DSS to reduce the environmental impacts from the organization's chloride related operations. City of Chicago DSS 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 Plaines 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

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|------------------------------------|-----------|----------------------|
| Agency Name: City of Chicago DSS | | |
| Facility Name: City Hall | | Permit Number: IRL40 |
| Facility Address: 121 N Lasalle St | | |
| City: Chicago | State: IL | Zip Code: 60602 |

City of Chicago DSS operates 6 snow divisions out of 13 lot locations. Division and lot locations are summarized below:

| <u>Division</u> | <u>Lot</u> |
|-----------------|-------------------|
| Division 1 | 6441 N Ravenswood |
| Division 1 | 4243 N Neenah |
| Division 2 | 4619 W Homer |
| Division 2 | 1633 W Medill |
| Division 3 | 4241 W Ferdinand |
| Division 3 | 2505 W Grand |
| Division 3 | 1717 W Pershing |
| Division 4 | 2350 W 52nd St |
| Division 4 | 4600 W 72nd St |
| Division 5 | 900 E 103rd St |
| Division 5 | 829 W 120th Pl |
| 600s | 1752 S Clark |
| 600s | McCormick Place |

DSS utilizes 19 salt piles:

| <u>Location</u> | <u>Inside or outside?</u> |
|---------------------------------------|---------------------------|
| 6441 N Ravenswood | Inside |
| 4201 N Oak Park Ave. | Inside |
| 4501 N Marine Drive | Outside |
| 3500 N Spaulding | Outside |
| 1633 W Medill | Inside |
| 4619 W Homer | Outside |
| 5605 W Grand Ave | Outside |
| 2505 W Grand Ave | Inside |
| 4241 W Ferdinand | Outside |
| McCormick Place | Inside |
| 2200 S Federal St | Inside |
| 3001 S Rockwell Ave | Outside |
| 39 th and Lake Shore Drive | Outside |
| 2350 W 52 nd St | Inside |
| 5301 S Lasalle St | Outside |
| 4600 S W 72 nd St | Outside |
| 3154 W 95 th St | Outside |
| 10101 S Stony Island Ave | Inside |
| 12000 S Peoria Ave | Inside |

The City of Chicago and its respective departments perform snow and ice control on municipal streets, bridges, parking lots, and at city-owned facilities within the city limits. Highway segments within the city limits are maintained by the Illinois Department of Transportation (IDOT). The City does not remove snow and ice from private streets, parking lots, or driveways. City of Chicago maintains 8,321.3 lane miles of road.

2.2 Chloride Sources

The City of Chicago operates 19 Salt Stations across the city. Currently, the optimal amount of salt to have on hand before a snow season is 373,000 tons, which is collected throughout the offseason, building on whatever supplies remain from the previous winter. Salt is delivered to permanent salt domes and temporary salt sites by the vendor throughout the offseason. The Facility Operations bureau of 2FM maintains the facilities and/or lots the salt is located at while DSS maintains the salt. DSS will ensure salt piles are protected from the elements by domes and tarps. Tarps must be handled with care as they are expensive and single-use and crucial to protecting the city's salt inventory from the elements

DSS uses a "super mix" to prolong the application of salt and prevent the freezing of roads in extreme temperatures. The mixture consists of: 80% salt brine, 15% ice bite derived from beet sugar, and 5% calcium chloride. The mixture is used on Lake Shore Drive, Stony Island (56th to 95th) and Ridge Ave. (from Bryn Mawr to the city limits) as well as bridge decks, overpasses and hills.

2.3 Level of Service for Winter Maintenance Activities

It is the expectation of our citizens that we will keep all of the city streets sufficiently passable during and following a winter weather incident. To accomplish this, the City will provide, to the extent reasonably possible, effective and efficient measures consistent with generally accepted standard practices to restore mobility.

Due to the many variables associated with winter weather, each event is unique. Factors that influence when and what measures we use include: air and pavement temperatures, wind speeds and directions, precipitation rates and types, time of onset, duration, and traffic activity. Availability of equipment, personnel, and materials is also key factor that affects the effectiveness of snow and ice control efforts.

There are many different levels of snow response that are detailed in the City of Chicago snow plan.

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 data for the CAWS 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. Further details about winter maintenance practices currently being implemented by City of Chicago DSS are included in the snow and ice plan, which is included as Appendix [#]. 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 | | City of Chicago has been a member of the Chicago Area Waterways Chloride Workgroup since 2021. City of Chicago actively participates in meetings and has an at large board member. |

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 | | Salt is stored on concrete pads. Some salt storage locations have salt domes. See "Salt Stations Locations" map in the City of Chicago snow plan. |
| Cover salt piles at all times except when in active use, unless stored indoors. | X | | All salt piles without a dome are covered with a tarp except when in active use. |
| 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 | City of Chicago is targeting to complete this BMP in a future year |
| MS4/CSO Only - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities. | X | | City of Chicago currently follows MS4 requirements |
| Good housekeeping practices must be implemented at the site, including: <ul style="list-style-type: none"> cleanup of salt at the end of each day or conclusion of a storm event; | | | City of Chicago follows all housekeeping requirements outlined in IRL40. |

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| <ul style="list-style-type: none"> • tarping of trucks for transportation of bulk chloride; • maintaining the pad and equipment; • good practices during loading and unloading; • cleanup of loading and spreading equipment after each snow/ice event; • a written inspection program for storage facility, structures and work area; • removing surplus materials from the site when winter activity finished where applicable; • annual inspection and repairs completed when practical; • evaluate the opportunity to reduce or reuse the wash water. | <p>X</p> | | |
|---|-----------------|--|--|

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. | <p>X</p> | | City of Chicago calibrates all salt spreaders annually |
| 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. | | <p>X</p> | City of Chicago is targeting to complete this BMP in a future year |
| Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles. | <p>X</p> | | City of Chicago utilizes 11 Vaisala Road Weather Systems located around the city. For locations see "5.3.1 Pavement Sensors" in the City of Chicago Snow Plan |
| Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing | <p>X</p> | | City of Chicago follows the procedures set in the "Leadman Manual" for varying the salt application rate |

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| weather conditions, and forecasted weather conditions. | | | |
| Track and record salt quantity used and storm conditions from each call-out. | X | | City of Chicago tracks the quantity of salt used for each call out in accordance with the City of Chicago snow plan. |
| 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. | X | | See section 5.2.2 in the City of Chicago Snow Plan for details on current City anti-icing practices. |
| 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. | | 2023 | City of Chicago will implement a training program for all drivers by 2023. Currently all seasonal snowplow drivers get hands on and classroom training prior to operating a snowplow. |
| 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. | X | | DSS does not use contractors |
| 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. | | 2023 | City of Chicago DSS will complete the report in 2023 when the initial report is due. |
| 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. | | X | City of Chicago is targeting to complete this BMP in a future year |
| MS4/CSO/IDOT/TOLLWAY Only - 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 | X | | City of Chicago has determined that no vehicles need pavement temperature sensors because of the high-quality road temperature data from the 11 Vaisala Road Weather Systems located around the city. |

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| winter maintenance fleet before the first re-evaluation. | | | |
| MS4/CSO/IDOT/TOLLWAY Only - 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. | | X | City of Chicago is targeting to complete this BMP in a future year |

5.0 Plan to Implement BMPs

BMP: 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.

Plan to Implement BMP: City of Chicago will assess its working areas and develop a plan to implement this BMP.

Schedule for Implementation: Due to the high number of working areas and budget constraints it's unclear when the BMP will be completed at this time.

BMP: 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.

Plan to Implement BMP: City of Chicago will assess current operations and develop a plan to pre wet salt

Schedule for Implementation: Due to the high number of trucks and salt piles it's unclear when this BMP will be completed at this time.

BMP: 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.

Plan to Implement BMP: City of Chicago will develop and implement a training plan for all employees. Currently, new seasonal snowplow drivers are given a combination of hands on and classroom training.

Schedule for Implementation: To be implemented by November 30, 2023.

BMP: 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.

Plan to Implement BMP: City of Chicago will prepare and submit an annual report in 2023.

Schedule for Implementation: Prepare and submit report in 2023

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: City of Chicago will assess current operations and develop a plan to add equipment in the future.

Schedule for Implementation: At the current time it’s unclear due to the scale of operations.

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: City of Chicago will develop a post winter review to identify areas in need of improvement

Schedule for Implementation: The current goal is to complete a review after the 2022-23 snow season.

6.0 Other Chloride TLWQS Required Milestones

COC DSS 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. | Currently implementing | City of Chicago currently tracks salt usage. |
| 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 | By July 1 of each year, beginning in Year 2 2023 | City of Chicago will submit an annual report to the workgroup and IEPA. |

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| <p>on. The report shall be on salt usage for deicing and steps taken to minimize salt use and makes the report publicly available.</p> | | |
| <p>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.</p> | <p>By July 1 of year 3 2024, the workgroups will submit a Status Report to the IEPA.</p> | |
| <p>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.</p> | <p>By July 1 of year 4 ½ 2025, the workgroups will submit a re-evaluation to the IEPA and IPCB.</p> | |