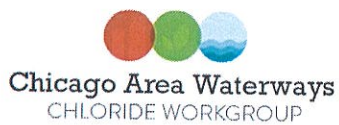


# Annual Report for Year 2 (2023-2024) of the Time Limited Water Quality Standard for Chloride

5/30/2024

Prepared by the Village of Midlothian



The Village of Midlothian is a member of the Chicago Area Waterways Chloride Workgroup/Lower Des Plaines Watershed Group



## 1.0 Introduction

This Annual Report has been prepared by the Village of Midlothian to report on progress in meeting the requirements for the Time Limited Water Quality Standard for Chloride. The Village of Midlothian 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 Annual Report has been prepared to meet the requirements laid out in the Time Limited Water Quality Standard (TLWQS) for The Chloride.

Chloride 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, Facility Information

Agency Name: Village of Midlothian		
Facility Name: Public Works		Permit Number: ILR400387
Facility Address: 14801 S. Pulaski		
City: Midlothian	State: IL	Zip Code: 60445

## 2.1 Level of Service for Winter Maintenance Activities

## 3.0 Best Management Practices

Details regarding the Village of Midlothian's implementation of the best management practices (BMPs) identified as part of the TLWQS for Chloride are included below.

### Workgroup BMP

BMP	Agency Description of Current Implementation or Status Update to the Plan to Implement the BMP
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.	The Village of Midlothian has been a member of the Chicago Area Waterways Chloride Workgroup since 2021. The Village has attended meetings and mentoring sessions.

### Salt Storage and Handling BMPs

BMP	Agency Description of Current Implementation or Status Update to the Plan to Implement the BMP
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.	All salt stored by The Village of Midlothian is stored in a permanent structure on an asphalt pad to prevent contact with stormwater. This practice has been implemented since the structure was built in the 2000's.
Cover salt piles at all times except when in active use, unless stored indoors.	
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,	Area around salt storage structure is sloped away from the opening of the structure to allow sufficient snow melt and rainwater runoff. This practice has been implemented since the structure was built in the 2000's.

<p>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.</p>	
<p><b>MS4/CSO Only</b> - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.</p>	
<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> <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> <li>• removing surplus materials from the site when winter activity finished where applicable;</li> <li>• annual inspection and repairs completed when practical;</li> <li>• evaluate the opportunity to reduce or reuse the wash water.</li> </ul>	<p>Sufficient clean-up of excess or spilt salt is performed after each salt event at the salt storage facility. Trucks and equipment is emptied and cleaned after each plowing/salting event. This practice has been implemented since the salt storage facility was built in the 2000's.</p>

**Winter Maintenance Operations BMPs**

BMP	Agency Description of Current Implementation or Status Update to the Plan to Implement the BMP
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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.	Calibrations of all salt trucks are performed before the start of each plow/salt season. Records of calibrations will be kept starting with the 2022/2023 season.
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.	Pre-wetting has been performed since the 2017/2018 season with 4 out of 6 trucks now having the ability of pre-wetting the salt as it's deposited. All new trucks purchased to replace older trucks will have pre-wetting ability.
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	One of our 6 salt trucks has a pavement thermometer. This practice has been implemented since 2017.
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.	Salt rates are determined by a deicing guide that takes current pavement temperatures, temperature trends, weather conditions, maintenance actions, pre-wetted salt, and dry salt into consideration. Since 2017.
Track and record salt quantity used and storm conditions from each call-out.	Salt amounts are recorded for each truck after each salt event. Since 2021.
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.	
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.	Employees are trained at the beginning of each plow/salt season in best management practices and operation of equipment. Since 2017.
Be responsible for complying with all applicable BMPs even when deicing practices are contracted out and ensure that	Meetings with deicing contractor to discuss BMPs for sidewalks. Since 2017.

<p>contractors are property trained and comply with all applicable BMPs.</p>	
<p>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.</p>	<p>Annual report will be created at the end of the 2022/2023 plow/salt season.</p>
<p>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.</p>	<p>Four out of six trucks currently have pre-wetting capabilities. As new trucks are purchased in the coming years, they will be outfitted with pre-wet capabilities. Since 2017.</p>
<p><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 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>As new trucks are purchased to replace old vehicles, pavement thermometers will be included in the build.</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>A method has been developed to determine successful practices and "needs improvement" practices so re-evaluation can be more productive.</p>

### Additional BMPs Identified for Agency/Facility

BMP	Agency Description of Current Implementation
Deicing workshop training video	All employees watched deicing training video
Salting and pre-wetting techniques	All employees participated in a "in house" workshop to teach and instruct the employees on functions and importance of good salt/brine practices.

### 3.1 Analysis of BMPs Implemented

The Village of Midlothian followed our list of BMP's to the best of our abilities for the past winter season. One of our trucks had a malfunction to the brine tank and parts for repair were not available until the season ended due to covid.

### 3.2 Analysis of Alternative Treatments or New Technology

There have been no alternative treatments or new technologies applied over the last year.

## 4.0 Deicing/Anti-Icing Agents Used

Materials used by the Village of Midlothian for the 2023-2024 winter season are included as Appendix 1.

### 4.1 Application Rates

The application rates used by the Village of Midlothian for the 2023-2024 winter season are included as Appendix 2.

#### 4.1.1 Application Rate Analysis

Application rates had to be adjusted for certain trucks and special applications due to changes in weather conditions, temperatures, and traffic volumes.

### 4.2 Application Practices

The Village of Midlothian uses the following practices to apply deicing and anti-icing materials:

- At the beginning of all snow events, the Public Works Department begins the process of snow and ice removal operations. Each event has its own unique characteristics with a variety of conditions such as wind, temperature, timing, and moisture content. Our approach to snow removal must remain flexible to address these variables. During light to normal snowfall, roads will be plowed to their full width as soon as possible following an initial pass. During heavier snowfalls, roads will be widened as the storm intensity lessens.

After a storm passes, clean-up operations will begin to fully clear intersections, remove snow piled in right-of-ways and cul-de-sacs, and salt the cleared roadways to prevent subsequent ice formation. In the event of rain preceding a snow event, trucks may 'pre-salt' in advance of plowing operations. Please be aware that the effectiveness of salt depends on several factors, including traffic volume, pavement type, sun/shade, and temperature.

#### **4.3 Call Outs**

A total of 20.2 inches of snow was reported in south/southwestern Cook County for the 2023-2024 winter. There were 2 freezing rain event(s) and 12 snow event(s) for the 2023-2024 winter. The Village of Midlothian had 14 of call outs completed during the 2023-2024 winter. A log of all call outs completed by the Village of Midlothian are included as Appendix 3.

#### **4.4 Use of Liquids**

The Village of Midlothian uses Biomelt S7 as a pre-wet brine which is sprayed on the salt at the spinner during the application.

#### **5.0 Training**

The Village of Midlothian completed annual training for 15 of employees out of 16 of employees who are part of the winter maintenance operations on September 26, 2023, and October 4, 2023. A list of annual training topics by type of employee is included as Appendix 4.

#### **6.0 Deicing and Snow Removal Equipment and Maintenance**

The Village of Midlothian uses equipment listed in Appendix 5 during winter maintenance activities.

##### **6.1 Description of Equipment Washing and Wash Water Collection**

All trucks are emptied and brushed from heavy deposits of salt at the salt storage facility. All trucks are then rinsed off inside the Public Works garage. Currently there is no wash water collection.

#### **7.0 Material Storage**

The Village of Midlothian maintains 1 storage area. Information regarding the storage area is included in Appendix 6.



## **8.0 Capital Purchases**

Identified capital purchases from the Village of Midlothian's PMP to implement the BMPs and reduce chlorides in our operations over the first 5-year term of the Chloride TLWQS are included as Appendix 7.

### **8.1 Explanation of Capital Purchases Unable to Be Made According to the Reported Plan**

Auger sensors and brine sensors were not purchased due to cost and the extensive time the trucks would be down while installing.

## **9.0 Environmental Monitoring Data**

Chloride monitoring data is collected for the CAWS and Lower Des Plaines River watersheds per the IPCB order. The data is maintained by the workgroups. Chloride data for the CAWS is 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.

Chloride monitoring data reports are posted to <https://www.cawswatershed.org/reports/> and <https://ldpwatersheds.org/about-us/lower-des-plaines-watershed-group/our-work/chloride-tlwqs/>.

## **10.0 Program Evaluation**

Overall, the program has been a success in reducing the amount of chlorides applied to the streets. Further training of employees, purchasing of new equipment, and retrofitting older equipment with new technologies will further reduce the number of chlorides applied.

### **10.1 Proposed Steps for the Coming Year**

1. Retrofitting older equipment with new technologies to help with record keeping.
2. More training for our employees.

## **11.0 Workgroup Participation**

The Village of Midlothian will continue to attend meetings and seminars when applicable.



**Deicing Application Rate Guidelines**

24' of pavement (typical two-lane road)

These rates are not fixed values, but rather the low end of a range to be selected and adjusted by an agency according to its local conditions and experience.

Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Lbs/ two-lane mile			
			Salt Prewetted/ Pretreated With Salt Brine	Salt Prewetted/ Pretreated With Other Blends	Dry Salt*	Winter Sand (abrasives)
>30° ↑	Snow	Plow, treat intersections only	80 (40/ lane mile)	70	100*	Not recommended
	Frz. rain	Apply chemical	80 - 160	70 - 140	100 - 200*	Not recommended
30° ↓	Snow	Plow & apply chemical	80 - 160	70 - 140	100 - 200*	Not recommended
	Frz. rain	Apply chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25 - 30° ↑	Snow	Plow & apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Frz. rain	Apply chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25 - 30° ↓	Snow	Plow & apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Frz. rain	Apply chemical	160 - 240	140 - 210	200 - 300*	400
20 - 25° ↑	Snow or frz. rain	Plow & apply chemical	160 - 240	140 - 210	200 - 300*	400
	Snow	Plow & apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
20 - 25° ↓	Snow	Plow & apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Frz. rain	Apply chemical	240 - 320	210 - 280	300 - 400*	400
15 - 20° ↑	Snow	Plow & apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Frz. rain	Apply chemical	240 - 320	210 - 280	300 - 400*	400
15 - 20° ↓	Snow or Frz. rain	Plow & apply chemical	240 - 320	210 - 280	300 - 400*	500 for frz. rain
	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 - 400	Not recommended	500 - 750 spot treat as needed
< 0°	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 - 600**	Not recommended	500 - 750 spot treat as needed

\*Dry salt is not recommended. It is likely to blow off the road before it melts ice.

\*\*A blend of 6 - 8 gal/ton MgCl<sub>2</sub> or CaCl<sub>2</sub> added to NaCl can melt ice as low as -10°

Organization Name:  
The Village of Midlothian

Chloride TLWQS Annual Report  
Appendix 3 - Log of Winter Events 2023/2024

**Midlothian Public Works  
2023/2024 Salt Usage**

**Lbs of Salt Used**

<b>Date</b>	<b>Truck 6</b>	<b>Truck 10</b>	<b>Truck 16</b>	<b>Truck 7</b>	<b>Truck 12</b>	<b>Truck 18</b>
11/26/2023	2700	0	2700	2700	2700	2700
1/6/2024	2700	2700	2700	2700	2700	2700
1/9/2024	2700	2700	2700	2700	2700	2700
1/9/2023	2700	2700	2700	2700	2700	2700
1/10/2024	2700	2700	2700	2700	2700	2700
1/13/2024	2700	2700	2700	0	4050	4050
1/14/2024	2700	2700	2700	0	4050	4050
1/18/2024	2700	2700	2700	0	2700	2700
1/19/2024	2700	2700	2700	0	2700	2700
1/22/2024	2700	2700	2700	0	0	2700
1/23/2024	2700	2700	2700	2700	2700	2700
1/24/2024	2700	2700	2700	0	2700	2700
1/24/2024	1350	1350	1350	0	0	0
2/23/2024	2700	2700	2700	2700	0	2700

**Totals Lbs**      36450      33750      36450      18900      32400      37800

**Grand Totals Lbs**      195750

**Grand Totals tons**      97.875

Role in Winter Operations	Training Topics Covered
Tye Swanson, Asst. Superintendent	2023 Virtual Deicing Workshop
Jerry Visage, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop
Louis Ceja, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop
Ron Jablonski, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop
Mike Quinn, Fleet Mechanic	2023 Virtual Deicing Workshop
Ed Feil, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop
Joe Powers, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop
Andy Bednarczyk, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop
Nick Sawicki, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop
Joe Dellamano, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop
Paul Tustison, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop
Nick Damiani, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop
Eric Flores, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop
Cesar Sanchez, Snow Plow/Salt Truck Operator	2023 Virtual Deicing Workshop

Type of Equipment	Equipment/Vehicle Number	Type of Spreader (mechanically controlled, computer controlled, etc.)	Type of Material Used with Equipment (Dry, Pre-Wet, Pretreated, Liquids)	Other Important Equipment Information
Ford F550 1Ton Dump	6	Computer	Pre-Wet	
Ford F550 1Ton Dump	16	Computer	Pre-Wet	
Ford F550 1Ton Dump	10	Mechanically	Dry	
International 7400 Dump	18	Mechanically	Dry	
Peterbilt 6-yd Dump	7	Computer	Pre-Wet	
Peterbilt 6-yd Dump	12	Computer	Pre-Wet	



Capital Purchase Description	Plan/Schedule for Purchase
Auger sensors for salt controllers	Winter 2024/2025
Brine sensors for salt controllers	Winter 2024/2025
Mirror thermometers for ground temps	Winter 2024/2025
New Peterbilt 6 yd dump to replace an old truck	Winter 2024/2025