

# Annual Report for Year 1 (2022-2023) of the Time Limited Water Quality Standard for Chloride

Prepared by The Village of Riverside



The Village of Riverside is a member of the Lower Des Plaines Watershed Group



## **1.0 Introduction to Chloride Issue in CAWS/LDPR**

This Pollutant Minimization Plan (PMP) has been prepared by the Village of Riverside to reduce the environmental impacts from the organization's chloride related operations. The Village of Riverside 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, Facility Information

Agency Name: The Village of Riverside		
Facility Name: The Village of Riverside Public Works		Permit Number: ILM 580015
Facility Address: 3860 Columbus Blvd		
City: Riverside	State: IL	Zip Code: 60546

The Village of Riverside is located in Cook County approximately 10 miles west of Chicago. The Village has a population of 9,283 and maintains a network of roads (68 lane miles), sidewalks, and parking lots within the Village limits. In addition, the Village also has maintenance agreements with the State to maintain portions of Des Plaines Ave, 31st St, and Harlem Ave (IL Route 43).

The Village has a covered salt storage building located at the Public Works facility, with a capacity of 750 tons. The building is designed for salt storage and includes an impermeable asphalt floor. The loading of the salt is done on an impermeable concrete apron and all remnants of salt are swept and placed in the storage building. Salt is not stored outside of the building. Liquid deicer is kept in a 4500-gallon storage tank adjacent to the salt storage building.

### 2.1 Level of Service for Winter Maintenance Activities

The Village provides winter maintenance operations on roadways, sidewalks, alleys, train platforms, and areas adjacent to Village owned facilities. The Public Works Department operates three plow trucks with each being responsible for approximately one third of all Village roadways including the IDOT roads that are part of the maintenance agreement. The Village also operates two pieces of sidewalk cleaning equipment which divide sidewalks within the Village’s Central Business District and high traffic areas typically adjacent to schools. All parking lots and alleys are cleared of snow through the use of a pickup truck mounted plows containing a rubber blade to minimize damage to the Village’s green infrastructure. In addition to roadways, sidewalks, and alleys, the Village provides winter operations on the platforms of the train station.

The Village contracts with Weather by Request to provide the most up to date weather information throughout the winter season. The on staff meteorologist will call staff directly to discuss storm events that may require chloride applications. The information provided allows staff to determine the most efficient use of chlorides for the maintenance of the aforementioned responsibilities.

## 3.0 Best Management Practices

Details regarding the Village of Riverside’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 Village of Riverside has been a member of the Lower Des Plaines Watershed Group since 2021. Staff regularly attends membership meetings.

the watershed within which the facility's discharge is located.	
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### 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 Riverside is stored in a covered, dedicated, permanent structure on an asphalt, impermeable pad.
Cover salt piles at all times except when in active use, unless stored indoors.	Salt is stored in a permanent storage building.
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.	All salt is stored in a permanent storage building with an impervious floor that is pitched away from the opening of the building. The exterior of the building is pitched away from the opening to drain away snow or rain. Delivered salt is loaded and any remnants are swept and placed in the storage building.
<b>MS4/CSO Only</b> - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.	All salt stored by the Village is stored in a covered, dedicated, permanent structure on an asphalt, impermeable pad.
Good housekeeping practices must be implemented at the site, including: <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> </ul>	<ul style="list-style-type: none"> <li>• Salt is cleaned up at the end of each event or delivery.</li> <li>• The Village does not transport bulk chlorides.</li> <li>• The Village maintains the impermeable pad and equipment.</li> <li>• All operators are properly trained how to load chlorides.</li> </ul>

<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>• Vehicles are washed in a designated wash bay that drains to a sanitary sewer.</li> <li>• The Village is including an inspection procedure in the snow and ice plan that is currently being revised.</li> <li>• The Village does not store material outside of the designated salt storage building.</li> <li>• All equipment is inspected and repaired prior to the winter maintenance season.</li> </ul>
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#### Winter Maintenance Operations BMPs

<b>BMP</b>	<b>Agency Description of Current Implementation or Status Update to the Plan to Implement the BMP</b>
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.	The Village is currently revising its Snow and Ice Control Plan along with calibration documents.
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.	The Village has the ability to utilize the on board pre wetting system to apply a brine solution. This is available on one road truck. The other road trucks will have the ability as they are replaced.
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	The Village utilizes one truck mounted pavement monitoring sensor, a hand held monitoring sensor, and data provided by contractual services.
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing	The staff in charge of the winter maintenance operations will consult the Minnesota Snow and Ice Control Application Rate Guidelines

weather conditions, and forecasted weather conditions.	
Track and record salt quantity used and storm conditions from each call-out.	The Village maintains a spreadsheet of all chlorides used on roadways, platforms, and sidewalks
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.	The Village has the capability of anti-icing and performs this operation on its main roads leading up to qualifying events. Further implementation will be noted in the Village’s revised snow and ice control plan.
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.	Winter maintenance training is provided to all staff through either deicing webinars or local on-site workshops.
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.	The Village does not contract out any winter maintenance operations.
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.	The annual report will be submitted by July 1st, 2023.
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.	The Village currently has all the necessary equipment and updates technologies as equipment is replaced.
<b>MS4/CSO/IDOT/TOLLWAY Only</b> - Install equipment to measure the pavement temperature on	The Village currently has one vehicle mounted sensor and utilizes a handheld sensor in conjunction with contractual services. New

<p>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>vehicles used for the application of chlorides will be outfitted with the appropriate sensors as they are replaced.</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>The Village's revised Snow and Ice Control Plan will incorporate feedback loops for all aspects of winter maintenance operations.</p>

**Additional BMPs Identified for Agency/Facility**

<b>BMP</b>	<b>Agency Description of Current Implementation</b>
Contractual Weather Service	Provides road and air temperatures to assist with chloride applications

**3.1 Analysis of BMPs Implemented**

The Village currently has one vehicle outfitted with liquid capabilities. Two additional plow trucks with liquid capabilities will be purchased in the future to replace the existing plow trucks.

**3.2 Analysis of Alternative Treatments or New Technology**

The Village continues to look for treatments or technology that will further our efforts to reduce chloride use.

## **4.0 Deicing/Anti-Icing Agents Used**

Materials used by The Village of Riverside for the 2022-2023 winter season are included as Appendix 1.

### **4.1 Application Rates**

The application rates used by The Village of Riverside for the 2022-2023 winter season are included as Appendix 2.

#### **4.1.1 Application Rate Analysis**

Driver buy-in to decreased application rates, specific to an application rate chart, is a work in progress. Typically, the suggested application rate will suffice, however, extreme situations or flash freezes do not instill confidence in the drivers. Larger data sets should bolster confidence in the long term objective.

### **4.2 Application Practices**

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

- Direct application of salt brine for anti-icing of roadways
- Onboard pre-wetting of salt for roadways
- Direct application of salt brine for anti-icing of sidewalks in the business district
- Direct application of salt brine for anti-icing of the train station platforms

### **4.3 Call Outs**

A total of 20.2 inches of snow was reported in The Village of Riverside for the 2022-2023 winter. There were zero freezing rain event(s) and 12 snow event(s) for the 2022-2023 winter. The Village of Riverside had 12 call outs completed during the 2022-2023 winter. A log of all call outs completed by The Village of Riverside are included as Appendix 3.

### **4.4 Use of Liquids**

The Village of Riverside currently has one plow truck outfitted with anti-icing and pre wetting equipment. This truck is used to anti-ice and pre wet when conditions are appropriate.

## **5.0 Training**

The Village of Riverside completed annual training for eleven employees out of eleven employees who are part of the winter maintenance operations on October 10<sup>th</sup> & 17<sup>th</sup> 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 Riverside uses equipment listed in Appendix 5 during winter maintenance activities.

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

The Village has an indoor wash bay at its Public Works facility that is utilized to wash each piece of equipment used during a snow and ice event. The Village does not currently have the capability to collect wash water.

## **7.0 Material Storage**

The Village of Riverside maintains two storage area(s). Information regarding the storage area(s) is included in Appendix 6.

## **8.0 Capital Purchases**

Identified capital purchases from The Village of Riverside'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**

The replacement of an older plow truck has been delayed due to the availability of the truck chassis.

## **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/>.

### **9.1 Organization Specific Chloride Monitoring Data**

### **9.2 Changes to the Facility's NPDES Treatment Technologies for Chloride**

## **10.0 Program Evaluation**

Older equipment will be replaced in the coming years with anti-icing and pre wetting capabilities. This equipment will help us reduce our chloride use.

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

Replace two existing plow trucks that utilize manually controlled spreaders with new trucks that have computer controlled spreaders along with the capability of anti-icing and pre wetting.

### **11.0 Workgroup Participation**

The Village of Riverside has been a member of the Lower Des Plaines Watershed Group since 2021. Staff regularly attends membership meetings.

Material	Dry, Pre-Wet, Liquids	Totals for 2022-2023 (Tons/Gallons)	Totals for 2023-2024 (Tons/Gallons)	Totals for 2024-2025 (Tons/Gallons)	Totals for 2025-2026 (Tons/Gallons)	Totals for 2026-2027 (Tons/Gallons)
Salt	Dry	238.73				
Brine	Liquids	0				

Pavement Temp and Trend	Winter Condition	Maintenance Actions	Salt Rate Lbs/Lane-mile	PreWet Rate Gallons/Ton	PreWet Blend
≥30°F↑	Snow	Plow and apply treatment	100	15	#1 100% Brine
	Freezing Rain	Apply treatment	150	none	N/A
30°F↓	Snow	Plow and apply treatment	150	15	#2 85% Brine 15% Carbohydrate
	Freezing Rain	Apply treatment	200	none	N/A
25-30°F↑	Snow	Plow and apply treatment	200	15	#2 85% Brine 15% Carbohydrate
	Freezing Rain	Apply treatment	250	none	N/A
25-30°F↓	Snow	Plow and apply treatment	250	15	#3 70% Brine 30% Carbohydrate
	Freezing Rain	Apply treatment	300	none	N/A
20-25°F↑	Snow	Plow and apply treatment	300	20	#3 70% Brine 30% Carbohydrate
	Freezing Rain	Apply treatment	350	none	N/A
20-25°F↓	Snow	Plow and apply treatment	350	20	#4 60% Brine 40% Carbohydrate
	Freezing Rain	Apply treatment	400	none	N/A
15-20°F↑	Snow	Plow and apply treatment	400	20	#4 60% Brine 40% Carbohydrate
	Freezing Rain		450	none	N/A
15-20°F↓	Snow	Plow and apply treatment	400	20	#5 50% Brine 50% Carbohydrate
	Freezing Rain		500	none	N/A
0-15°F↑↓	Snow	Plow and apply treatment	400	20	#12 50% Brine 25% CaCl 25% Carbohydrate
≤0°F	Snow	Plow and apply treatment	400	20	#25 50% CaCl 50% Carbohydrate

## The Village of Riverside

## Appendix 3 - Call Outs

## Chloride TLWQS Annual Report

Date	Call Out Time	End Time	Snow Amount	Temp	Predicted	Anti-Ice Application	# of Personnel	Total Salt lbs	Total Brine gal
11/18/2022	0315	0530	2	30-32	Y	N	2	45000	0
12/15/2022	2245	0045	0.25	28-30	Y	N	3	45300	0
12/16/2022	2130	0030	0.25	25-28	Y	N	2	45000	0
12/22/2022	1100	0000	3	-2	Y	N	6	60300	0
12/23/2022	1200	1600	0.5	-1	Y	N	2	40500	0
1/22/2023	0645	0930	0.75	29	Y	N	3	22000	0
1/25/2023	0430	1000	2.5	35	Y	N	5	33300	0
1/26/2023	0530	1200	0.25	25	Y	N	5	28200	0
1/29/2023	0430	1600	2	25	Y	N	6	77550	0
1/30/2023	0700	1200	0.25	15	Y	N	5	27750	0
2/16/2023	2100	0100	1.5	19	Y	N	7	37550	0
2/24/2023	2100	0230	2	25	N	N	2	15000	0

**The Village of Riverside**

**Appendix 4 - Training**

**Chloride TLWQS Annual Report**

October 10th, 2023	Public Roads - Deicing Workshop	All Winter Ops Employees
October 17th, 2023	Parking Lots & Sidewalks - Deicing Workshop	All Winter Ops Employees

Equipment	Vehicle #	Spreader	Material	Notes
2008 International Dump Truck	R2	Manual	Dry	Plow/Salt
2011 International Dump Truck	R3	Manual	Dry	Plow/Salt
2016 Peterbuilt Dump Truck	R4	Computer	Dry/Liquids	Pavement Sensor
2023 Utility Dump	R5	Computer	Dry	Plow/Salt
2022 Pick Up Truck	R6	N/A	N/A	Plow
2015 Pick Up Truck	R7	N/A	N/A	Plow
2022 Pick Up Truck	R8	N/A	N/A	Plow
Polaris UTV	R9	Manual	Dry/Liquids	Plow/Salt/Anti-Ice
Grasshopper	R10	N/A	N/A	Broom
Bobcat Skid Steer	R11	N/A	N/A	Broom/Snow Removal
Caterpillar Front End Loader	R12	N/A	N/A	3.5 cu yd bucket

Location	Material	Quantity	Covered Storage	Impermeable Pad
3860 Columbus Blvd	Rock Salt	750 tons	Yes, enclosed salt shed	Yes
3860 Columbus Blvd	Brine	5000 gallons	Yes, tank	Yes



Equipment	Replacement Year	Description of Purchase
Replace Plow Truck R2	2024	Older manual controlled plow truck to be replaced with computer controlled plow truck with liquids and pavement sensors.
Replace Plow Truck R4	2027	Older manual controlled plow truck to be replaced with computer controlled plow truck with liquids and pavement sensors.