

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

29-June-2023

Prepared by the Village of Channahon



The Village of Channahon 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 Channahon to reduce the environmental impacts from the organization's chloride related operations. The Village of Channahon 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 Channahon		
Facility Name: Channahon Public Works	Permit Number: ILG103059	
Facility Address: 26156 S. Blackberry Ln.		
City: Channahon	State: IL	Zip Code: 60410

2.1 Level of Service for Winter Maintenance Activities

Provide reasonable road conditions for traffic flow throughout the winter driving season. The first events of the season are the most critical. Drivers are not accustomed to driving on snow/ice. Road surface temperatures may be near freezing point. Minimize the ice to road bond that causes hazardous driving in accordance with the Villages Snow Policy.

3.0 Best Management Practices

Details regarding Channahon’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 Channahon has been a member of the Lower Des Plaines Watershed Group since March of 2017. The Village is an original founder and attends all bimonthly meetings.

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 Channahon is stored in a permanent dome structure on an impermeable pad to prevent contact with stormwater. Constructed in 1995

<p>Cover salt piles at all times except when in active use, unless stored indoors.</p>	<p>All salt is stored in a permanent dome structure unless it's being used. Loaded trucks, when not in use, park inside the public works garage. Constructed in 1995.</p>
<p>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.</p>	<p>The Permanent dome structure is surrounded 360 degrees by asphalt pavement, sloped to ensure proper drainage away from the salt stockpile. Constructed in 1995. A lined basin is implemented to catch runoff from the salt loading zone (2023).</p>
<p>MS4/CSO Only - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.</p>	<p>Channahon currently uses 3 above ground holding tanks for deicing material. Two 5,000 gallon and one 8,000 gallons. Implemented in 2019. See attached documents.</p>
<p>Good housekeeping practices must be implemented at the site, including:</p> <ul style="list-style-type: none"> • cleanup of salt at the end of each day or conclusion of a storm event; • 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; 	<p>Salt Clean-up procedure-SOP Storage facility, structures and work area check list Implemented in 2023</p>

<ul style="list-style-type: none"> • annual inspection and repairs completed when practical; • evaluate the opportunity to reduce or reuse the wash water. 	
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Winter Maintenance Operations BMPs

BMP	Agency Description of Current Implementation or Status Update to the Plan to Implement the 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.	The Village calibrates all salt spreading equipment annually before November 30 th . Implemented in 2018.
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.	Three plow trucks currently do not have pre-wet systems and will be replaced through capital purchases pending product availability and funding.
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	The Village utilizes both truck mounted and handheld noncontact thermometers. Implemented in 2018.
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.	Appendix 2.
Track and record salt quantity used and storm conditions from each call-out.	Implemented in 2020.
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.	Channahon is currently treating bridges, hills and curves deemed hazardous. And as of 2021 started anti-icing all roadways within snow plow routes designated as mains.
Provide employees involved in winter maintenance operations	Training is held annually where we review the Villages snow policy and procedural power point presentation. Implemented in 2000.

<p>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.</p>	
<p>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.</p>	<p>All snow operations are executed by village personnel.</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>Channahon will complete annual reporting. Implemented in 2022.</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>Three plow trucks currently do not have pre-wet systems and will be replaced through capital purchases pending product availability and funding.</p>
<p>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 winter maintenance fleet before the first re-evaluation.</p>	<p>A sufficient number of vehicles are currently equipped with thermometers. Units are designated in the equipment inventory attached. Implemented in 2018.</p>
<p>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.</p>	<p>Post Winter Evaluation Form to be completed by every driver at the conclusion of each snow season. Developed 2023. Attached</p>

<p>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>	
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Additional BMPs Identified for Agency/Facility

BMP	Agency Description of Current Implementation
Wastewater Effluent chloride monthly testing	Monthly effluent chloride testing completed by Channahon’s wastewater department. NPDES monitor only.

3.1 Analysis of BMPs Implemented

The Villages winter snow season appears to have been successful but, with the lack of precipitation it is difficult to perform a compressive analysis. Actions such as preventative vehicle maintenance and additional meetings with personal about the adverse effects of chlorides seemed beneficial.

3.2 Analysis of Alternative Treatments or New Technology

The Village incorporated snow route mains into its pre-treatment locations. At this time, it is unclear as to the effectiveness of the treatment for pre-snowfall events. In the event of an ice/freeze events, road conditions where in fact of a better surface condition compared to non-treated roads.

4.0 Deicing/Anti-Icing Agents Used

Materials used by Channahon for the 2022-2023 winter season are included as Appendix 1. Channahon purchases its rock salt through the JPMC with the State of Illinois.

Rock Salt shall comply with the requirements of The American Association of State Highway and Transportation Officials (AASHTO) SPECIFICATION M143, SODIUM CHLORIDE TYPE 1, GRADE 1.

Channahon’s winter liquid deicer is supplied from SNI Solutions, Environmental Chemical Contractor out of Geneseo, IL. Channahon utilizes their Biomelt Supreme formula for direct pavement applications

during winter operation. Biomelt Supreme is a hybrid organic that is mix with salt brine (70% Brine/ 30% Biomelt) and is semi-translucent green.

Brine is produced using an Accubatch system where JPMC salt is used to produce a brine solution to the target brine concentration of 23.3%. This solution is then used in both direct pavement applications and pre-wet systems.

4.1 Application Rates

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

4.1.1 Application Rate Analysis

The current rates implemented by Channahon are reducing the quantity of road salt applied to public roads and maintaining their snow removal standards.

4.2 Application Practices

Channahon uses the following practices to apply deicing and anti-icing materials: Direct pavement application of brine and the pre-wetting of salt with 70/30 mix of brine and SNI biomelt at the discharge point of plow trucks.

4.3 Call Outs

A total of 9 ¾" inches of snow was reported in Channahon for the 2022-2023 winter. There was one freezing rain event(s) and 21 snow event(s) for the 2022-2023 winter. Channahon had 22 call outs completed during the 2022-2023 winter. A log of all call outs completed by Channahon are included as Appendix 3.

4.4 Use of Liquids

Channahon applies brine solution to its designated ant-icing/pretreatment and hot spot location prior to any forecasted event. All equipped vehicles pre-wet discharged rock salt with a 70% brine and 30% SNI biomelt solution to minimize chlorides.

5.0 Training

Channahon completed annual training for 15 employees out of 15 of employees who are part of the winter maintenance operations on October 12th 2022 for Salt Smart and November 3rd 2022 for in house training. A list of annual training topics by type of employee is included as Appendix 4.

6.0 Deicing and Snow Removal Equipment and Maintenance

Channahon uses equipment listed in Appendix 5 during winter maintenance activities.

6.1 Description of Equipment Washing and Wash Water Collection

Barrier protection, such as jersey barriers with plastic sheeting, shall be placed along the eastern edge of the drive prior to the beginning of snow season. The barrier system is intended to block water runoff created from hosing salt on pavement and allow it to be collected and used in the brine tank. This location is where all winter operational equipment is washed to remove chloride residuals. The length and configuration of the barrier system should be adjusted and/or widened until it achieves the intended result.

7.0 Material Storage

Channahon maintains 1 storage area(s). Information regarding the storage area(s) is included in Appendix 6.

8.0 Capital Purchases

Identified capital purchases from Channahon'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

Channahon is currently waiting for the delivery of two International dump trucks ordered in FY21. The new vehicles are replacing equipment without pre-wet systems. Two additional trucks are budgeted but are unable to be filled by suppliers. Further capital purchases are unknown due to the nationwide supply chain shortage.

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

Channahon collects chloride monitoring data as part of its NPDES effluent data and the data is included as Appendix 8.

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

Channahon continues to be in a state of monitor only for Chloride but, there is a reasonable potential to exceed the 35 Ill. Adm. Code 302.208(9) water quality standards for Chloride. However, the Village of Channahon has received a Time-Limited Water Quality Standard (TLWQS) for chloride. The Channahon STP must comply with the Board Order resulting from the TLWQS (Case# PCB 2019-033) and the subsequent General Permit (ILG103059).

10.0 Program Evaluation

Attached data indicates a possible downward trend in max effluent chloride concentration. With the 2022-23 snow season having less than average precipitation and chloride application, Channahon will continue to monitor effluent chloride concentrations for further improvements.

10.1 Proposed Steps for the Coming Year

Channahon will continue its participation in the watershed groups and follow the TLWQS.

11.0 Workgroup Participation

The Village of Channahon has been a member of the Lower Des Plaines Watershed Group since March of 2017. The Village is an original founder and attends all bimonthly meetings.



**POST-WINTER REVIEW FORM –
Winter 2023-2024**

Please complete one form after the last snow event.

Date: _____ Site: _____

Name: _____ Company/Organization: _____

Check box if you used calibrated equipment
for this storm. Check box if you used liquids
(brine) before the storm.

Average Pavement Temperature		Pavement Condition Before Applying Product		Product Applied		Application Rate Used (lbs. per lane mile)	How Did it Work? <small>(Compare application rates)</small>
<input type="checkbox"/>	28 ° to 32 °	<input type="checkbox"/>	Almost bare pavement	<input type="checkbox"/>	Rock Salt		
<input type="checkbox"/>	23 ° to 28 °	<input type="checkbox"/>	Very clean; ¼ inch or less snow/ice	<input type="checkbox"/>	Bagged Blend Mostly Sodium Chloride		
<input type="checkbox"/>	15 ° to 23 °	<input type="checkbox"/>		<input type="checkbox"/>	Bagged MgCl ₂ or CaCl ₂		
<input type="checkbox"/>	0 ° to 15 °	<input type="checkbox"/>	More than ¼ inch snow/ice	<input type="checkbox"/>	Rock Salt Wet With Salt Brine		
<input type="checkbox"/>	-5 ° to 0 °	<input type="checkbox"/>		<input type="checkbox"/>	Rock Salt Wet With Other Liquids		
<input type="checkbox"/>	< -5 °	<input type="checkbox"/>		<input type="checkbox"/>	Winter Sand		
				<input type="checkbox"/>	Other		

What operational change proved successful?

What improvements need to be made to further reduce chlorides?

Evaluate the application rate of your spreader.

At any point during the snow season where adjustments made to your application rate?

If so, at what rate and how effective was the outcome?

SALT CLEANUP PROCEDURE – SOP

Date:

I. Introduction

This SOP is intended to provide guidance for cleaning up salt spilled onto pavement adjacent to the salt dome. A proper cleanup procedure is needed to prevent water-soluble salt runoff from entering the municipal separate storm sewer system (MS4) and the wastewater treatment facility premises.

II. Purpose

Salt spills outside the dome will occur while trucks are being loaded, as operators test their spreaders in the parking lot, or spreaders are left on while driving through the facility. Due to the pitch of the pavement, hosing the area causes salt-laden water to run east towards the wastewater treatment facility which poses a potential permitting problem with IDEM. Any significant runoff in this direction could also enter the MS4. Municipalities are held responsible for contaminants that enter the MS4 and it is critical the appropriate action is taken to effectively clean up salt spills when they occur.



III. Procedure

1. Barrier protection, such as jersey barriers with plastic sheeting, shall be placed along the eastern edge of the drive prior to the beginning of snow season. The barrier system is intended to block water runoff created from hosing salt on pavement and allow it to be collected and used in the brine tank. The length and configuration of the barrier system should be adjusted and/or widened until it achieves the intended result.
2. The front loader operator shall perform salt clean up procedures, as defined in the ordered steps below, after each loading and/or unloading event.
 - a. Scrape pavement with front loader and push salt back into the dome
 - b. Use skid steer with a broom attachment or use backpack blower to push additional salt back into the dome
 - c. If weather shall remain above freezing until pavement is able to dry, hosing of salt on pavement may be utilized, provided the barrier protection is in place to collect runoff.

IV. Responsibilities

1. Utilities and Streets Superintendent shall
 - a. monitor the cleanliness of the pavement surrounding the salt dome and request additional cleaning, as required.
 - b. Identify and convey to operators the area perimeter for all salt operations, including testing of spreaders, to occur.
 - c. Notify MS4 coordinator if there is a breach of the barrier system and a significant amount of salt (saltwater) was allowed to enter the wastewater treatment facility and/or the MS4 system.
2. Within reason, truck operators shall:
 - a. Test spreaders adjacent to the dome in the designated perimeter that will already be subject to regular cleanup measures, as defined by the Superintendent.
 - b. Take care to turn off spreaders when entering the facility, unless the facility is the target of de-icing operations
 - c. to cleanup any spilled salt caused by his/her truck outside of the regular cleanup area

BLANK

Storage Area Checklist

This form provides a checklist for safety features, proper access, legality, tidiness, economics and drainage.

Yes	No	SAFETY. . .
<input type="checkbox"/>	<input type="checkbox"/>	1. Equipment operators have good visibility in all directions.
<input type="checkbox"/>	<input type="checkbox"/>	2. Access roads do not open directly into heavily traveled routes.
<input type="checkbox"/>	<input type="checkbox"/>	3. Signs are posted to warn motorist that trucks enter and leave the area.
<input type="checkbox"/>	<input type="checkbox"/>	4. Culvert headers, guard rails and other obstructions in storage area are marked so they can be avoided when covered with snow.
<input type="checkbox"/>	<input type="checkbox"/>	5. Outside areas are adequately lighted.
<input type="checkbox"/>	<input type="checkbox"/>	6. Lights are available inside storage buildings.
<input type="checkbox"/>	<input type="checkbox"/>	7. Storage yards are free of junk and other debris.
<input type="checkbox"/>	<input type="checkbox"/>	8. All mechanical parts of storage facility, such as hinges, slides, conveyors, are in safe working condition.
<input type="checkbox"/>	<input type="checkbox"/>	9. All mechanical equipment is in safe working condition.

Comment—

ACCESS. . .

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 1. Spreader trucks can easily enter and leave storage sites, even during periods of low visibility. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. Storage areas are large enough for front-end loaders and trucks to maneuver. |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. Building doors and other openings are large enough to permit loading and unloading. |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. There are no low and weak spots in storage yard. |

Comment—

LEGALITY. . .

- | | | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 1. All storage areas are on state or municipal property or on space for which there is a definite lease rental or use agreement. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. All storage sites comply with local zoning ordinances and applicable building, environmental, discharge and sanitation codes. |

Comment—

TIDINESS. . .

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 1. Storage yard is well maintained and clean. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. Junk or scrap material is not piled around yards. |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. Storage sites are shielded from view of nearby roads or homes by plantings or fencing. |

Comment—

ECONOMICS. . .

- 1. Storage is covered to prevent loss of material.
- 2. Sites are strategically located to avoid deadheading to reload.

Comment—

DRAINAGE. . .

- 1. Storage pads are on sites with proper drainage.
- 2. Storage runoff is properly contained, collected and provisions made for use or disposal.

Comment—

Appendix 1 - Deicing/Anti-Icing Agents Used

Material or Product	Dry, Pre-Wet, Pretreated, or Liquid	Lane Miles Treated with the Product for 2022-2023	Parking Lot and Sidewalk Area (Sq. Ft.) Treated with the Product for 2022-2023	Total Amount used for 2022-2023 (Year 1) in Tons or Gallons	Total Amount used for 2023-2024 (Year 2) in Tons or Gallons	Total Amount used for 2023-2024 (Year 3) in Tons or Gallons	Total Amount used for 2023-2024 (Year 4) in Tons or Gallons	Total Amount used for 2023-2024 (Year 5) in Tons or Gallons	Total Amount Used Over First 5-Year Term
Rock Salt	Dry	5,461	174,000	289.69					289.69
Brine	Pre-Wet	5,461	174,000	5,837.50					5837.5
SNI BioMelt (70/30)	Pretreated	764	464,000	1,987.50					1987.5
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0

Estimates of Relative Material Amounts Applied and Coverage Achieved

Year	Total Lane Miles Maintained	Total Parking Lot and Sidewalk Area (Sq. Ft.) Maintained	Percent of Total Lane Miles Treated with Dry Materials	Percent of Total Lane Miles Treated with Pre-Wet or Pretreated Materials	Percent of Total Lane Miles Treated with Liquids	Percent of Total Parking Lot and Sidewalk Area Treated with Dry	Percent of Total Parking Lot and Sidewalk Area Treated with Pre-wet or Pretreated Materials	Percent of Total Parking Lot and Sidewalk Area Treated with Liquids
2022-2023	5461	812,000	100%	114%	0%	21%	21%	0%

These rates are adapted from road application guidelines. Develop your own application rates using the guide at the rate of 300-500 pounds per lane mile and no further out than

Hot Mix shall be a mixture of 70% Brine and 30% SNI Bio Melt and implemented using the

All snow removal equipment outfitted with pre-wet systems shall utilize

Pavement Temp. (°F) and Trend (H)		Weather Condition	Maintenance Actions
>30°	↑	Snow	Plow, treat inter- sections of
		Frz. Rain	Apply chemical
30°	↓	Snow	Plow & apply chemical
		Frz. Rain	Apply chemical
25 - 30°	↑	Snow	Plow & apply chemical
		Frz. Rain	Apply chemical
25 - 30°	↓	Snow	Plow & apply chemical
		Frz. Rain	Apply chemical
20 - 25°	↑	Snow or Frz. Rain	Plow & apply chemical
20 - 25°	↓	Snow	Plow & apply chemical
		Frz. Rain	Apply chemical
15° to 20°.	↑	Snow	Plow & apply chemical
		Frz. Rain	Apply chemical
15° to 20°.	↓	Snow or Frz. Rain	Plow & apply chemical
0 to 15°	↕	Snow	Plow, treat with blends
< 0°		Snow	Plow

The:

Condition

1. Regularly scheduled applications
2. Prior to frost or black ice event
3. Prior to light or moderate snow

Application Rate Guidelines

Guidelines as a starting point and modify them incrementally over time to fit your needs. The area should first be cleared an 3 feet outside the plowed lane unless circumstances such as an ice storm dictate otherwise or unless otherwise

use village water truck for all hot spots and mains within the snow routes for pre-treatment/anti icing purposes at

use Brine during every snow event at a rate of 1-1.25 gallon per lane mile. Application rate based on temperature

	Application Rate in lbs. per lane mile		
	Salt Prewetted/ Pretreated With	Salt Prewet- ted/ Pre-	Dry Salt
below 32°	125	85	125
32° - 34°	200	175	250
34° - 36°	200	175	250
36° - 38°	250	225	300
38° - 40°	200	175	250
40° - 42°	250	225	300
42° - 44°	200	175	250
44° - 46°	300	250	375
46° - 48°	300	250	375
48° - 50°	325	325	450
50° - 52°	425	350	500
52° - 54°	325	325	450
54° - 56°	425	350	500
56° - 58°	425	350	500
58° - 60°	not recommended	525	not recommended
above 60°	not recommended	not recommended	not recommended

Anti-Icing Guidelines

These are a starting point only. Adjust based on your experience.

Gallons per lane mile		Other Products
Biomelt 30%/ Brine 70%	Salt Brine	
0.0	10.0	Follow manufacturers' recommendations
0.0	10.0	
0.0	10.0	

Date	Curt	Alternate	Travis	Dick	Randy	Matt K	Scott	Jim
11/14/2022								
11/16/2022							2.5	
							114	
							3.72	
							0	
11/18/2022								
12/15/2022					8			
					92			
					0			
					750			
12/16/2022			2					
			33					
			1.28					
			0					
12/20/2022								
12/22/2022	10.68		7.5		7.5	7.5		
	116		130		100	63		
	0		0		0	0		
	0		0		0	0		
12/23/2022			5.25	5	5.25	5.25	5.25	
			80	49	21	48	86	
			0	0	0	0	0	
			0	0	0	0	0	
12/24/2022			6.5					
			89					
			0					
			0					

1/4/2023							
1/20/2023							
1/24/2023					8		
					80		
					0		
					600		
1/25/2023	11.5	11.5	11.5	11.5	11.5	3.5	
	97	137	109	95	18		
	6.79	13.38	14.491	9.88	1.43		
	0	0	0	68	0		
1/26/2023	8	8	11	8			
	36	98	84	71			
	2.52	9.56	11.172	7.32			
	0	0	0	52			
1/27/2023							
1/29/2023	4.5	5	4.5	4.5	4.5		
	35	83	29	34	24		
	2.45	8.1	3.837	3.54	1.91		
	0	0	0	60	0		
2/15/2023					8		
					82		
					0		
					700		
2/16/2023	2.5	2.5	2.5	2.5	2.5		
	16	37	27	29	27		
	3.17	9.22	7.07	3.89	5.16		
	0	0	0	41	21		
2/17/2023	4.5	4.5	4.5	4.5	4.5		
	29	65	43	42	25		

2/11/2023	1.52		16.2		11.25	5.61	4.78	
	0		0		0	59	19	
3/2/2023								
3/9/2023								
3/13/2023					2	2		
					34	26		
					5.24	1.26		
					0	0		

8								8
82								
0								
800								
8								8
78								
0								
800								
								8
	8		11.5	3.5	11.5	11.5	11.5	107
	89		112	33	93	101	86	
	0.98		8.96	0.37	7.54	6.96	5.65	
	0		82	0	70	63	0	
8			8		8		8	67
92			93		67		104	
6.39			7.44		5.56		6.85	
57			68		50		40	
3			8					11
35			101					
0			0					
0			0					
4.5			4.5		4.5		4.5	41
47			47		34		50	
3.29			3.62		2.82		3.3	
60			60		60		20	
								8
			2.5		5.75		2.5	23.25
			66		66		30	
			5.26		6.2		3.04	
			63		69		16	
			4.5		4.5		4.5	36
			39		39		46	

Total Miles	Total Salt	Brine	OT Hrs
	(Tons)	(Gallons)	
95	0	800	
			2.5
114	3.72	0	
98	0	850	
92	0	750	
33	1.28	0	
77	0	800	
			47.5
1011	0	0	
			46.75
501	3.04	0	
			6.5
89	0	0	

82			
	0		
		800	
78			
	0		
		800	
80			
	0		
		600	
			35
970			
	76.431		
		283	
			3
645			
	56.812		
		267	
136			
	0		
		0	
			41
383			
	32.867		
		260	
82			
	0		
		700	
			3.25
298			
	43.01		
		210	
			36
328			

	50.68		
		180	
80			
	0.27		
		525	
70			
	4.36		
		0	
119			
	17.02		
		0	

Organization Name: Village of Channahon Chloride TLWQS Annual Report
Appendix 4 - Annual Training

Channahon completed annual training for 15 employees out of 15 of employees who are part of the winter maintenance operations which includes Street Forman, Utility Operators and Laborers.	
Role in Winter Operations	Training Topics Covered
Formen, Utility Operators and Laborers (In-house training)	1. Village Snow Policy – Definitions and Verbiage
	2. Callout Procedure – Description of emergency operations, Shift work and hours.
	3. Exemption Policy – Time off for snow drivers.
	4. Snow Removal Procedures – Callouts, checking in, Removal operations, Checking out, definitions, Application rates, Repairs and equipment inspections.
	5. Snow Removal Safety – Driving, attaching plow, loading salt, grate cleaning, blade changes/bolt replacement, unloading vehicles, wash down and general.
	6. Brine, Hot Mix(70/30) salt and pre-wet- Production and application rates
	7. Required Documentation – Driver sheets, Equipment check sheet, Salt load/unload tracking sheets, Brine production,
Formen, Utility Operators and Laborers (Salt Smart)	Salt Smart Webinar

Truck Number	Plow MFG	Plow Type	Plow Model	Push Frame MFG	Push Frame Type	Push Frame Model No	Salt Spreader
13	Flink	29HH Torsion Trip Edge 11'	29HHTTPY11PA45	Flink	29" Husting Hitch	PF91HH	Rhan / Highway (Bed Belt)
18	Flink	Husting hitch 12'	29HHTTPY12PA45	Flink	29" Husting Hitch	PF91HH	Flink 9"
32	Flink	Husting hitch 12'	29HHTTPY12PA45	Flink	29" Husting Hitch	PF91HH	Flink 9"
34	Flink	Reversable 11'	TTPY11PA450	Flink	29" Husting Hitch	PF91HHK	10' Henderson
36	Flink	Reversable 11'	PTTPY11PA45007	Flink	29" Husting Hitch	PF91HHK	Flink 6" x 8'
41	Western	9'	ProPlus	Western	Ultra mount	ULTRAMT	Flink 6" x 8'
43	Flink	11'	PTTPY11PA4500XX	Flink	Quick Link	F106FDAQL2LMH	Flink 6"
50	Flink	11'	PTTPY11PA4500XX	Flink	Quick Link	F106FDAQL2LMH	Flink 6"
64	Flink	11'	PTTPY11PA4500XX	Flink	Quick Link	F106FDAQL2LMH	Flink 6"
40	Western	7.5'	ProPlus	Western	Ultra mount 2	ULTRAMT	NA
49	Western	8'	Pro Plow Series 272390	Western	Ultra mount 2	ULTRAMT2	NA
59	Western	8'	Pro Plow Series 272390	Western	Ultra mount 2	ULTRAMT2	NA
45	Western	8'	Pro Plow Plus 72390	Western	Ultra mount 2	ULTRAMT2	NA
47	Western	8'	Pro Plow Plus 72390	Western	Ultra mount 2	ULTRAMT2	NA

17	Flink	29HH Torsion Trip Edge 11'	29HHTTPY11PA45	Flink	29" Husting Hitch	PF91HH	Varitech
60	NA	NA	NA	NA	NA	NA	NA
66	Western	9'	IUTPP	Western	Ultra Mount 2	ULTRAMT2	Swenson
67	Western	8'	8' Pro-Plow Series 2	Western	Ultral Mount 2	ULTRAMT2	NA

Salt Spreader Model	Controller	Controller Type	Controller Model	Truck Thermometer	Pre-Wet Systems (Y/N)
XT3-9/10	Component Tech	Storm Guard	GL-400	NA	NO
VCT90S4	Force	Center Electric	XV520P-32 Command-All	NA	NO
VCT90S4	Force	Electric over Hyd	XV520P-32 Command-All	NA	NO
Mini Body 2	Force	electric load Sense	XV520P-32 Command-All	NA	YES
VCT12DDS4	Force	GRM Kit	ssc1500	NA	YES
VCT12DDDS4	Force	Spool	AAS2001-3-3-4-2-2E	NA	NA
VCT12DDS4	Force	Spool/Electric	ssc2500	NA	YES
VCT12DDS4	Force	cable over Hyd	5100EX	Precise WCM-02 ARC System	YES
VCT12DDS4	Force	cable over Hyd	5100EX	NA	YES
NA	fleet flex	Electric over hyd	85200 or 96500	NA	NA
NA	fleet flex	Electric over hyd	85200 or 96500	NA	NA
NA	fleet flex	Electric over hyd	85200 or 96500	NA	NA
NA	fleet flex	Electric over hyd	85200 or 96500	NA	NA
NA	fleet flex	Electric over hyd	85200 or 96500	Precise WCM-02 ARC System	NA

1035 Gal Anti Ice system with legs	Force	Center Electric	SSC3100	NA	Anti-Icing Truck
NA	NA	NA	NA	Raytek Raynger St thermometer	NA
SADS 6 SS	Force	Spool	Force 3100EX	NA	NA
NA	Fleet Flex	Electric over Hyd	35500 CabCommand	NA	NA

Organization Name:

Chloride TLWQS Annual Report
Appendix 6 - Material Storage

Location of Storage Area	Material Stored (Rock Salt, Salt Brine, etc.)	Amount of Material Stored 2022-2023	Material stored under permanent cover? (yes/describe other)	Material stored in a fully enclosed structure? (yes/describe other)	Material stored on an impervious pad? (yes/describe other)	Good housekeeping practices followed at storage area? (yes/describe other)
26156 S. Blackberry Ln. Channahon IL 60410	Rock Salt	2400 tons	Yes	access door open to elements	YES	YES
26156 S. Blackberry Ln. Channahon IL 60410	Brine	5000 gallons	NO, Enduraplas flat bottom storage tank made of polyethylene	YES	YES	YES
26156 S. Blackberry Ln. Channahon IL 60410	SNI BioMelt Supreme	5000 gallons	NO, Enduraplas flat bottom storage tank made of polyethylene	YES	YES	YES
26156 S. Blackberry Ln. Channahon IL 60410	70% Brine/30% BioMelt	8000 gallons	NO, Enduraplas flat bottom storage tank made of polyethylene	YES	YES	YES

Channahon has one rock salt storage area which consists of a 72' diameter prefabricated "Domar" salt storage building with 8' tall walls capable of storing 2419 tons of rock salt. The foundation is of a floating mat foundation as per BOCA code 1205.3 consisting of a minimum of four inches of bituminous concrete over a minimum of six inches of well compacted crushed stone and 10 feet larger in square of the diameter of the dome. Finished surface of +/- one inch. Retaining walls are of reinforced concrete tension ring, one foot thick and coated after curing with two coats of 50/50 mineral spirits and linseed oil. The 18' entrance opening is protected by an overhanging roof and sidewall to limit water exposure. The original underground A.J. Sacket & Sons Co. conveyer has been replaced with an above ground KimCo USA INC. portable KC2470SSP conveyer and 4-ton hopper KH4TSS.

Organization Name:

Chloride TLWQS Annual Report
Appendix 7 - Capital Purchases

Capital Purchase Description	Plan/Schedule for Purchase
FY 21-22 Two International plow trucks	Currently being upfitted with plow equipment. Channahon has not taken delivery.
FY 22-23 Two Mack plow Trucks	Unable to secure contracts due to nation wide backorder
FY 23-24 One F550 1-ton plow truck	Unable to secure contracts due to nation wide backorder

Hach Variable Two Year Data Report

2022

Var# 10027
 Name: .Effluent.Chloride {mg/l}

Day	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	
1								
2								
3								
4								
5								
6	305							
7								
8			316					
9								
10								
11								
12								
13								
14								
15		372						
16								
17								
18								
19				272				
20								
21							225	
22								
23								
24					288			
25								
26								
27								
28								
29								
30						327		
31								
Monthly	Minimum	305	372	316	272	288	327	225
	Maximum	305	372	316	272	288	327	225
	Total	305	372	316	272	288	327	225
	Average	305	372	316	272	288	327	225
	Count	1	1	1	1	1	1	1

Hach Variable Two Year Data Report

2021

Var# 10027
 Name: .Effluent.Chloride {mg/l}

Day	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Jun 2021	Jul 2021	
1								
2								
3								
4								
5								
6								
7	378.00				358.00			
8							315.00	
9				502.00				
10								
11		387.00	405.00					
12								
13								
14								
15								
16								
17						290.00		
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
Monthly	Minimum	378.00	387.00	405.00	502.00	358.00	290.00	315.00
	Maximum	378.00	387.00	405.00	502.00	358.00	290.00	315.00
	Total	378.00	387.00	405.00	502.00	358.00	290.00	315.00
	Average	378.00	387.00	405.00	502.00	358.00	290.00	315.00
	Count	1	1	1	1	1	1	1

Hach Variable Two Year Data Report

2020

Var# 10027
 Name: .Effluent.Chloride {mg/l}

Day	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	
1								
2								
3	226.00							
4						239.00		
5								
6			378.00					
7		280.00		293.00				
8								
9								
10								
11								
12								
13								
14					175.00			
15								
16								
17							151.00	
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
Monthly	Minimum	226.00	280.00	378.00	293.00	175.00	239.00	151.00
	Maximum	226.00	280.00	378.00	293.00	175.00	239.00	151.00
	Total	226.00	280.00	378.00	293.00	175.00	239.00	151.00
	Average	226.00	280.00	378.00	293.00	175.00	239.00	151.00
	Count	1	1	1	1	1	1	1

Channahon

Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
	326			
270				
				236
			384	
		302		
270	326	302	384	236
270	326	302	384	236
270	326	302	384	236
270	326	302	384	236
1	1	1	1	1

Channahon

Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020
		405.00		
	260.00			
				239.00
			264.00	
376.00				
376.00	260.00	405.00	264.00	239.00
376.00	260.00	405.00	264.00	239.00
376.00	260.00	405.00	264.00	239.00
376.00	260.00	405.00	264.00	239.00
1	1	1	1	1