

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

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CHICAGO, ILLINOIS 60611-3154

312.751.5600

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June 30, 2023

Mr. Darin E. LeCrone, P.E.
Manager, Permit Section
Illinois Environmental Protection Agency
Division of Water Pollution Control
P.O. Box 19276
Springfield, IL 62794-9276

Subject: Metropolitan Water Reclamation District of Greater Chicago (District)
Chloride Time Limited Water Quality Standard (TLWQS)
2023 Annual Reports

Dear Mr. LeCrone:

In accordance with Section 3.B of the NPDES Permits listed below, please find enclosed the Chloride Time Limited Water Quality Standard 2023 Annual Reports for the following facilities:

<u>Facility</u>	<u>NPDES No.</u>
Stickney WRP	ILG103017
O'Brien WRP	ILG103018
Calumet WRP	ILG103014
Lemont WRP	ILG103015
Lockport Powerhouse	ILG103016

If you have any questions regarding this submittal, please contact Ms. Ann Ko, Principal Engineer, at 312-751-6553.

Sincerely,

John P. Murray

EJS:JS:AK:TS

Enclosures

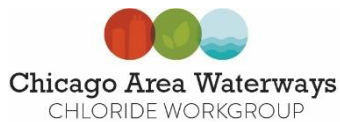
C: Jennifer Hammer, Lower Des Plaines Watershed Group

Hanna Miller, Chicago Area Waterways Chloride Workgroup

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

July 1, 2023

Prepared by The Metropolitan Water Reclamation District of Greater Chicago



The Metropolitan Water Reclamation District of Greater Chicago is a member of the Chicago Area Waterways Chloride Workgroup and Lower Des Plaines Watershed Group



1.0 Introduction to Chloride Issue in CAWS/LDPR

This Pollutant Minimization Plan (PMP) has been prepared by the Metropolitan Water Reclamation District of Greater Chicago to reduce the environmental impacts from the organization's chloride related operations. The Metropolitan Water Reclamation District of Greater Chicago 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 the 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: Metropolitan Water Reclamation District of Greater Chicago		
Facility Name: Stickney WRP		Chloride TLWQS Permit Number: ILG103017
Facility Address: 6001 W. Pershing Rd.		
City: Cicero	State: IL	Zip Code: 60808

The District is located primarily within the boundaries of Cook County, Illinois, serving an area of 883.5 square miles, which includes the City of Chicago and 128 suburban communities. The District serves an equivalent population of 12.72 million people: 5.16 million real people, a commercial and industrial equivalent of 5.32 million people, and a combined sewer overflow equivalent of 2.24 million people. The District operates seven automated water reclamation plants to treat over 500 billion gallons of wastewater annually and is considered a world leader in wastewater treatment facilities. Wastewater is collected from municipalities and conveyed to the WRP's through a 554-mile network of intercepting sewers, ranging in size from 6 inches to 27 feet in diameter, with the assistance of 23 pumping stations located throughout this network. The water flowing through the Lockport Powerhouse is harnessed by two turbines to provide a safe and environmentally friendly hydroelectric energy source that is sold back to Commonwealth Edison.

The Stickney WRP has a design average flow of 1,200 million gallons per day and a design maximum flow of 1,440 million gallons per day.

2.1 Level of Service for Winter Maintenance Activities

The level of service for the winter maintenance is dependent upon the forecast, amount and intensity of precipitation, weather conditions, and pavement conditions. Staff prioritize service based on plant and operational needs first. The goal is to maintain safe travel for both vehicles and personnel.

3.0 Best Management Practices

Details regarding the Metropolitan Water Reclamation District of Greater Chicago'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	Metropolitan Water Reclamation District of Chicago has been a member of the Lower Des Plaines Watershed Group/Chicago Area

the watershed within which the facility's discharge is located.	Waterways Chloride Workgroup. The MWRD has a representative on the Board of CAWCW.
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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 bulk salt is stored in a permanent salt structure on a concrete pad. Bagged salt is stored indoors.
Cover salt piles at all times except when in active use, unless stored indoors.	N/A 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, 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.	Working areas have sufficient slope to allow snow melt and stormwater to drain away from the area.
MS4/CSO Only - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.	N/A
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; • tarping of trucks for transportation of bulk chloride; 	Current good housekeeping practices: <ul style="list-style-type: none"> Cleanup of salt at the end of each storm event. Maintaining equipment Cleanup spreading equipment after each snow/ice event Written inspection program for storage facility (through GASB 34)

<ul style="list-style-type: none"> • 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. 	
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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.	Walk behind spreaders are yearly calibrated.
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.	Currently two of three trucks equipped for prewetting. Replacement truck in 2023 will have prewetting capabilities as well.
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	Handheld temp sensors
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing	Currently attempting to follow protocols as mentioned in workshops and training. There is a need to purchase salt spreading equipment (drop spreaders) that further limit the amount of salt dispersed.

weather conditions, and forecasted weather conditions.	
Track and record salt quantity used and storm conditions from each call-out.	IT developed a system for tracking.
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.	Currently implementing but weather conditions were not favorable for deicing in 2022-23 season.
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.	Training is performed annually in the fall.
Be responsible for complying with all applicable BMPs even when deicing practices are contracted out and ensure that contractors are properly trained and comply with all applicable BMPs.	N/A
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.	MWRD Tech Projects will submit reports annually to IEPA and CAWCW.
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.	As budgeting allows, purchase equipment for deicing sidewalks. Replacement truck in 2023 will have prewetting capabilities.
MS4/CSO/IDOT/TOLLWAY Only - Install equipment to measure the pavement temperature on	N/A

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.	
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.	N/A

3.1 Analysis of BMPs Implemented

We were able to calibrate equipment in 2022. Laborers mentioned having a hard time controlling the salt from flowing out of the spreader attachments.

3.2 Analysis of Alternative Treatments or New Technology

Having an additional truck with prewetting capabilities should reduce the amount of salt used on the roadways.

4.0 Deicing/Anti-Icing Agents Used

Materials used by the Metropolitan Water Reclamation District of Greater Chicago for the 2022-2023 winter season are included as Appendix 1.

4.1 Application Rates

The application rates used by the Metropolitan Water Reclamation District of Greater Chicago for the 2022-2023 winter season are included as Appendix 2.

4.1.1 Application Rate Analysis

Insufficient occurrences. Conditions (temperature or precipitation) were not favorable to apply brine to sidewalks during the 2022-2023 season. Rain was usually forecast prior to a snow event.

4.2 Application Practices

The Metropolitan Water Reclamation District of Greater Chicago uses the following practices to apply deicing and anti-icing materials:

- Deicing using brine from walk-behind sprayers.

4.3 Call Outs

A total of 6.35 inches of snow was reported in Stickney WRP for the 2022-2023 winter. There were [1] freezing rain event(s) and [4] snow event(s) for the 2022-2023 winter. The Metropolitan Water Reclamation District of Greater Chicago had [5] call outs completed during the 2022-2023 winter. A log of all call outs completed by the Metropolitan Water Reclamation District of Greater Chicago are included as Appendix 3.

4.4 Use of Liquids

For sidewalks, one test application was done. Conditions (temperature or precipitation) were not favorable to apply brine to sidewalks during the 2022-2023 season. Rain was usually forecast prior to a snow event.

5.0 Training

The Metropolitan Water Reclamation District of Greater Chicago - SWRP completed annual training for employees who are part of the winter maintenance operations during the fall of 2022. 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 Metropolitan Water Reclamation District of Greater Chicago uses equipment listed in Appendix 5 during winter maintenance activities.

6.1 Description of Equipment Washing and Wash Water Collection

At SWRP the equipment is washed at the truck garage (truck/car wash area) using minimum water.

7.0 Material Storage

The Metropolitan Water Reclamation District of Greater Chicago SWRP maintains [2] storage area(s). Information regarding the storage area(s) is included in Appendix 6.

8.0 Capital Purchases

Identified capital purchases from the Metropolitan Water Reclamation District of Greater Chicago'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.

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

The Metropolitan Water Reclamation District of Greater Chicago 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

No changes were made.

10.0 Program Evaluation

Currently reviewing our salt usage information, evaluating our equipment and adjusting our application practices. Crews seem more cognizant in reducing salt.

10.1 Proposed Steps for the Coming Year

Continue to maintain, repair, and calibrate current equipment to achieve further chloride reductions. Purchasing a new truck with prewetting capabilities.

11.0 Workgroup Participation

The MWRD is a member of the CAWS Chloride Workgroup. MWRD attends and participates in quarterly membership meetings, sends staff to Winter Deicing Workshops, and also submits annual reports to the workgroup.

Organization Name: Stickney WRP

Chloride TLWQS Annual Report

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
Bagged Rock Salt, 10% CALCIUM CHLORIDE,50 LB	Dry		250,000	2.42					2.42
Brine (Sidewalk)	Liquids		40,000	72					72
									0
Loose Bulk Rock salt	Pre-Wet	36		24.27					24.27
	Dry								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		290,000	0%	0%	0%	86%	0%	14%	

Truck Drivers:

- Truck Drivers clear the snow and ice prior to applying salt.
- Truck Drivers applied salt at a rate of 1,348 lbs/lane-mile.
- Truck Drivers will reapply salt if more snow comes or is otherwise needed.
- In 2022-23 no trucks at SWRP had anti-icing equipment.

Laborers:

- Laborers clear the snow and ice prior to applying salt.
- Laborers applied salt at a rate of 15.5 lbs/1000 sq. ft.
- Laborers applied salt as conditions and complaints (slips and falls warranted).
- Anti-icing of the sidewalks was tested once at SWRP, however weather conditions never were optimal to fully pretreat the sidewalks.

Organization Name: Metropolitan Water
Reclamation District of Greater Chicago

Chloride TLWQS Annual Report
Appendix 3 - Callouts

Facility Location	Call out Date/Time	Completion Date/Time	Precipitation Type	Snow Amount (inches)	Sleet Amount (inches)	Pavement Conditions	Pavement Temperature (°F)	Are pavement temperatures rising or falling?	Air Temperature (°F)	Wind or Blowing Snow?	Storm Length	Materials Used	Amount Used (gallons)	Amount Used (lbs)	Application Rate (lb/sq ft)	Equipment Used	How many anti-icing application passes were made?	Methods used before applying deicer material(s)?	Dry or Walk/Driveways?	How many square feet of parking lots/sidewalks were treated?
SWRP	2023-01-17 6:00:00	2023-01-17 6:15:00	Snow		0.25	Dry	29	Rising	23			Sodium_Chloride_Rock_Salt	1	1480		Snowex, Spreader		Sweeping/Shovelling	Dry	60000
SWRP	2023-01-30 7:30:00	2023-01-30 13:00:00	Snow	1		Dry	20	Falling	12	Blowing Snow		Sodium_Chloride_Rock_Salt	72	1480		Snowex's, Spreader		Sweeping/Sweeping/Shovelling	Dry	60000
SWRP	2023-01-30 13:00:00	2023-01-30 14:30:00	Snow			Dry	12		13			Rock_Salt/Gravel				Snowex's, 24gal. Spreader	1		Dry	60000
SWRP	2023-01-26 7:30:00	2023-01-26 13:30:00	Snow	0.25		Wet	29	Falling	25			Sodium_Chloride_Rock_Salt		720	3	Snowex's, Spreader	0	Sweeping/Shovelling	Dry	60000
SWRP	2023-01-27 13:00:00	2023-01-27 13:15:00	Snow	0.1		Wet	28	Rising	29	Blowing Snow	14.00	Sodium_Chloride_Rock_Salt		150		Walk_Behind_Salt_Spreader		Sweeping	Dry	10000
SWRP	2023-01-25 16:00:00	2023-01-25 13:59:00	Snow	2		Wet	29	Rising	29	Blowing Snow		Sodium_Chloride_Rock_Salt		1360	3	Snowex's_Spreader, Walk_Behind_Salt_Spreader	0	Sweeping/Shovelling	Dry	60000

Role in Winter Operations	Training Topics Covered
Laborer	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Laborer Foreman	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Truck Driver	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Truck Driver Foreman	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Managers	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts

Appendix 5 - Equipment

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
Cub Cadet Salt Spreader	N/A	Walk Behind (Mechanical)	Dry	
Spiker ergo Pro	N/A	Walk Behind (Mechanical)	Dry	
Earthway 2050	N/A	Walk Behind (Mechanical)	Dry	
Earthway 2600	N/A	Walk Behind (Mechanical)	Dry	
CHAPIN PROFESSIONAL #82088B	N/A	Walk Behind (Mechanical)	Dry	
SnowEx_Spreader	Kubota TRAC0014	Motorized rotary spreader attachment	Dry	Snowex spreaders on Kubota tractors do not have gate controls to stop salt from flowing out of the hoppers.
SnowEx_Spreader	Kubota TRAC0020	Motorized rotary spreader attachment	Dry	Snowex spreaders on Kubota tractors do not have gate controls to stop salt from flowing out of the hoppers.
SnowEx_12gal_Sprayer	N/A	Battery operated walk behind	Brine for de-icing	
SnowEx_12gal_Sprayer	N/A	Battery operated walk behind	Brine for de-icing	
Truck	TRUK0078	Mechanical	Brine, Dry	
Truck	TRUK0009	Mechanical	Dry	
Truck	TRUK0007	Mechanical	Brine, Dry	
Truck	TRUK0060	Mechanical	Dry	

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)
Garage	Bagged salt	120 bags	Yes	Yes	Yes	Yes
Salt Dome 412 ton capacity	Bulk Rock Salt		Yes	Yes	Yes	Yes

Capital Purchase Description	Plan/Schedule for Purchase
Drop spreaders for Kubota tractors	2024 if suitable drop spreaders are found for existing Kubotas and if budget allows
Spray equipment with 100 gallon tank and spray bar for personel carrier to be used for de-icing sidewalks.	2024-25 if budget allows.
2024 Dump truck , Monroe 13' with spray equipment for prewetting salt	2023

IC-ANIONS	
Cl	
Collect date	mg/L
5/3/2022	162.073
5/10/2022	209.718
5/17/2022	195.745
5/24/2022	164.081
5/31/2022	209.928
6/7/2022	158.592
6/14/2022	161.411
6/21/2022	158.553
6/28/2022	175.569
7/5/2022	130.018
7/12/2022	140.339
7/19/2022	161.12
7/26/2022	157.175
8/2/2022	131.857
8/9/2022	137.913
8/16/2022	168.706
8/23/2022	152.831
8/30/2022	122.535
9/6/2022	154.635
9/13/2022	131.032
9/20/2022	122.311
9/27/2022	136.648
10/4/2022	153.973
10/11/2022	156.625
10/18/2022	145.314
10/25/2022	139.624
11/1/2022	146.934
11/8/2022	153.639
11/15/2022	153.793
11/29/2022	194.331
12/1/2022	166.716
12/2/2022	155.085
12/3/2022	147.837
12/4/2022	154.223
12/5/2022	145.338
12/6/2022	144.741
12/7/2022	143.176
12/8/2022	144.394
12/9/2022	138.497
12/10/2022	128.344
12/11/2022	138.053
12/12/2022	157.155
12/13/2022	165.956

12/14/2022	142.463
12/15/2022	92.921
12/16/2022	146.09
12/17/2022	207.483
12/18/2022	180.465
12/19/2022	167.185
12/20/2022	168.51
12/21/2022	159.248
12/22/2022	143.369
12/23/2022	167.188
12/24/2022	206.052
12/25/2022	196.48
12/26/2022	187.197
12/27/2022	171.506
12/28/2022	167.318
12/29/2022	284.54
12/30/2022	359.766
12/31/2022	297.212
1/1/2023	265.256
1/2/2023	336.675
1/3/2023	244.954
1/4/2023	226.866
1/5/2023	215.298
1/6/2023	221.353
1/7/2023	202.705
1/8/2023	187.385
1/9/2023	188.743
1/10/2023	186.57
1/11/2023	183.222
1/12/2023	173.324
1/13/2023	168.42
1/14/2023	169.106
1/15/2023	166.375
1/16/2023	167.183
1/17/2023	223.078
1/18/2023	210.717
1/19/2023	171.157
1/20/2023	181.049
1/21/2023	191.246
1/22/2023	197.591
1/23/2023	284.223
1/24/2023	252.956
1/25/2023	311.462
1/26/2023	948.557
1/27/2023	730.46
1/28/2023	549.321
1/29/2023	551.11

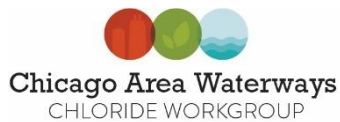
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1/31/2023	599.856
2/1/2023	391.923
2/2/2023	311.31
2/3/2023	257.95
2/4/2023	237.309
2/5/2023	222.96
2/6/2023	228.298
2/7/2023	231.726
2/8/2023	259.018
2/9/2023	343.515
2/10/2023	347.562
2/11/2023	354.606
2/12/2023	362.463
2/13/2023	349.719
2/14/2023	319.893
2/15/2023	309.513
2/16/2023	285.74
2/17/2023	561.991
2/18/2023	706.37
2/19/2023	476.765
2/20/2023	380.527
2/21/2023	318.368
2/22/2023	324.72
2/23/2023	352.949
2/24/2023	330.414
2/25/2023	336.658
2/26/2023	321.193
2/27/2023	309.122
2/28/2023	284.244
3/1/2023	300.884
3/2/2023	293.71
3/3/2023	281.555
3/4/2023	270.899
3/5/2023	267.022
3/6/2023	265.238
3/7/2023	267.709
3/8/2023	259.571
3/9/2023	250.439
3/10/2023	307.693
3/11/2023	339.922
3/12/2023	375.237
3/13/2023	373.409
3/14/2023	318.495
3/15/2023	295.506
3/16/2023	283.134
3/17/2023	300.305

3/18/2023	304.91
3/19/2023	280.236
3/21/2023	270.671
3/22/2023	259.368
3/23/2023	246.77
3/24/2023	242.125
3/25/2023	206.178
3/26/2023	191.879
3/27/2023	204.835
3/28/2023	213.743
3/29/2023	228.358
3/30/2023	237.972
3/31/2023	222.271
4/1/2023	202.388
4/2/2023	174.379
4/3/2023	180.773
4/4/2023	169.795
4/5/2023	178.016
4/6/2023	178.888
4/7/2023	198.924
4/8/2023	201.54
4/9/2023	198.401
4/10/2023	207.366
4/11/2023	221.867
4/12/2023	214.417
4/13/2023	213.853
4/14/2023	216.588
4/15/2023	225.669
4/16/2023	213.623
4/17/2023	196.707
4/18/2023	204.469
4/19/2023	208.101
4/20/2023	199.96
4/21/2023	200.096
4/22/2023	193.036
4/23/2023	201.554
4/24/2023	192.044
4/25/2023	192.997
4/26/2023	174.048
4/27/2023	185.793
4/28/2023	197.924
4/29/2023	201.987
4/30/2023	180.599

Annual Report for Year 1 (2022-2023) of the Time Limited Water Quality Standard for Chloride - O'Brien Water Reclamation Plant (WRP)

July 1, 2023

Prepared by The Metropolitan Water Reclamation District of Greater Chicago



The Metropolitan Water Reclamation District of Greater Chicago is a member of the Chicago Area Waterways Chloride Workgroup and Lower Des Plaines Watershed Group



1.0 Introduction to Chloride Issue in CAWS/LDPR

This Pollutant Minimization Plan (PMP) has been prepared by the Metropolitan Water Reclamation District of Greater Chicago to reduce the environmental impacts from the organization's chloride related operations. The Metropolitan Water Reclamation District of Greater Chicago 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 the 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: Metropolitan Water Reclamation District of Greater Chicago		
Facility Name: OWRP		Chloride TLWQS Permit Number: ILG103018
Facility Address: 3500 W Howard		
City: Skokie	State: IL	Zip Code: 60076

The District is located primarily within the boundaries of Cook County, Illinois, serving an area of 883.5 square miles, which includes the City of Chicago and 128 suburban communities. The District serves an equivalent population of 12.72 million people: 5.16 million real people, a commercial and industrial equivalent of 5.32 million people, and a combined sewer overflow equivalent of 2.24 million people. The District operates seven automated water reclamation plants to treat over 500 billion gallons of wastewater annually and is considered a world leader in wastewater treatment facilities. Wastewater is collected from municipalities and conveyed to the WRP's through a 554-mile network of intercepting sewers, ranging in size from 6 inches to 27 feet in diameter, with the assistance of 23 pumping stations located throughout this network. The water flowing through the Lockport Powerhouse is harnessed by two turbines to provide a safe and environmentally friendly hydroelectric energy source that is sold back to Commonwealth Edison.

The O'Brien WRP has a design average flow of 333 million gallons per day and a design maximum flow of 450 million gallons per day.

2.1 Level of Service for Winter Maintenance Activities

The level of service for the winter maintenance is dependent upon the forecast, amount and intensity of precipitation, weather conditions, and pavement conditions. Staff prioritize service based on plant and operational needs first. The goal is to maintain safe travel for both vehicles and personnel.

3.0 Best Management Practices

Details regarding the Metropolitan Water Reclamation District of Greater Chicago'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	Metropolitan Water Reclamation District of Chicago has been a member of the Lower Des Plaines Watershed Group/Chicago Area

CAWS or LDPR, depending on the watershed within which the facility's discharge is located.	Waterways Chloride Workgroup. The MWRD has a representative on the Board of CAWCW.
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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 bulk salt is stored in a permanent salt structure on a concrete pad. Bagged salt is stored indoors.
Cover salt piles at all times except when in active use, unless stored indoors.	N/A 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, 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.	Sidewalk clearing equipment is loaded inside a service garage. Using bagged salt, and the area is cleaned afterwards. Bulk salt working is minimal and the area is cleaned afterwards.
MS4/CSO Only - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.	N/A
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; • tarping of trucks for transportation of bulk chloride; 	<p>Excess salt gets swept up after storm events.</p> <p>All loose salt gets swept back into the bulk piles after unloading.</p> <p>All tools and equipment used for snow and ice removal gets placed in a storage location at the end of the winter season.</p> <p>All equipment receives regular maintenance at the end of the season. All repairs are completed as needed.</p>

<ul style="list-style-type: none"> • 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. 	
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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.	All equipment is calibrated at the start of each winter 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.	All new plow trucks will have pre wetting as standard. Our main plow truck has pre wetting equipment.
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	Currently utilizing handheld temp sensors. New plow trucks will have temp sensors equipped.
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing	We currently vary salt application based on the weather forecast and train drivers and laborers.

weather conditions, and forecasted weather conditions.	
Track and record salt quantity used and storm conditions from each call-out.	IT developed a system for tracking.
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.	Currently implementing but weather conditions were not favorable for deicing in 2022-23 season.
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.	Training is performed annually in the fall.
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.	If contracted, contractors must comply with District policies.
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.	MWRD Tech Projects will submit reports annually to IEPA and CAWCW.
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.	OWRP will have new equipment with pre-wetting equipment by the end of 2023. Our main plow truck has pre-wetting capabilities.
MS4/CSO/IDOT/TOLLWAY Only - Install equipment to measure the pavement temperature on	N/A

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.	
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.	N/A

3.1 Analysis of BMPs Implemented

MWRD OWRP will plan to calibrate our salt spreaders using methods and calibration charts from saltsmart.org. OWRP is using the equipment on the plow truck for brine stored at OWRP for pre wetting and testing de-icing. MWRD has purchased infrared thermometers to measure pavement temperatures. We monitor the future weather conditions to determine when to begin applying pre wet chloride and anti-icing to the parking lots and roadways. We also utilize a digital form to track the required data for each storm event.

3.2 Analysis of Alternative Treatments or New Technology

Having an additional truck with prewetting capabilities should reduce the amount of salt used on the roadways.

4.0 Deicing/Anti-Icing Agents Used

Materials used by the Metropolitan Water Reclamation District of Greater Chicago for the 2022-2023 winter season are included as Appendix 1.

4.1 Application Rates

The application rates used by the Metropolitan Water Reclamation District of Greater Chicago for the 2022-2023 winter season are included as Appendix 2.

4.1.1 Application Rate Analysis

Brine is used at OWRP as a pre wetting agent on the road trucks and as a de-icing agent on the sidewalks.

4.2 Application Practices

The Metropolitan Water Reclamation District of Greater Chicago uses the following practices to apply deicing and anti-icing materials:

- Deicing can be applied utilizing truck mounted equipment

4.3 Call Outs

A total of [6] inches of snow was reported in [OWRP] for the 2022-2023 winter. There were [1] freezing rain event(s) and [4] snow event(s) for the 2022-2023 winter. The Metropolitan Water Reclamation District of Greater Chicago had [4] of call outs completed during the 2022-2023 winter. A log of all call outs completed by the Metropolitan Water Reclamation District of Greater Chicago are included as Appendix 3.

4.4 Use of Liquids

Conditions (temperature or precipitation) were not favorable to apply brine to during the 2022-2023 season. Rain was usually forecast prior to a snow event.

5.0 Training

The Metropolitan Water Reclamation District of Greater Chicago - SWRP completed annual training for employees who are part of the winter maintenance operations during the fall of 2022. 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 Metropolitan Water Reclamation District of Greater Chicago uses equipment listed in Appendix 5 during winter maintenance activities.

6.1 Description of Equipment Washing and Wash Water Collection

OWRP does not use a washing station.

7.0 Material Storage

The Metropolitan Water Reclamation District of Greater Chicago OWRP maintains one bulk materials storage shed. Information regarding the storage area is included in Appendix 6.

8.0 Capital Purchases

Identified capital purchases from the Metropolitan Water Reclamation District of Greater Chicago'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. Walk behind spreaders with shields to control overspray were also purchased during the winter season.

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

The Metropolitan Water Reclamation District of Greater Chicago 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

No changes were made.

10.0 Program Evaluation

As we go through the upcoming winter, we will be reviewing our callout information, developing a plan on how to adjust our application practices, implementing it, evaluating the results, and repeating those steps to continue improving our process.

10.1 Proposed Steps for the Coming Year

Continue to maintain, repair, and calibrate current equipment to achieve further chloride reductions.

11.0 Workgroup Participation

The MWRD is a member of the CAWS Chloride Workgroup. MWRD attends and participates in quarterly membership meetings, sends staff to Winter Deicing Workshops, and also submits annual reports to the workgroup.

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
Bagged Chloride	Dry	NA	15000	1.5					1.5
									0
Bulk Rock salt	Pre-Wet	3	20000	6					6
									0
									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	3	35,000	0%	100%	0%	100%	57%	25%	

Truck Drivers:

- Truck Drivers clear the snow before applying salt. If snow starts while they are applying salt, they will stop until they are able to remove the snow.
- Truck Drivers apply salt at a rate of 300-750 lb./lane-mile. This is dependent of pavement temperature.
- Truck Drivers will reapply salt if more snow comes or is otherwise needed.

Buildings and Grounds Laborers:

- Laborers clear the snow before applying salt. If snow starts while they are applying salt, they will stop until they are able to remove the snow.
- Laborers apply salt at a rate of 7.5 lb./1000 sq. ft. This is dependent of pavement temperature and prior anti-icing.
- Laborers will reapply salt if more snow comes or is otherwise needed.

Facility Location	Call out Date/Time	Completion Date/Time	Precipitation Type	Snow Amount (inches)	Freezing Rain Amount (inches)	Pavement Conditions	Pavement Temperature (°F)	Materials Used	Equipment Used	Methods used before applying deicer materials?	How many lane miles were treated?
OWRP	2023-01-25 5:00:00	1923-01-25 15:00:00	Snow,Freezing_Rain	2	2	wet, icy	0	Sodium_Chloride_Rock_Salt	11TRUK7821	Plowing	1
OWRP	2023-01-27 4:30:00	1923-01-29 10:30:00	Snow	1		icy	15	Sodium_Chloride_Rock_Salt	11TRUK7821	Plowing	2
OWRP	2023-01-29 4:30:00	1923-01-29 10:30:00	Snow	2		icy	-1	Sodium_Chloride_Rock_Salt	11TRUK7821	Plowing	2
OWRP	2023-02-17 4:30:00	1923-01-29 10:30:00	Snow	1		wet	26	Sodium_Chloride_Rock_Salt	11TRUK7821	Plowing	2

Role in Winter Operations	Training Topics Covered
Laborer	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Laborer Foreman	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Truck Driver	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Truck Driver Foreman	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Managers	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts

**Organization Name: Metropolitan Water
Reclamation District**

**Chloride TLWQS Annual Report
Appendix 5 - Equipment**

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
snowplow truck		mechanically controlled	pre wet bulk salt	
pickup plow		mechanically controlled	dry bulk salt	
Ventrec 1		mechanically controlled	dry bulk salt	
Ventrec 2		mechanically controlled	dry bulk salt	
Kubota RTV		mechanically controlled	dry bulk salt	

Organization Name: Metropolitan Water
Reclamation District

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)
Bulk Materials Building	Bulk rock salt	20 tons	Yes permanat building	Three sides, sloped out	Concrete	Swept up after truck loading

Capital Purchase Description	Plan/Schedule for Purchase
N/A	

Collection Date	Chloride mg/L
05/01/22	132.68
05/02/22	189.23
05/03/22	146.45
05/09/22	227.95
05/16/22	196.17
05/23/22	183.67
05/30/22	179.45
06/06/22	163.02
06/13/22	154.52
06/20/22	154.21
06/27/22	138.69
07/04/22	130.89
07/11/22	137.30
07/18/22	131.74
07/25/22	131.57
08/01/22	130.44
08/08/22	107.30
08/15/22	125.81
08/22/22	114.54
08/29/22	104.81
09/05/22	106.73
09/12/22	137.87
09/19/22	97.18
09/26/22	112.85
10/03/22	113.65
10/10/22	110.50
10/17/22	108.09
10/24/22	100.45
10/31/22	111.17
11/07/22	102.64
11/14/22	105.21
11/21/22	112.59
11/28/22	127.71
12/01/22	106.67
12/02/22	103.39
12/03/22	100.28
12/04/22	100.28
12/05/22	100.20
12/06/22	99.11
12/07/22	99.36
12/08/22	99.53
12/09/22	100.64

12/10/22	110.20
12/11/22	113.16
12/12/22	112.28
12/13/22	110.45
12/14/22	93.03
12/15/22	75.24
12/16/22	136.77
12/17/22	169.66
12/18/22	144.35
12/19/22	136.88
12/20/22	138.17
12/21/22	127.75
12/22/22	123.75
12/23/22	176.30
12/24/22	188.77
12/25/22	191.99
12/26/22	161.69
12/27/22	161.18
12/28/22	154.64
12/29/22	314.83
12/30/22	287.31
12/31/22	223.86
01/01/23	273.30
01/02/23	277.08
01/03/23	169.22
01/04/23	194.20
01/05/23	191.58
01/06/23	186.11
01/07/23	167.76
01/08/23	153.15
01/09/23	149.38
01/10/23	144.94
01/11/23	145.59
01/12/23	133.69
01/13/23	129.16
01/14/23	126.50
01/15/23	126.63
01/16/23	142.37
01/17/23	179.87
01/18/23	155.93
01/19/23	126.85
01/20/23	149.55
01/21/23	155.45
01/22/23	165.45
01/23/23	275.30
01/24/23	188.44
01/25/23	546.12

01/26/23	747.62
01/27/23	489.59
01/28/23	456.52
01/30/23	879.53
01/31/23	361.10
02/01/23	229.60
02/02/23	202.85
02/03/23	200.55
02/04/23	175.00
02/05/23	173.03
02/06/23	209.38
02/07/23	194.88
02/08/23	205.44
02/09/23	285.82
02/10/23	293.24
02/11/23	252.10
02/12/23	226.35
02/13/23	213.13
02/14/23	207.58
02/15/23	224.92
02/16/23	294.57
02/17/23	848.18
02/18/23	709.08
02/19/23	355.07
02/20/23	274.67
02/21/23	241.70
02/22/23	275.63
02/23/23	244.95
02/24/23	272.18
02/25/23	330.10
02/26/23	309.76
02/27/23	233.39
02/28/23	240.63
03/01/23	234.10
03/02/23	238.52
03/03/23	236.73
03/04/23	234.87
03/05/23	228.36
03/06/23	228.47
03/07/23	215.43
03/08/23	211.06
03/09/23	210.48
03/10/23	388.02
03/11/23	273.73
03/12/23	280.06
03/13/23	260.42
03/14/23	233.10

03/15/23	220.58
03/16/23	216.07
03/17/23	262.80
03/18/23	221.28
03/19/23	200.89
03/20/23	191.64
03/21/23	187.25
03/22/23	185.88
03/23/23	193.59
03/24/23	191.63
03/25/23	153.56
03/26/23	185.57
03/27/23	194.95
03/28/23	193.41
03/29/23	194.39
03/30/23	189.53
03/31/23	189.15
04/01/23	148.77
04/02/23	171.05
04/03/23	180.68
04/04/23	157.31
04/05/23	138.88
04/06/23	170.00
04/07/23	184.32
04/08/23	185.69
04/09/23	182.17
04/10/23	183.82
04/11/23	178.62
04/12/23	181.02
04/13/23	179.88
04/14/23	180.81
04/15/23	179.88
04/16/23	175.64
04/17/23	164.13
04/18/23	163.70
04/19/23	160.71
04/20/23	161.63
04/21/23	155.21
04/22/23	157.32
04/23/23	155.15
04/24/23	146.74
04/25/23	140.50
04/26/23	138.76
04/27/23	151.41
04/28/23	154.03
04/29/23	148.53
04/30/23	139.28

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

July 1, 2023

Prepared by The Metropolitan Water Reclamation District of Greater Chicago



The Metropolitan Water Reclamation District of Greater Chicago is a member of the Chicago Area Waterways Chloride Workgroup and Lower Des Plaines Watershed Group



1.0 Introduction to Chloride Issue in CAWS/LDPR

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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 the 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 Metropolitan Water Reclamation District of Greater Chicago		
Facility Name: Calumet WRP		Chloride TLWQS Permit Number: ILG103014
Facility Address: 400 E 130th St.		
City: Chicago	State: IL	Zip Code: 60628

The District is located primarily within the boundaries of Cook County, Illinois, serving an area of 883.5 square miles, which includes the City of Chicago and 128 suburban communities. The District serves an equivalent population of 12.72 million people: 5.16 million real people, a commercial and industrial equivalent of 5.32 million people, and a combined sewer overflow equivalent of 2.24 million people. The District operates seven automated water reclamation plants to treat over 500 billion gallons of wastewater annually and is considered a world leader in wastewater treatment facilities. Wastewater is collected from municipalities and conveyed to the WRP's through a 554-mile network of intercepting sewers, ranging in size from 6 inches to 27 feet in diameter, with the assistance of 23 pumping stations located throughout this network. The water flowing through the Lockport Powerhouse is harnessed by two turbines to provide a safe and environmentally friendly hydroelectric energy source that is sold back to Commonwealth Edison.

The Calumet WRP has a design average flow of 354 million gallons per day and a design maximum flow of 430 million gallons per day.

2.1 Level of Service for Winter Maintenance Activities

The level of service for the winter maintenance is dependent upon the forecast, amount and intensity of precipitation, weather conditions, and pavement conditions. Staff prioritize service based on plant and operational needs first. The goal is to maintain safe travel for both vehicles and personnel.

3.0 Best Management Practices

Details regarding the Metropolitan Water Reclamation District of Greater Chicago'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
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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.	Metropolitan Water Reclamation District of Chicago has been a member of the Lower Des Plaines Watershed Group/Chicago Area Waterways Chloride Workgroup. The MWRD has a representative on the Board of CAWCW.
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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.	The salt is stored on an impermeable asphalt pad.
Cover salt piles at all times except when in active use, unless stored indoors.	Salt storage area is permanently covered
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.	The pad is sloped away from the salt pile to prevent runoff.
MS4/CSO Only - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.	N/A
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; 	At every conclusion of a storm event, labor crews clean and palletted bags of salt, wrapped, and store salt with the snow removal equipment. Truck drivers swept and returned spilled salt to the stockpile during operation.

<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>Salt spreader and snow blower equipment are maintained regularly by cleaning and inspecting them after use and doing repairs as necessary.</p> <p>We ensure safety protocols are being followed and implemented. We keep the truck's container and unloading areas clean and free of foreign objects as such could damage spreaders and could occasionally get into salt.</p> <p>After each snow event, all equipment (e.g., snow blowers and walk behind salt spreaders) used are cleaned and kept in good shape.</p> <p>Criteria for inspection has been made and will be implemented for the 2023-2024 season.</p> <p>Any surplus materials used in the snow removal are removed from the site and stored in an enclosed area for future use.</p> <p>An annual inspection of the snow blower equipment is carried out and repairs are done if necessary.</p> <p>Ways to collect wash water to be reused to make brine are planned to be implemented for the 2023-2024 season.</p>
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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.	Salt spreading equipment will be calibrated annually.
Pre-wet road salt before use, either by applying liquids to the	Continue to add prewetting capabilities to trucks.

salt stockpile, or by applying liquids by way of the spreading equipment as the salt is deposited on the road.	
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	Continue to add temperature sensors to all equipment.
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.	A protocol has been developed to vary the salt application rate.
Track and record salt quantity used and storm conditions from each call-out.	IT developed a system for tracking.
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.	Anti-icing plan has been developed.
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.	Training is performed annually in the Fall.
Be responsible for complying with all applicable BMPs even when deicing practices are contracted out and ensure that contractors are properly trained and comply with all applicable BMPs.	N/A
Complete an annual report, as required by paragraph 3(B) of this order, which is standardized in an electronic format and	MWRD Tech Projects will submit reports annually to IEPA and CAWCW.

submitted to the IEPA's website and to the watershed group.	
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.	CWRP will implement BMPs and budget for any new equipment, as needed.
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.	N/A
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.	N/A

3.1 Analysis of BMPs Implemented

We were able to make the changes we set out to complete this year. Staff did not report any unexpected difficulties, but they did mention having an easier time working with the road salt now that there is a permanent covered storage location for the road salt.

3.2 Analysis of Alternative Treatments or New Technology

Retrofitting our salt spreaders for our trucks with pre-wetting capabilities should allow us to decrease the amount of dry salt we are using, and thereby decrease our total chloride usage.

4.0 Deicing/Anti-Icing Agents Used

Materials used by the Metropolitan Water Reclamation District of Greater Chicago for the 2022-2023 winter season are included as Appendix 1.

4.1 Application Rates

The application rates used by the Metropolitan Water Reclamation District of Greater Chicago for the 2022-2023 winter season are included as Appendix 2.

4.1.1 Application Rate Analysis

This was the first year of tracking application rates, so there is no previous data to compare against.

4.2 Application Practices

The Metropolitan Water Reclamation District of Greater Chicago uses the following practices to apply deicing and anti-icing materials:

- Deicing using dry salt from salt spreader trucks and walk-behind spreaders.

4.3 Call Outs

A total of 8.8 inches of snow was reported at the Calumet Water Reclamation Plant for the 2022-2023 winter. There were 0 freezing rain event(s) and 7 snow event(s) for the 2022-2023 winter. The Metropolitan Water Reclamation District of Greater Chicago had 7 of call outs completed during the 2022-2023 winter. A log of all call outs completed by the Metropolitan Water Reclamation District of Greater Chicago are included as Appendix 3.

4.4 Use of Liquids

The District is pilot testing the use of liquids at various treatment plants and will continue to expand its use.

5.0 Training

The Metropolitan Water Reclamation District of Greater Chicago - CWRP completed annual training for employees who are part of the winter maintenance operations during the fall of 2022. 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 Metropolitan Water Reclamation District of Greater Chicago uses equipment listed in Appendix 5 during winter maintenance activities.

6.1 Description of Equipment Washing and Wash Water Collection

Presently, the wash water is not being reused, but plans are in place to reuse brine starting next season.

7.0 Material Storage

The Calumet Water Reclamation Plant maintains 1 storage area. Information regarding the storage area(s) is included in Appendix 6.

8.0 Capital Purchases

Identified capital purchases from the Metropolitan Water Reclamation District of Greater Chicago'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.

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

The Metropolitan Water Reclamation District of Greater Chicago 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

No changes were made.

10.0 Program Evaluation

As we go through the upcoming winter, we will be reviewing our callout information, developing a plan on how to adjust our application practices, implementing it, evaluating the results, and repeating those steps to continue improving our process.

10.1 Proposed Steps for the Coming Year

We will be transitioning to using pre-wet salt instead of dry salt. We will also be purchasing tools to measure pavement temperatures to allow us to have a better idea of the application rate we need.

11.0 Workgroup Participation

The MWRD is a member of the CAWS Chloride Workgroup. MWRD attends and participates in quarterly membership meetings, sends staff to Winter Deicing Workshops, and also submits annual reports to the workgroup.

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 2024-2025 (Year 3) in Tons or Gallons	Total Amount used for 2025-2026 (Year 4) in Tons or Gallons	Total Amount used for 2026-2027 (Year 5) in Tons or Gallons	Total Amount Used Over First 5-Year Term
Rock Salt	Dry	17.5	45700	82.3					82.3078
									0
									0
									0
									0
									0
									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	17.5	45,700	100%	0%	0%	100%	0%	0%	

Truck Drivers:

- Truck Drivers clear the snow before applying salt. If snow starts while they are applying salt, they will stop until they are able to remove the snow.
- Truck Drivers apply salt at a rate of 750 lb./lane-mile. This is independent of pavement temperature as they did not have a way to measure it.
- Truck Drivers will reapply salt if more snow comes or is otherwise needed.

Buildings and Grounds Laborers:

- Laborers clear the snow before applying salt. If snow starts while they are applying salt, they will stop until they are able to remove the snow.
- Laborers apply salt at a rate of 7.5 lb./1000 sq. ft. This is independent of pavement temperature as they did not have a way to measure it.
- Laborers will reapply salt if more snow comes or is otherwise needed.

Sewer Maintenance Laborers:

- Laborers clear the snow before applying salt. If snow starts while they are applying salt, they will stop until they are able to remove the snow.
- Laborers apply salt at a rate of 2 lb./1000 sq. ft. This is independent of pavement temperature as they did not have a way to measure it.
- Laborers will reapply salt if more snow comes or is otherwise needed.

Organization Name: Metropolitan Water Chloride TLWQS Annual Report
Reclamation District of Greater Chicago Appendix 3 - Callouts

Date	Weather Condition	Buildings and Grounds Laborers Called?	Truck Driveres Called?	Sewer Maintenance Laboreres Called?
12/16/2022	0.8" Snow	No	Yes	Yes
12/22/2022	3.0" Snow	Yes	Yes	Yes
1/23/2023	0.7" Snow	No	Yes	No
1/25/2023	2.5" Snow	Yes	Yes	Yes
1/30/2023	0.4" Snow	Yes	Yes	No
2/17/2023	1.4" Snow	No	Yes	Yes
3/10/2023	0.3" Snow	No	No	Yes

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
Salt Spreader Truck	8701	Mechanical	Dry	
Salt Spreader Truck	8067	Mechanical	Dry/Pre-wet	
Salt Spreader Truck	8068	Mechanical	Dry/Pre-wet	
Walk behind salt spreader	1	Mechanical	Dry	
Walk behind salt spreader	2	Mechanical	Dry	
Walk behind salt spreader	3	Mechanical	Dry	
Walk behind salt spreader	4	Mechanical	Dry	
Walk behind salt spreader	5	Mechanical	Dry	

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
Salt Spreader Truck	8701	Mechanical	Dry	
Salt Spreader Truck	8067	Mechanical	Dry/Pre-wet	
Salt Spreader Truck	8068	Mechanical	Dry/Pre-wet	
Walk behind salt spreader	1	Mechanical	Dry	
Walk behind salt spreader	2	Mechanical	Dry	
Walk behind salt spreader	3	Mechanical	Dry	
Walk behind salt spreader	4	Mechanical	Dry	
Walk behind salt spreader	5	Mechanical	Dry	

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)
Salt Dome near Truck Storage	Rock Salt	50 tons	yes	Storage has 3 walls and an opening for access	yes	yes

Capital Purchase Description	Plan/Schedule for Purchase
Salt Storage Dome	8/11/2022
Brine Storage Tank and Mixer	3/6/2023
Pre-wet Capabilities for Truck 8701	7/1/2023

Collection Date	Chloride mg/L
05/02/22	181.00
05/09/22	198.01
05/16/22	177.17
05/23/22	186.81
05/30/22	201.45
06/06/22	204.14
06/13/22	192.15
06/20/22	202.77
06/27/22	184.73
07/04/22	183.37
07/11/22	193.03
07/18/22	135.48
07/25/22	118.52
08/01/22	166.99
08/08/22	118.28
08/15/22	165.10
08/22/22	144.33
08/29/22	163.70
09/05/22	155.78
09/12/22	104.41
09/19/22	159.86
09/26/22	158.55
10/03/22	151.71
10/10/22	138.51
10/17/22	127.04
10/24/22	150.45
10/31/22	125.32
11/07/22	142.28
11/14/22	151.80
11/21/22	154.60
11/28/22	172.88
12/01/22	158.21
12/02/22	162.84
12/03/22	162.96
12/04/22	161.67
12/06/22	146.52
12/07/22	151.28
12/08/22	148.70
12/09/22	149.29
12/10/22	132.80
12/11/22	143.55
12/12/22	142.17

12/13/22	151.71
12/14/22	147.11
12/15/22	102.91
12/16/22	131.58
12/17/22	169.35
12/18/22	166.52
12/19/22	156.49
12/20/22	160.65
12/21/22	166.72
12/22/22	169.99
12/23/22	203.07
12/24/22	219.14
12/25/22	215.71
12/26/22	175.42
12/27/22	185.48
12/28/22	200.25
12/29/22	312.58
12/30/22	341.53
12/31/22	297.54
01/01/23	248.83
01/02/23	267.65
01/03/23	239.12
01/04/23	226.17
01/05/23	223.21
01/06/23	219.61
01/07/23	206.36
01/08/23	203.20
01/09/23	178.69
01/10/23	183.22
01/11/23	183.93
01/12/23	186.70
01/13/23	187.88
01/14/23	182.98
01/15/23	179.11
01/16/23	169.48
01/17/23	203.49
01/18/23	201.02
01/19/23	181.18
01/20/23	181.38
01/21/23	184.65
01/22/23	190.82
01/23/23	199.36
01/24/23	205.80
01/25/23	261.46
01/26/23	787.35
01/27/23	579.91
01/28/23	436.64

01/29/23	363.86
01/30/23	518.58
01/31/23	393.18
02/01/23	328.35
02/03/23	250.16
02/04/23	231.12
02/05/23	218.33
02/06/23	202.18
02/07/23	202.05
02/08/23	228.89
02/09/23	291.63
02/10/23	332.09
02/11/23	288.23
02/12/23	252.13
02/13/23	221.30
02/14/23	222.59
02/15/23	230.27
02/16/23	228.45
02/17/23	334.34
02/18/23	346.10
02/19/23	271.55
02/20/23	249.84
02/21/23	246.41
02/22/23	268.11
02/23/23	310.74
02/24/23	265.04
02/25/23	268.62
02/26/23	261.83
02/27/23	282.90
02/28/23	244.69
03/01/23	254.09
03/02/23	242.88
03/03/23	242.00
03/04/23	375.32
03/05/23	276.68
03/06/23	264.62
03/07/23	254.57
03/08/23	244.59
03/09/23	245.83
03/10/23	284.19
03/11/23	297.85
03/12/23	340.53
03/13/23	362.68
03/14/23	281.90
03/15/23	272.11
03/16/23	261.84
03/17/23	282.58

03/18/23	257.98
03/19/23	251.36
03/20/23	233.66
03/21/23	235.14
03/22/23	239.56
03/23/23	237.88
03/24/23	230.16
03/25/23	216.07
03/26/23	188.24
03/27/23	185.51
03/28/23	201.82
03/29/23	218.29
03/30/23	221.31
03/31/23	223.88
04/01/23	168.37
04/02/23	168.78
04/03/23	176.78
04/04/23	183.31
04/05/23	179.33
04/06/23	189.89
04/07/23	185.88
04/08/23	169.86
04/09/23	162.91
04/10/23	159.65
04/11/23	179.11
04/12/23	211.56
04/13/23	229.98
04/14/23	205.30
04/15/23	167.71
04/16/23	179.76
04/17/23	188.19
04/18/23	204.43
04/19/23	216.52
04/21/23	183.45
04/22/23	190.90
04/23/23	204.50
04/24/23	209.08
04/25/23	204.61
04/26/23	210.10
04/27/23	215.80
04/28/23	214.40
04/29/23	214.61
04/30/23	201.83

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

July 1, 2023

Prepared by The Metropolitan Water Reclamation District of Greater Chicago



The Metropolitan Water Reclamation District of Greater Chicago is a member of the Chicago Area Waterways Chloride Workgroup and Lower Des Plaines Watershed Group



1.0 Introduction to Chloride Issue in CAWS/LDPR

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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 Metropolitan Water Reclamation District of Greater Chicago		
Facility Name: Lemont WRP		Chloride TLWQS Permit Number: ILG103015
Facility Address: 13 Stephen St.		
City: Lemont	State: IL	Zip Code: 60439

The District is located primarily within the boundaries of Cook County, Illinois, serving an area of 883.5 square miles, which includes the City of Chicago and 128 suburban communities. The District serves an equivalent population of 12.72 million people: 5.16 million real people, a commercial and industrial equivalent of 5.32 million people, and a combined sewer overflow equivalent of 2.24 million people. The District operates seven automated water reclamation plants to treat over 500 billion gallons of wastewater annually and is considered a world leader in wastewater treatment facilities. Wastewater is collected from municipalities and conveyed to the WRP's through a 554-mile network of intercepting sewers, ranging in size from 6 inches to 27 feet in diameter, with the assistance of 23 pumping stations located throughout this network. The water flowing through the Lockport Powerhouse is harnessed by two turbines to provide a safe and environmentally friendly hydroelectric energy source that is sold back to Commonwealth Edison.

The Lemont WRP has a design average flow of 2 million gallons per day and a design maximum flow of 4 million gallons per day.

2.1 Level of Service for Winter Maintenance Activities

The level of service for the winter maintenance is dependent upon the forecast, amount and intensity of precipitation, weather conditions, and pavement conditions. Staff prioritize service based on plant and operational needs first. The goal is to maintain safe travel for both vehicles and personnel.

3.0 Best Management Practices

Details regarding the Metropolitan Water Reclamation District of Greater Chicago'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
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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.	Metropolitan Water Reclamation District of Chicago has been a member of the Lower Des Plaines Watershed Group/Chicago Area Waterways Chloride Workgroup. The MWRD has a representative on the Board of CAWCW.
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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.	The salt is stored on an impermeable asphalt pad.
Cover salt piles at all times except when in active use, unless stored indoors.	Salt storage area is permanently covered
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.	The pad is sloped away from the salt pile to prevent runoff.
MS4/CSO Only - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.	N/A

<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; • annual inspection and repairs completed when practical; • evaluate the opportunity to reduce or reuse the wash water. 	<p>At every conclusion of a storm event, labor crews clean and palletted bags of salt, wrapped, and store salt with the snow removal equipment. Truck drivers swept and returned spilled salt to the stockpile during operation.</p> <p>Salt spreader and snow blower equipment are maintained regularly by cleaning and inspecting them after use and doing repairs as necessary.</p> <p>We ensure safety protocols are being followed and implemented. We keep the truck's container and unloading areas clean and free of foreign objects as such could damage spreaders and could occasionally get into salt.</p> <p>After each snow event, all equipment (e.g., snow blowers and walk behind salt spreaders) used are cleaned and kept in good shape.</p> <p>Criteria for inspection has been made and will be implemented for the 2023-2024 season.</p> <p>Any surplus materials used in the snow removal are removed from the site and stored in an enclosed area for future use.</p> <p>An annual inspection of the snow blower equipment is carried out and repairs are done if necessary.</p> <p>Ways to collect wash water to be reused to make brine are planned to be implemented for the 2023-2024 season.</p>
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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.	Salt spreading equipment will be calibrated 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.	Continue to add prewetting capabilities to trucks.
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	Continue to add temperature sensors to all equipment.
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.	A protocol has been developed to vary the salt application rate.
Track and record salt quantity used and storm conditions from each call-out.	IT developed a system for tracking.
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.	Anti-icing plan has been developed.
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.	Training is performed annually in the Fall.
Be responsible for complying with all applicable BMPs even when deicing practices are contracted out and ensure that	N/A

contractors are property trained and comply with all applicable BMPs.	
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.	MWRD Tech Projects will submit reports annually to IEPA and CAWCW.
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.	LWRP will implement BMPs and budget for any new equipment, as needed.
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.	N/A
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.	N/A

3.1 Analysis of BMPs Implemented

We were able to make the changes we set out to complete this year. Staff did not report any unexpected difficulties, but they did mention having an easier time working with the road salt now that there is a permanent covered storage location for the road salt.

3.2 Analysis of Alternative Treatments or New Technology

Retrofitting our salt spreaders for our trucks with pre-wetting capabilities should allow us to decrease the amount of dry salt we are using, and thereby decrease our total chloride usage.

4.0 Deicing/Anti-Icing Agents Used

Materials used by the Metropolitan Water Reclamation District of Greater Chicago for the 2022-2023 winter season are included as Appendix 1.

4.1 Application Rates

The application rates used by the Metropolitan Water Reclamation District of Greater Chicago for the 2022-2023 winter season are included as Appendix 2.

4.1.1 Application Rate Analysis

This was the first year of tracking application rates, so there is no previous data to compare against.

4.2 Application Practices

The Metropolitan Water Reclamation District of Greater Chicago uses the following practices to apply deicing and anti-icing materials:

- Deicing using dry salt from salt spreader trucks and walk-behind spreaders.

4.3 Call Outs

A total of 8.8 inches of snow was reported at the Lemont Water Reclamation Plant for the 2022-2023 winter. There were 0 freezing rain event(s) and 7 snow event(s) for the 2022-2023 winter. The Metropolitan Water Reclamation District of Greater Chicago had 7 of call outs completed during the 2022-2023 winter. A log of all call outs completed by the Metropolitan Water Reclamation District of Greater Chicago are included as Appendix 3.

4.4 Use of Liquids

The District is pilot testing the use of liquids at various treatment plants and will continue to expand its use.

5.0 Training

The Metropolitan Water Reclamation District of Greater Chicago - LWRP completed annual training for employees who are part of the winter maintenance operations during the fall of 2022. 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 Metropolitan Water Reclamation District of Greater Chicago uses equipment listed in Appendix 5 during winter maintenance activities.

6.1 Description of Equipment Washing and Wash Water Collection

Presently, the wash water is not being reused, but plans are in place to reuse brine starting next season.

7.0 Material Storage

The Lemont Water Reclamation Plant maintains 0 storage areas; It gets the salt it uses from the Calumet Water Reclamation Plant. Information regarding the storage area(s) is included in Appendix 6.

8.0 Capital Purchases

Identified capital purchases from the Metropolitan Water Reclamation District of Greater Chicago'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.

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

The Metropolitan Water Reclamation District of Greater Chicago 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

No changes were made.

10.0 Program Evaluation

As we go through the upcoming winter, we will be reviewing our callout information, developing a plan on how to adjust our application practices, implementing it, evaluating the results, and repeating those steps to continue improving our process.

10.1 Proposed Steps for the Coming Year

We will be transitioning to using pre-wet salt instead of dry salt. We will also be purchasing tools to measure pavement temperatures to allow us to have a better idea of the application rate we need.

11.0 Workgroup Participation

The MWRD is a member of the CAWS Chloride Workgroup. MWRD attends and participates in quarterly membership meetings, sends staff to Winter Deicing Workshops, and also submits annual reports to the workgroup.

Organization Name: Metropolitan Water Reclamation District of Greater Chicago

Chloride TLWQS Annual Report

Appendix 1 - Deicing/Anti-Icing Agents Used

[illegible]

Truck Drivers:

- Truck Drivers clear the snow before applying salt. If snow starts while they are applying salt, they will stop until they are able to remove the snow.
- Truck Drivers apply salt at a rate of 750 lb./lane-mile. This is independent of pavement temperature as they did not have a way to measure it.
- Truck Drivers will reapply salt if more snow comes or is otherwise needed.

Buildings and Grounds Laborers:

- Laborers clear the snow before applying salt. If snow starts while they are applying salt, they will stop until they are able to remove the snow.
- Laborers apply salt at a rate of 7.5 lb./1000 sq. ft. This is independent of pavement temperature as they did not have a way to measure it.
- Laborers will reapply salt if more snow comes or is otherwise needed.

Sewer Maintenance Laborers:

- Laborers clear the snow before applying salt. If snow starts while they are applying salt, they will stop until they are able to remove the snow.
- Laborers apply salt at a rate of 2 lb./1000 sq. ft. This is independent of pavement temperature as they did not have a way to measure it.
- Laborers will reapply salt if more snow comes or is otherwise needed.

Date	Weather Condition	Buildings and Grounds Laborers Called?	Truck Driveres Called?	Sewer Maintenance Laboreres Called?
12/16/2022	0.8" Snow	No	Yes	Yes
12/22/2022	3.0" Snow	Yes	Yes	Yes
1/23/2023	0.7" Snow	No	Yes	No
1/25/2023	2.5" Snow	Yes	Yes	Yes
1/30/2023	0.4" Snow	Yes	Yes	No
2/17/2023	1.4" Snow	No	Yes	Yes
3/10/2023	0.3" Snow	No	No	Yes

Role in Winter Operations	Training Topics Covered
Laborer	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Laborer Foreman	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Truck Driver	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Truck Driver Foreman	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Managers	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts

**Organization Name: Metropolitan Water
Reclamation Distirct of Greater Chicago**

**Chloride TLWQS Annual Report
Appendix 5 - Equipment**

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
Salt Spreader Truck	8701	Mechanical	Dry	

**Organization Name: Metropolitan Water
Reclamation District of Greater Chicago**

**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)
Uses storage of Calumet Plant						

Capital Purchase Description	Plan/Schedule for Purchase
Salt Storage Dome	8/11/2022
Brine Storage Tank and Mixer	3/6/2023
Pre-wet Capabilities for Truck 8701	7/1/2023

Collection Date	Chloride mg/L
05/02/22	296.95
05/09/22	276.84
05/16/22	379.60
05/23/22	347.05
05/30/22	389.80
06/06/22	377.93
06/13/22	438.14
06/20/22	307.83
06/27/22	415.56
07/04/22	524.80
07/11/22	472.92
07/18/22	382.46
07/25/22	224.96
08/01/22	537.92
08/08/22	360.62
08/15/22	406.84
08/22/22	300.10
08/29/22	359.91
09/05/22	543.14
09/12/22	239.69
09/19/22	301.96
09/26/22	423.88
10/03/22	432.97
10/10/22	350.80
10/17/22	296.40
10/24/22	389.25
10/31/22	352.29
11/07/22	321.77
11/14/22	338.34
11/21/22	378.64
11/28/22	324.97
12/01/22	314.91
12/02/22	297.69
12/03/22	331.29
12/04/22	340.75
12/05/22	329.08
12/06/22	311.93
12/07/22	319.03
12/08/22	330.84
12/09/22	306.40
12/10/22	289.64
12/11/22	323.72

12/12/22	322.41
12/13/22	273.04
12/14/22	184.36
12/15/22	155.10
12/16/22	212.53
12/17/22	259.03
12/18/22	279.55
12/19/22	291.13
12/20/22	266.48
12/21/22	262.45
12/22/22	289.44
12/23/22	301.20
12/24/22	286.77
12/25/22	323.13
12/26/22	304.33
12/27/22	339.62
12/28/22	411.84
12/29/22	470.91
12/30/22	439.51
12/31/22	411.40
01/01/23	397.56
01/02/23	425.45
01/03/23	339.91
01/04/23	315.30
01/05/23	334.11
01/06/23	377.45
01/07/23	383.38
01/08/23	386.13
01/09/23	377.74
01/10/23	349.79
01/11/23	344.14
01/12/23	353.87
01/13/23	329.64
01/14/23	337.73
01/15/23	331.23
01/16/23	334.10
01/17/23	369.61
01/18/23	364.86
01/19/23	351.77
01/20/23	325.99
01/21/23	310.70
01/22/23	351.26
01/24/23	358.96
01/25/23	558.35
01/26/23	718.95
01/27/23	658.44
01/28/23	603.87

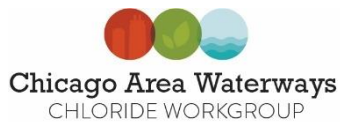
01/29/23	574.74
01/30/23	585.49
01/31/23	538.11
02/01/23	443.65
02/02/23	405.69
02/03/23	426.72
02/04/23	429.44
02/05/23	435.81
02/06/23	445.74
02/07/23	446.67
02/08/23	432.55
02/10/23	427.96
02/11/23	420.25
02/12/23	388.97
02/13/23	389.98
02/14/23	368.54
02/15/23	365.40
02/16/23	385.72
02/17/23	445.69
02/18/23	436.63
02/19/23	408.33
02/20/23	429.15
02/21/23	405.37
02/22/23	407.73
02/23/23	357.05
02/24/23	371.60
02/25/23	359.81
02/26/23	356.25
02/27/23	297.02
02/28/23	290.91
03/01/23	305.92
03/02/23	300.76
03/03/23	315.00
03/04/23	312.87
03/05/23	307.12
03/06/23	317.77
03/07/23	309.88
03/08/23	306.43
03/09/23	292.03
03/10/23	311.83
03/11/23	315.89
03/12/23	385.71
03/13/23	369.50
03/14/23	358.72
03/15/23	344.22
03/16/23	331.37
03/17/23	360.94

03/18/23	334.59
03/19/23	358.11
03/20/23	358.97
03/21/23	354.19
03/22/23	366.34
03/23/23	367.46
03/24/23	336.25
03/25/23	275.33
03/26/23	279.33
03/27/23	280.30
03/28/23	284.56
03/29/23	296.70
03/30/23	287.85
03/31/23	295.91
04/01/23	303.30
04/02/23	292.33
04/03/23	282.61
04/04/23	283.93
04/05/23	275.63
04/06/23	264.94
04/07/23	265.32
04/08/23	283.81
04/09/23	297.95
04/10/23	309.98
04/11/23	305.84
04/12/23	305.65
04/13/23	290.91
04/14/23	307.04
04/15/23	353.04
04/16/23	359.23
04/17/23	343.81
04/18/23	370.48
04/19/23	353.03
04/20/23	322.20
04/21/23	341.53
04/22/23	387.51
04/23/23	367.08
04/24/23	322.21
04/25/23	331.98
04/26/23	332.34
04/27/23	346.27
04/28/23	358.45
04/29/23	371.55
04/30/23	342.11

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

July 1, 2023

Prepared by The Metropolitan Water Reclamation District of Greater
Chicago



The Metropolitan Water Reclamation
District of Greater Chicago is a
member of the Chicago Area
Waterways Chloride Workgroup and
Lower Des Plaines Watershed Group



1.0 Introduction to Chloride Issue in CAWS/LDPR

This Pollutant Minimization Plan (PMP) has been prepared by the Metropolitan Water Reclamation District of Greater Chicago to reduce the environmental impacts from the organization's chloride related operations. The Metropolitan Water Reclamation District of Greater Chicago 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 the 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: Metropolitan Water Reclamation District of Greater Chicago		
Facility Name: Lockport Powerhouse		Chloride TLWQS Permit Number: ILG103016
Facility Address:2400 S Powerhouse Road		
City: Lockport	State: Illinois	Zip Code: 60441

The Lockport Powerhouse is a dam and powerhouse used to control the water surface elevation in the Chicago and Sanitary Ship Canal. Most of the snow and ice control is provided by truck drivers from the Stickney Water Reclamation plant. The facility has an approximate 2-mile entrance road that is maintained and a small parking lot.

2.1 Level of Service for Winter Maintenance Activities

The level of service for the winter maintenance is dependent upon the forecast, amount and intensity of precipitation, weather conditions, and pavement conditions. Staff prioritize service based on plant and operational needs first. The goal is to maintain safe travel for both vehicles and personnel.

3.0 Best Management Practices

Details regarding the Metropolitan Water Reclamation District of Greater Chicago'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.	Metropolitan Water Reclamation District of Chicago has been a member of the Lower Des Plaines Watershed Group/Chicago Area Waterways Chloride Workgroup. The MWRD has a representative on the Board of CAWCW.

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	No salt pile at this location. Bagged salt is stored in the garage with a concrete floor.

unless the salt is stored in a container that ensures stormwater does not come into contact with the salt.	
Cover salt piles at all times except when in active use, unless stored indoors.	No salt pile at this location. Bagged salt is stored in the garage with a concrete floor.
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.	Bagged salt is stored in the garage with a concrete floor.
MS4/CSO Only - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.	N/A
<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 	No salt pile at this location. Bagged salt is stored in the garage with a concrete floor. Any salt spilled on the floor is swept up.

<p>activity finished where applicable;</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.	Calibrated hand spreader at LPH.
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.	Where pre-wetting is not available on trucks, pre-wetting will be done at stockpiles at the Stickney WRP (source of trucks for road salt.)
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	Handheld temp sensor used by drivers from Stickney WRP.
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.	Service is primarily provided by drivers from the Stickney WRP and LPH will incorporate changes as they are implemented at the Stickney WRP.
Track and record salt quantity used and storm conditions from each call-out.	IT developed a system for tracking.
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.	Service is primarily provided by drivers from the Stickney WRP and LPH will incorporate changes as they are implemented at the Stickney WRP.

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.	Training is performed annually in the fall.
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.	If contracted, contractors must comply with District policies.
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.	MWRD Tech Projects will submit reports annually to IEPA and CAWCW.
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.	LPH will implement BMPs and budget for any new equipment, as needed.
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.	N/A
MS4/CSO/IDOT/TOLLWAY Only - Before the first re-evaluation, develop a method for conducting a post-winter review	N/A

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.	
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3.1 Analysis of BMPs Implemented

The Lockport Powerhouse is a small site and there was a lack of snow this year. We will continue to monitor progress and analyze when there is a more typical year.

3.2 Analysis of Alternative Treatments or New Technology

The Lockport Powerhouse is a small site and there was a lack of snow this year. We will continue to monitor progress and analyze alternative treatments when there is a more typical year.

4.0 Deicing/Anti-Icing Agents Used

Materials used by the Metropolitan Water Reclamation District of Greater Chicago for the 2022-2023 winter season are included as Appendix 1.

4.1 Application Rates

The application rates used by the Metropolitan Water Reclamation District of Greater Chicago for the 2022-2023 winter season are included as Appendix 2.

4.1.1 Application Rate Analysis

The Lockport Powerhouse is a small site and there was a lack of snow this year. We will continue to monitor application rates when there is a more typical year.

4.2 Application Practices

The Lockport Powerhouse is a small facility that was serviced primarily by staff from the Stickney WRP. Limited application is performed by on-site staff using a hand spreader. See Stickney WRP report for details of Stickney WRP application practices used at Lockport.

4.3 Call Outs

A total of 2.4 inches of snow was reported in Lockport Powerhouse for the 2022-2023 winter. There were 0 freezing rain event(s) and 4 snow event(s) for the 2022-2023 winter. The Metropolitan Water Reclamation District of Greater Chicago - Lockport had 4 call outs

completed during the 2022-2023 winter. A log of all call outs completed by the Metropolitan Water Reclamation District of Greater Chicago are included as Appendix 3.

4.4 Use of Liquids

The Lockport Powerhouse is a small facility that was serviced primarily by staff from the Stickney WRP. Limited application is performed by on-site staff using a hand spreader. See Stickney WRP report for details of Stickney WRP application practices used at Lockport.

5.0 Training

The Metropolitan Water Reclamation District of Greater Chicago -Lockport completed annual training for employees who are part of the winter maintenance operations during the fall of 2022. 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 Metropolitan Water Reclamation District of Greater Chicago – Lockport uses a hand spreader that did not require maintenance this year. See Stickney WRP annual report for details on maintenance of their equipment. The Metropolitan Water Reclamation District of Greater Chicago uses equipment listed in Appendix 5 during winter maintenance activities.

6.1 Description of Equipment Washing and Wash Water Collection

The staff at the Lockport Powerhouse use a hand spreader that does not require washing and collection of water.

7.0 Material Storage

The Metropolitan Water Reclamation District of Greater Chicago - Lockport uses a garage for bagged salt storage. Information regarding the storage area(s) is included in Appendix 6.

8.0 Capital Purchases

Identified capital purchases from the Metropolitan Water Reclamation District of Greater Chicago – Lockport’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.

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

The Metropolitan Water Reclamation District of Greater Chicago 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

No changes were made.

10.0 Program Evaluation

The biggest impact comes from the educating and training staff that apply chlorides to understand how chlorides work and the most efficient and environmentally friendly use of chlorides.

10.1 Proposed Steps for the Coming Year

Continue to train staff that apply chlorides to understand how chlorides work and the most efficient and environmentally friendly use of chlorides.

11.0 Workgroup Participation

The MWRD is a member of the CAWS Chloride Workgroup. MWRD attends and participates in quarterly membership meetings, sends staff to Winter Deicing Workshops, and also submits annual reports to the workgroup.

Organization Name: Metropolitan Water Reclamation District

Chloride TLWQS Annual Report

Appendix 1 - Deicing/Anti-Icing Agents Used

[illegible]

Truck Drivers:

- Truck Drivers clear the snow and ice prior to applying salt.
- Truck Drivers applied salt at a rate of 1,348 lbs/lane-mile.
- Truck Drivers will reapply salt if more snow comes or is otherwise needed.
- In 2022-23 no trucks at SWRP had anti-icing equipment.

Laborers:

- Laborers clear the snow and ice prior to applying salt.
- Laborers applied salt at a rate of 15.5 lbs/1000 sq. ft.
- Laborers applied salt as conditions and complaints (slips and falls warranted).
- Anti-icing of the sidewalks was tested once at SWRP, however weather conditions never were optimal to fully pretreat the sidewalks.

Organization Name: Metropolitan Water
Reclamation District of Greater Chicago

Chloride TLWQS Annual Report
Appendix 3 - Callouts

Facility Location	Call out Date/Time	Completion Date/Time	Precipitation Type	Snow Amount (inches)	Pavement Conditions	Pavement Temperature (°F)	Are pavement temperatures rising or falling?	Air Temperature (°F)	Storm Length	Materials Used	Amount Used (lbs)	Application Rate (lb/100'²)	Equipment Used	How many anti-icing application passes were made?	Methods used before applying deicer materials?	Dry or Wet/Pre-treated?	How many square feet of parking lots/sidewalks were treated?
Lockport	2023-03-17 10:00:00	2023-03-17 11:03:00	Snow	0.2	Icy	20	Rising	21	11:03	Calcium_Chloride	500	0.07	Chapin_Spreader	0	Shovelling	Dry	1440
Lockport	2023-03-18 10:00:00	2023-03-18 11:30:00	Snow	0.1	Icy	17	Falling	12	10:22	Calcium_Chloride	50	0.035	Chapin_Spreader	1	Shovelling	Dry	1440
Lockport	2023-03-25 10:30:00	2023-03-25 12:00:00	Snow	2	Dry,Wet,Icy	20	Rising	32	15:00	Calcium_Chloride	50	0.035	Chapin_Spreader	0	None	None	1440
Lockport	2023-03-26 10:30:00	2023-03-26 12:00:00	Snow	0.1	Wet	20	Falling	20	12:13	Calcium_Chloride	50	0.03	Chapin_Spreader	0	Shovelling	Dry	1440

Role in Winter Operations	Training Topics Covered
Laborer	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Laborer Foreman	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Truck Driver	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Truck Driver Foreman	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts
Managers	Calibration, Pavement Temperatures, Application Rates, Storage, Environmental Impacts

Organization Name: Metropolitan Water
Reclamation District

Chloride TLWQS Annual Report
Appendix 5 - Equipment

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
Hand Spreader	1	Chaplin Hand Spreader	Dry Calcium Chloride	

Organization Name: Metropolitan Water
Reclamation District

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)
Garage	Rock Salt	50lb Bags	Yes	Yes	Yes	Yes

Capital Purchase Description	Plan/Schedule for Purchase
Drop spreaders for Kubota tractors	2024 if suitable drop spreaders are found for existing Kubotas and if budget allows
Spray equipment with 100 gallon tank and spray bar for personel carrier to be used for de-icing sidewalks.	2024-25 if budget allows.
2024 Dump truck , Monroe 13' with spray equipment for prewetting salt	2023



CHLORIDE MONITORING DATA SUMMARY REPORT FOR THE TIME LIMITED WATER QUALITY STANDARD FOR CHLORIDE – YEAR 1, MAY 2022-APRIL 2023

July 1, 2023

Prepared by the Chicago Area Waterways Chloride Workgroup and
the Lower Des Plaines Watershed Group

Introduction

Chloride harms aquatic life and vegetation and is corrosive to 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. It is cost prohibitive and very difficult to remove chloride through current treatment options available; whereas, proactive measures to reduce the amount of chloride discharged can help reduce the impacts from chloride on receiving waterways and the environment.

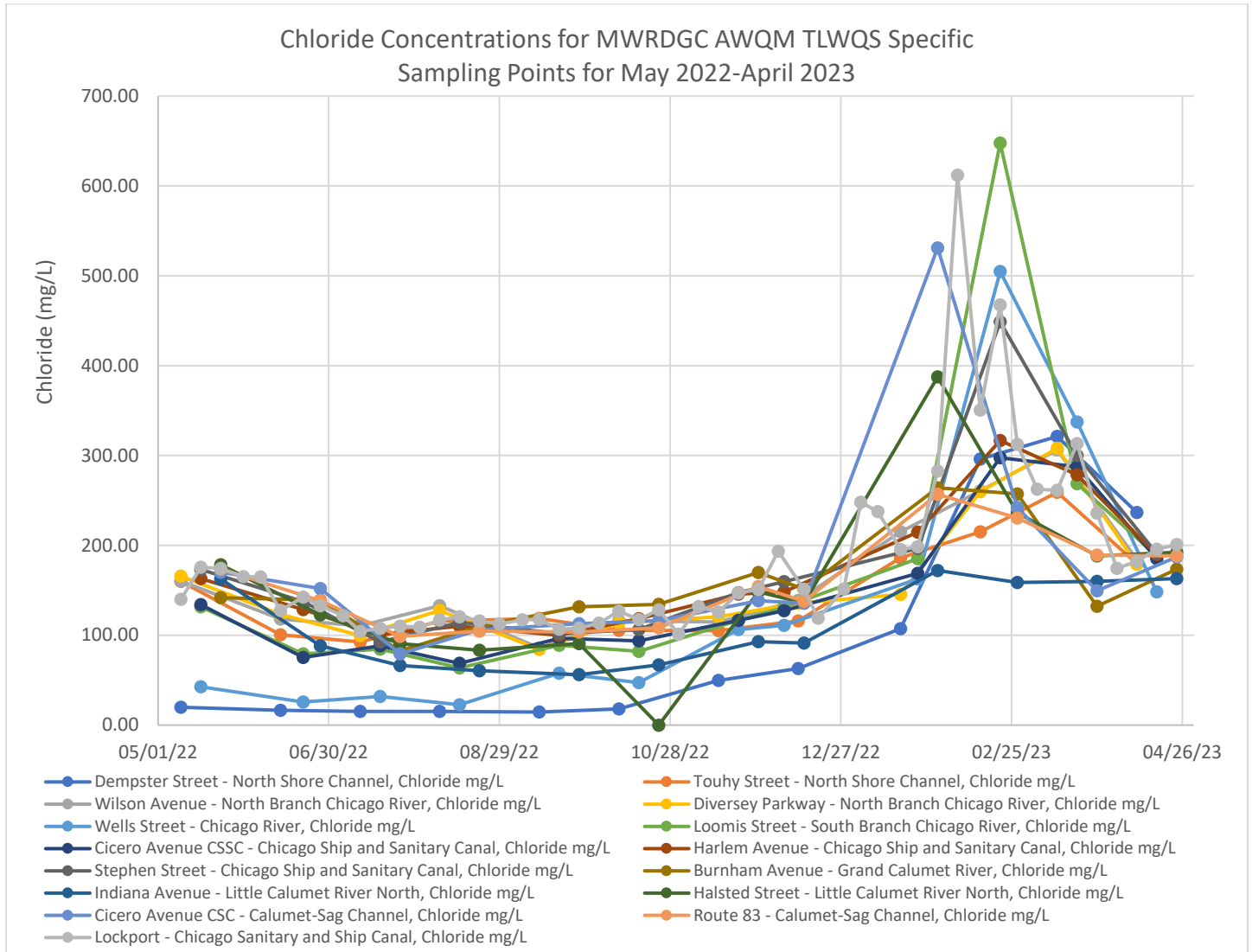
Chlorides are commonly found in road salt, fertilizers, water softeners, dust suppressants, and certain industrial processes. Chloride-based deicers, like rock salt, are used on parking lots, sidewalks, and roads to provide safe surfaces to the public during the winter months. These deicers are one of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

As the Time Limited Water Quality Standard for Chloride (TLWQS) permittees make changes to their operations to reduce chlorides, various other factors may influence the chloride concentrations in the Chicago Area Waterway System (CAWS) and Lower Des Plaines River (LDPR) watersheds that are outside of the TLWQS permittees' control. Chloride concentrations can vary based on how much road salt and other deicing materials are used, but weather and precipitation variability across the watershed year to year also are an important factor. During mild winters, less salt may be needed to provide safe surfaces to the traveling public leading to lower chloride concentrations. Whereas, during more severe winters, more salt may be needed for the safe surfaces leading to higher chloride concentrations. Geographic variability in weather events also is a factor and will influence chloride concentrations. The precipitation amounts or types may not be equally reflected across the entire watershed and differing amounts of road salt may be needed to provide safe surfaces. Chloride concentrations can also be influenced by the flow and in years with more precipitation and higher flow, lower concentrations of chloride may be observed versus in years with less precipitation and lower flow, higher chloride concentrations may be observed. With various factors influencing the chloride concentrations in the entire watershed, both chloride concentration data and operational information from the permittees will be needed to evaluate the success of the TLWQS.

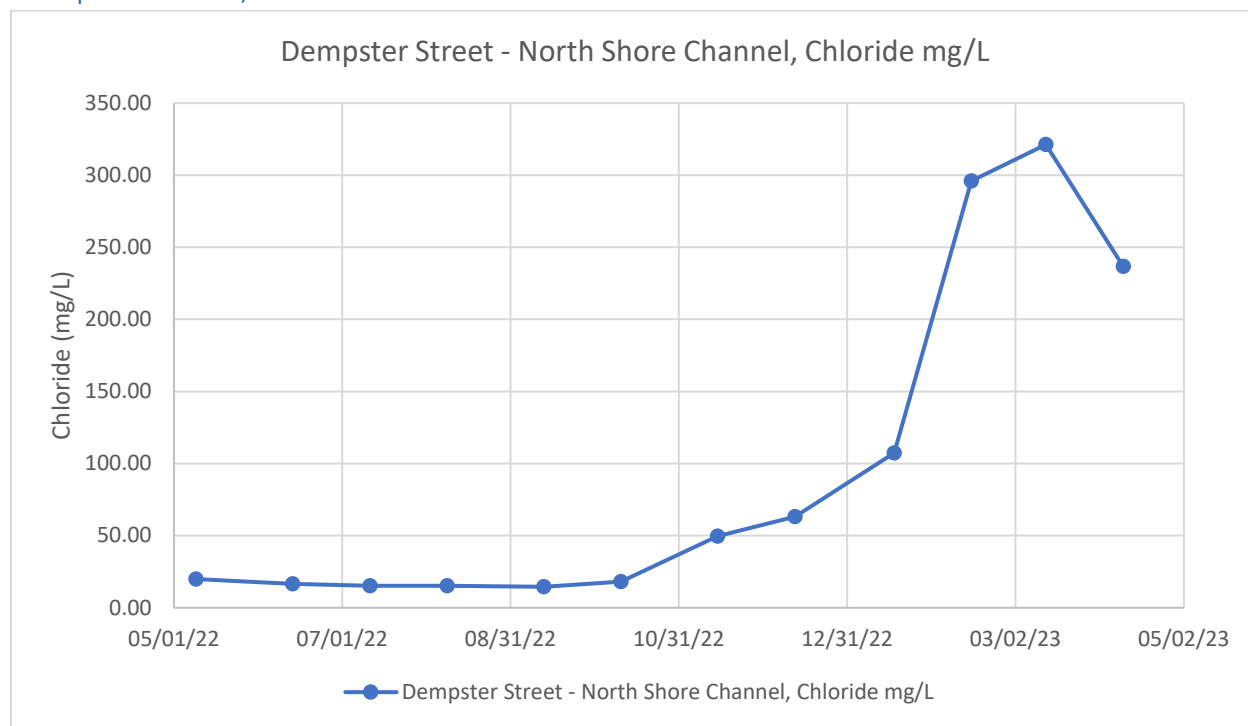
Presented below are graphs summarizing the chloride monitoring data collected by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) and the Lower Des Plaines Watershed Group (LDWG) for May 2022 through April 2023 to meet the requirements of the TLWQS. This data covers the first year of the TLWQS. The data collected is from both water quality monitoring and continuous specific conductivity monitoring. Specific conductivity is used to calculate estimated chloride concentrations based on a linear relationship. The raw data sets are available upon request.

Graphs for MWRDGC's Monthly and Weekly Sampling Sites

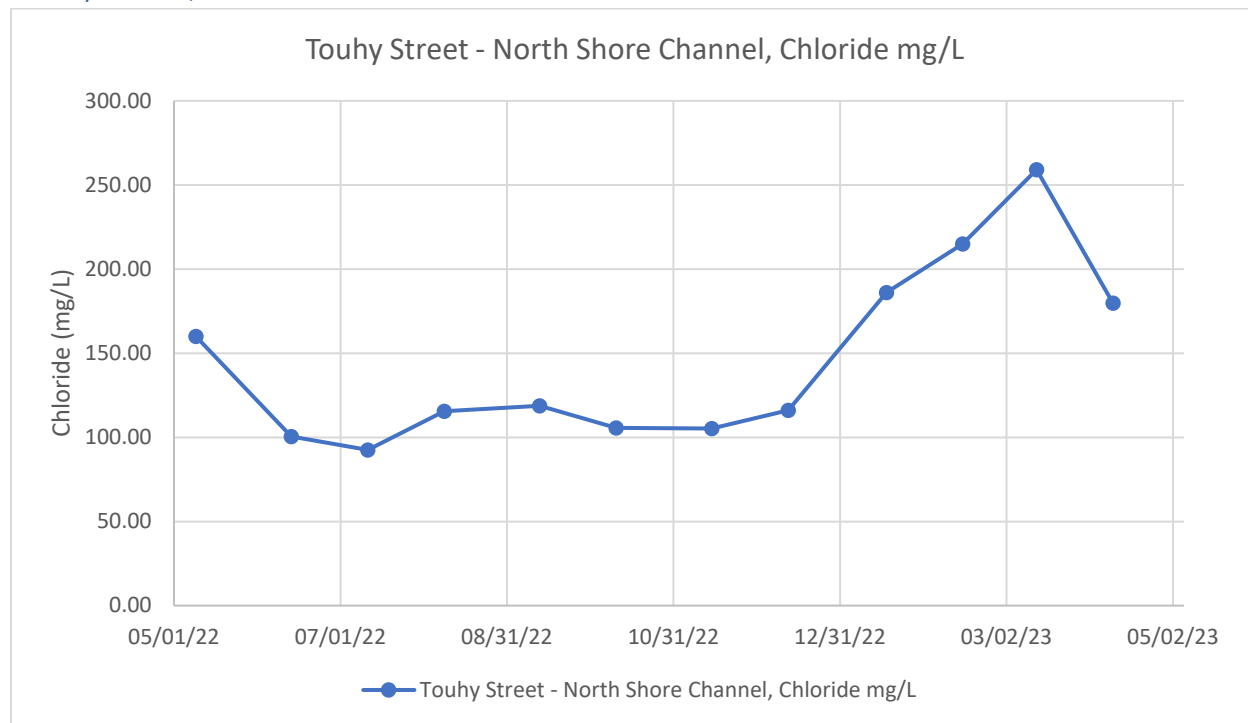
All Sites



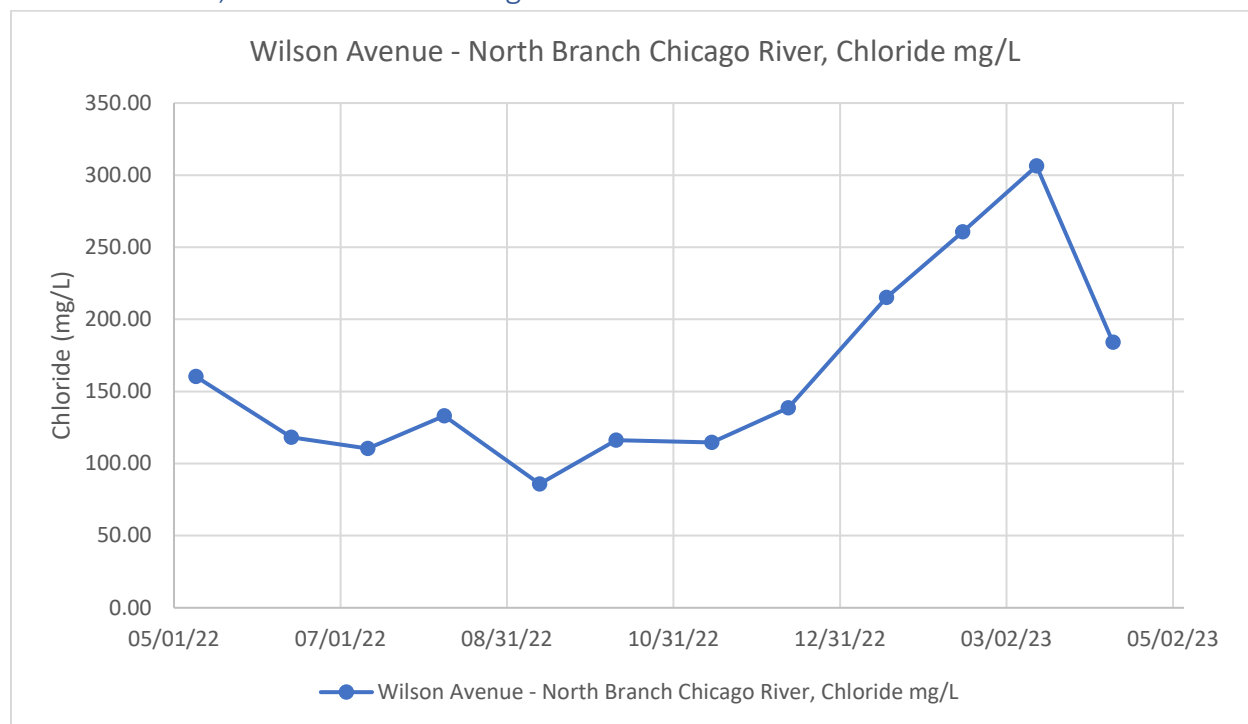
Dempster Street, North Shore Channel



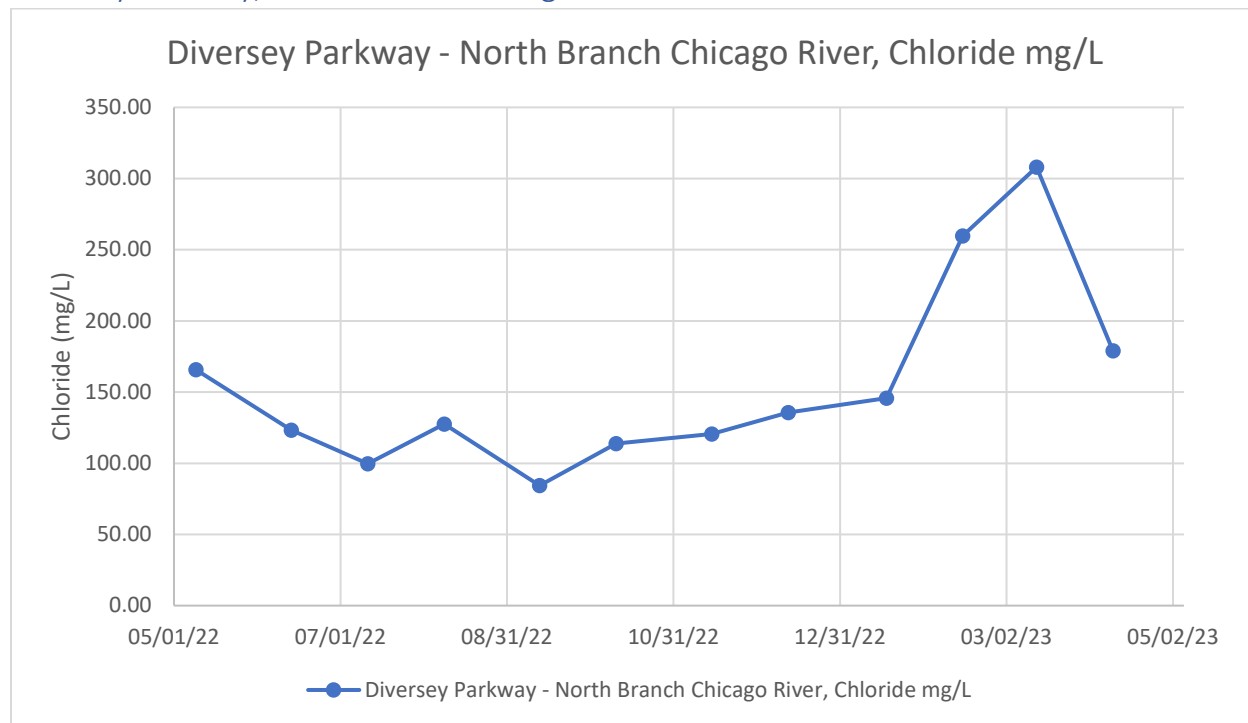
Touhy Street, North Shore Channel



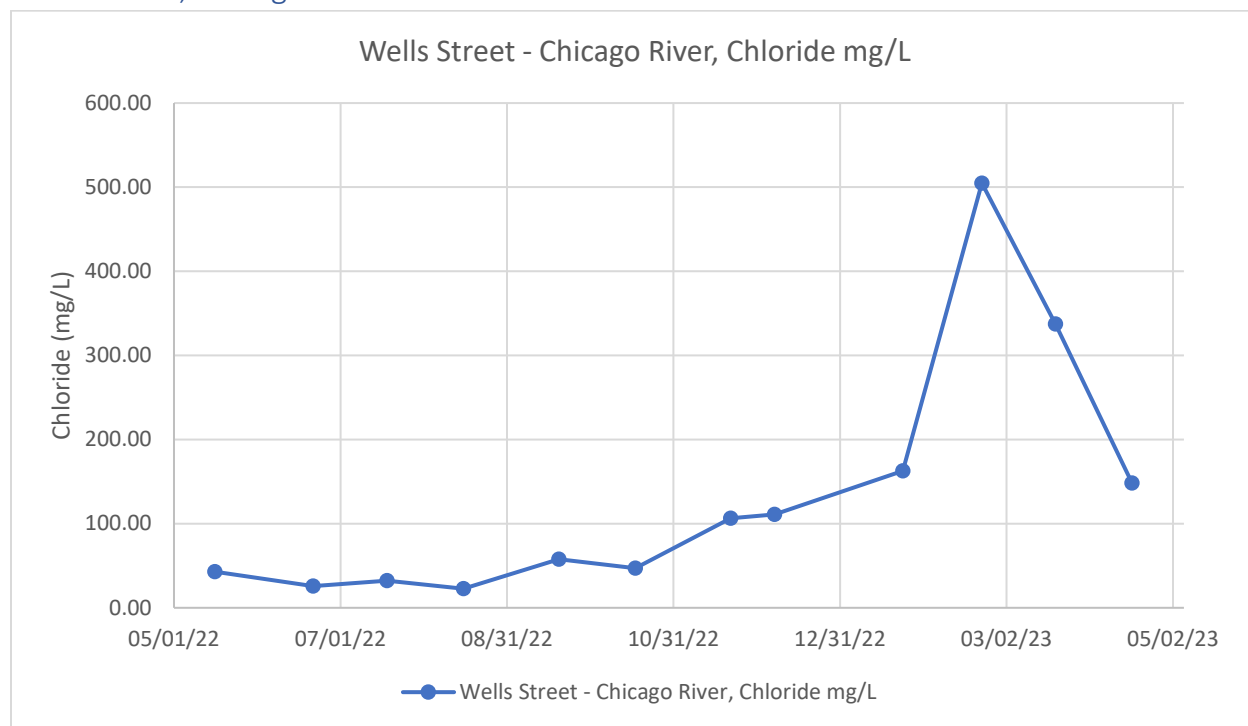
Wilson Avenue, North Branch Chicago River



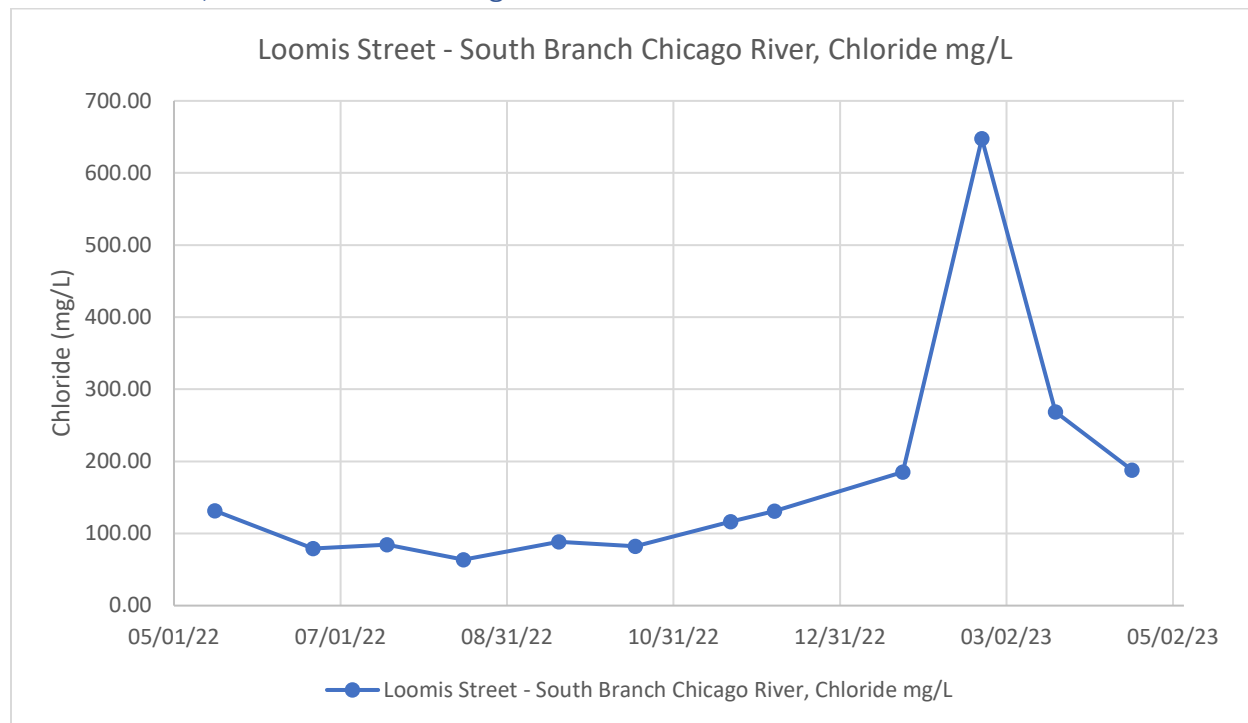
Diversey Parkway, North Branch Chicago River



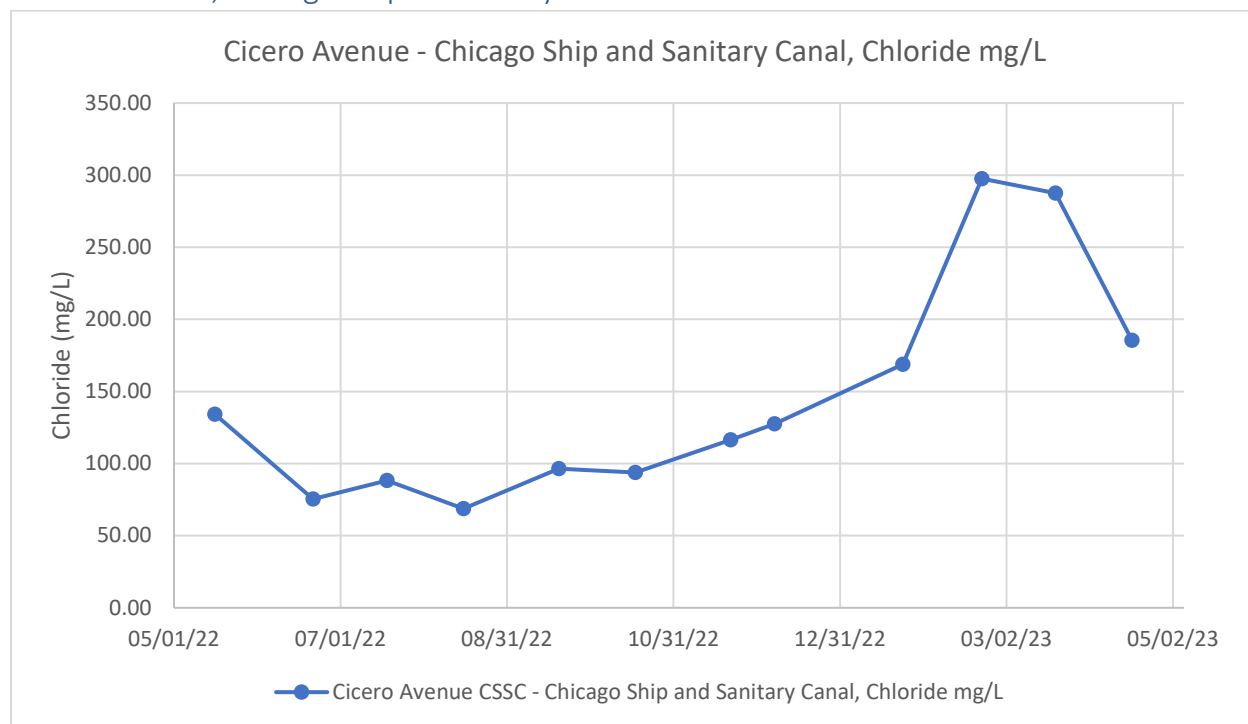
Wells Street, Chicago River



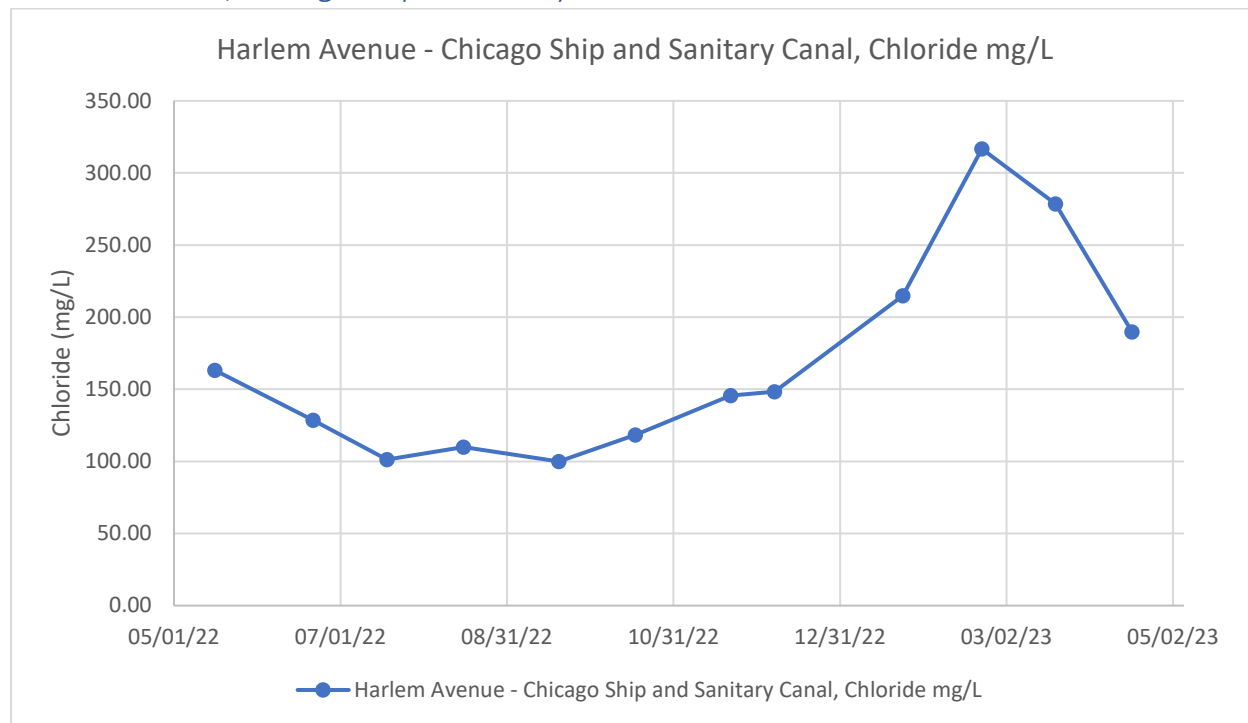
Loomis Street, South Branch Chicago River



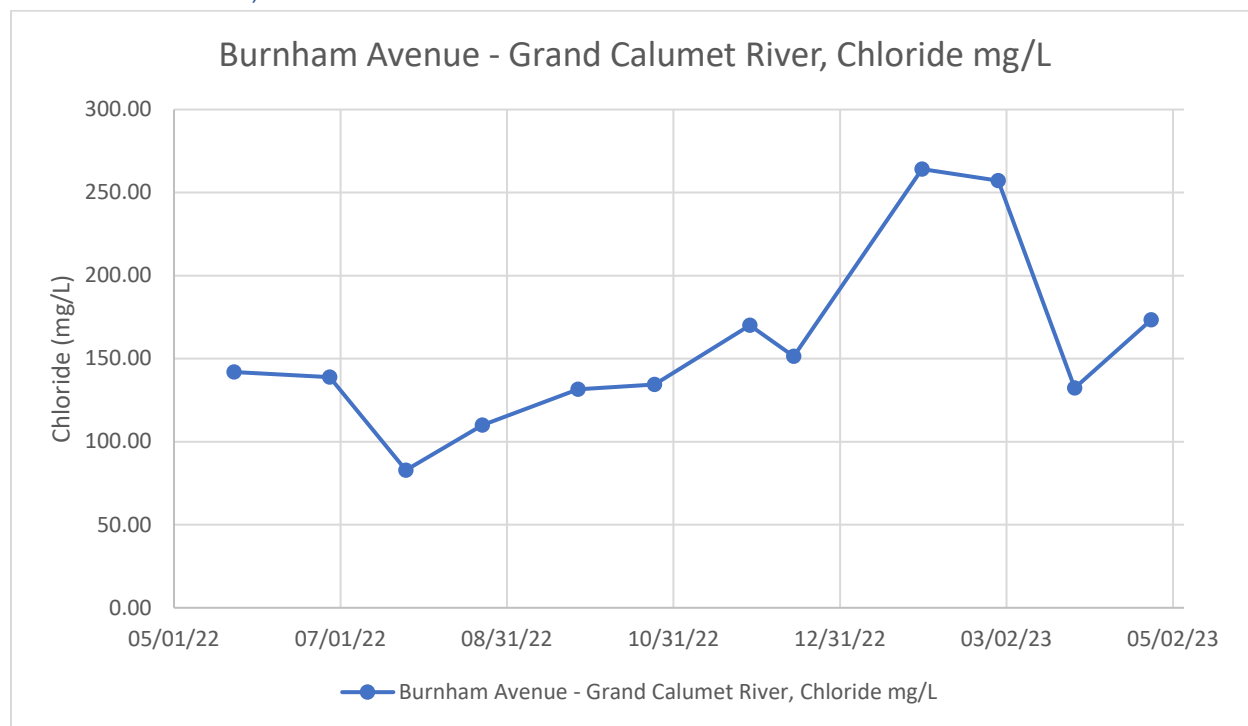
Cicero Avenue, Chicago Ship & Sanitary Canal



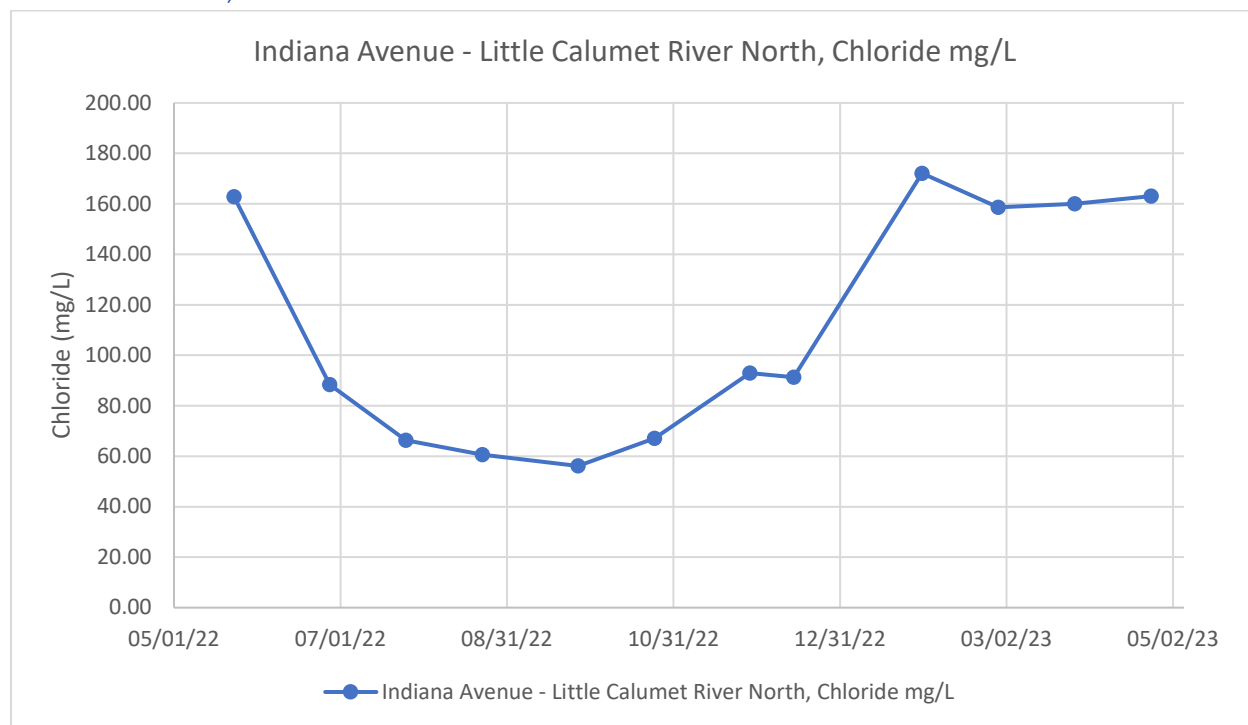
Harlem Avenue, Chicago Ship & Sanitary Canal



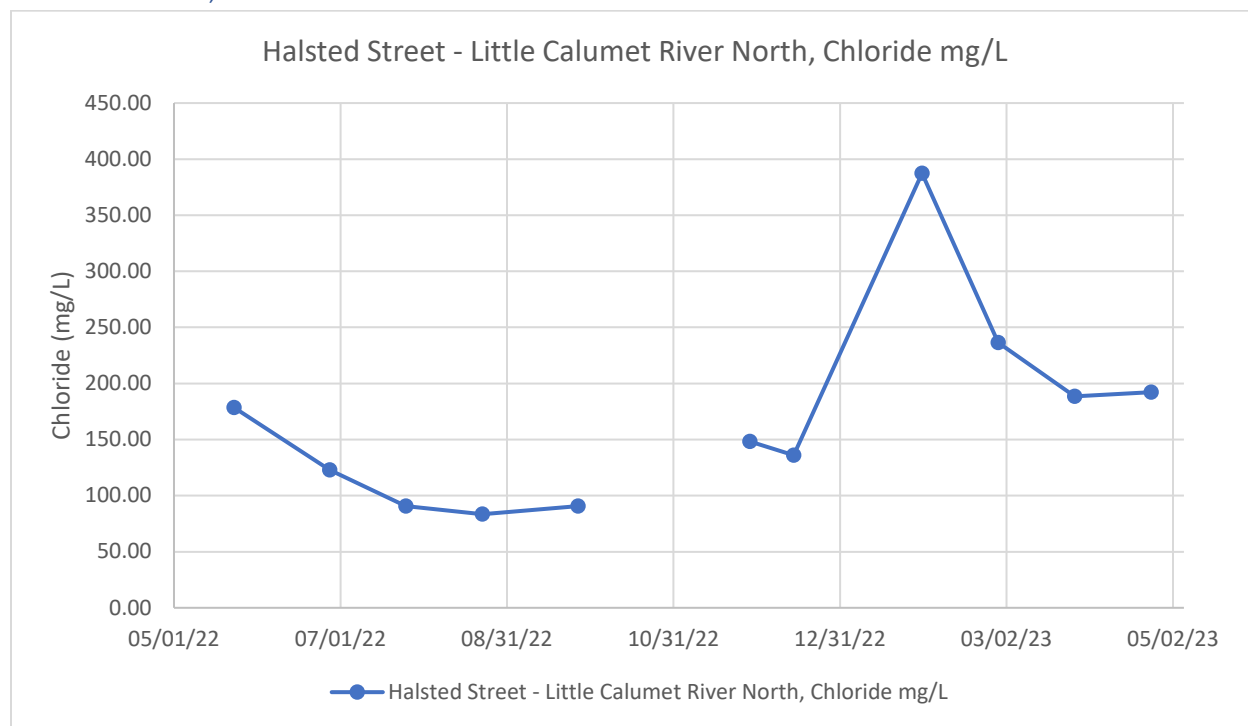
Burnham Avenue, Grand Calumet River



Indiana Avenue, Little Calumet River North

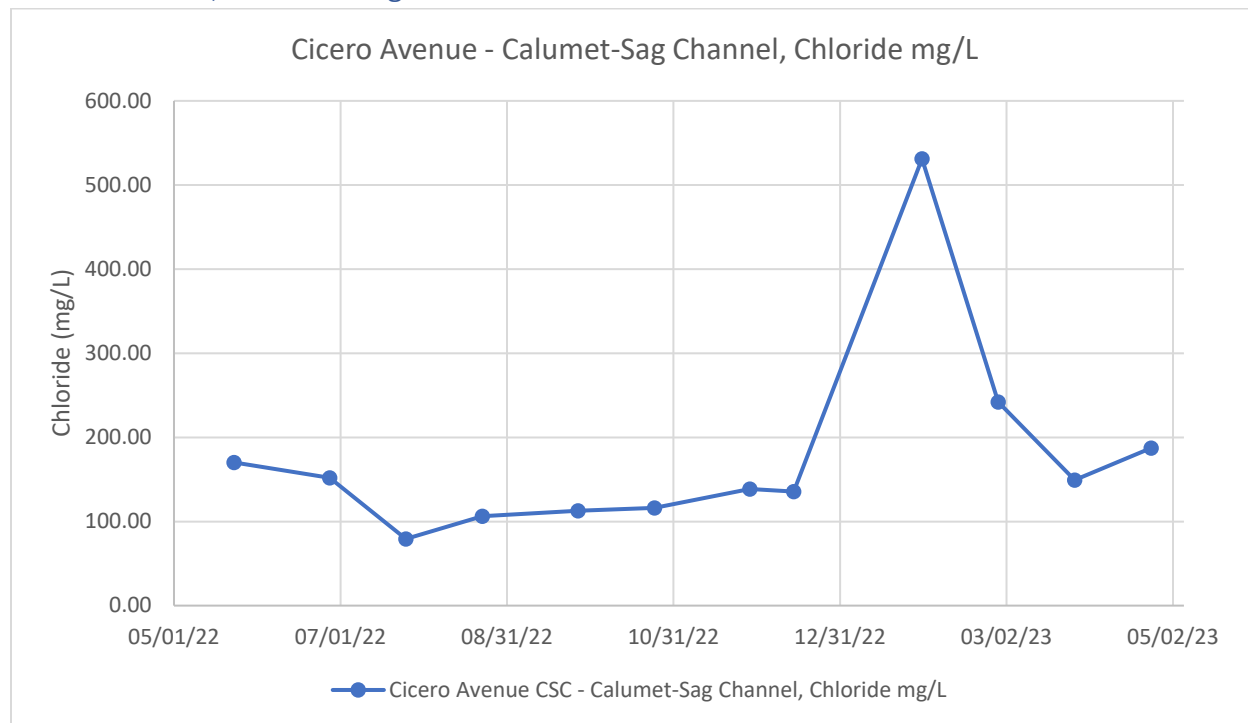


Halsted Street, Little Calumet River North*

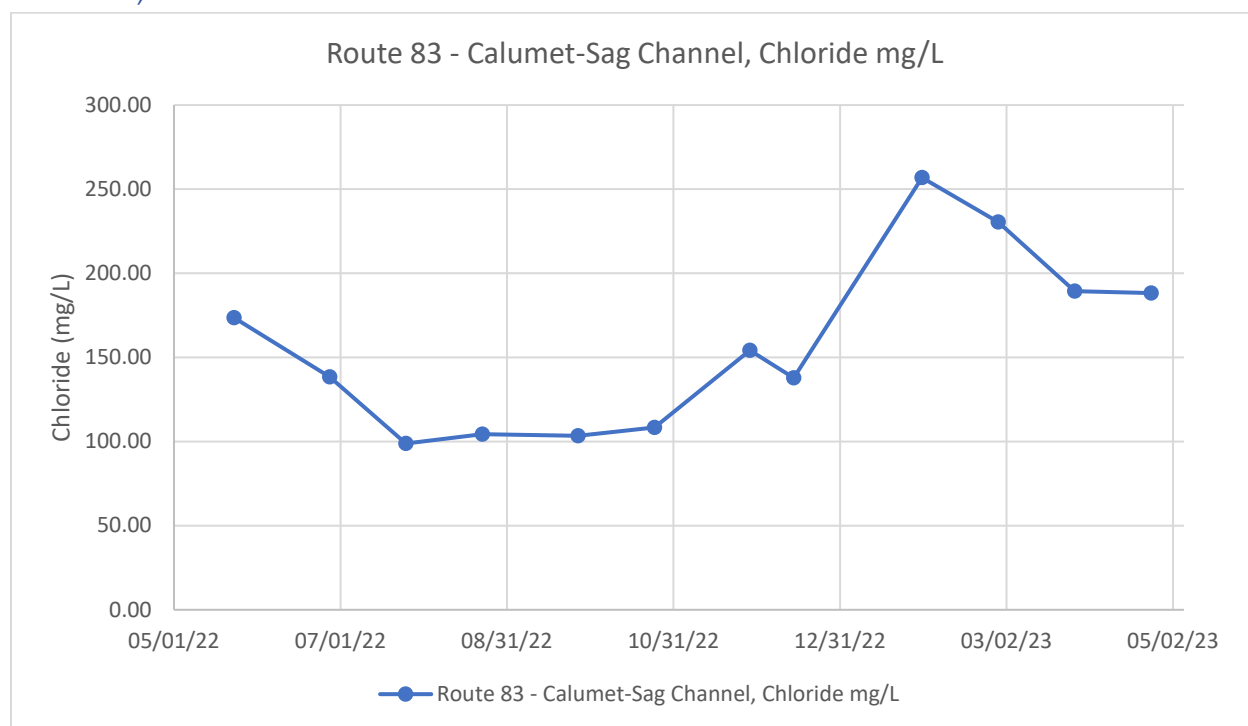


*No data for sample collected 10/24/2022 due to duplicate failure

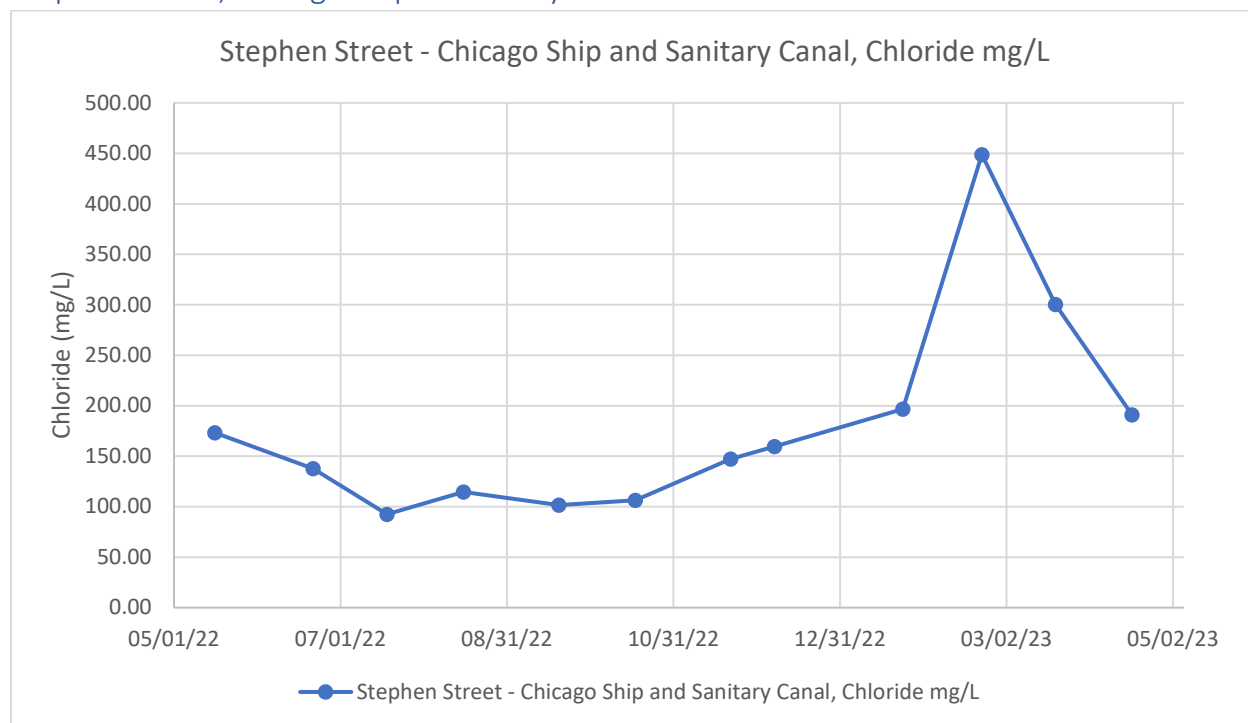
Cicero Avenue, Calumet-Sag Channel



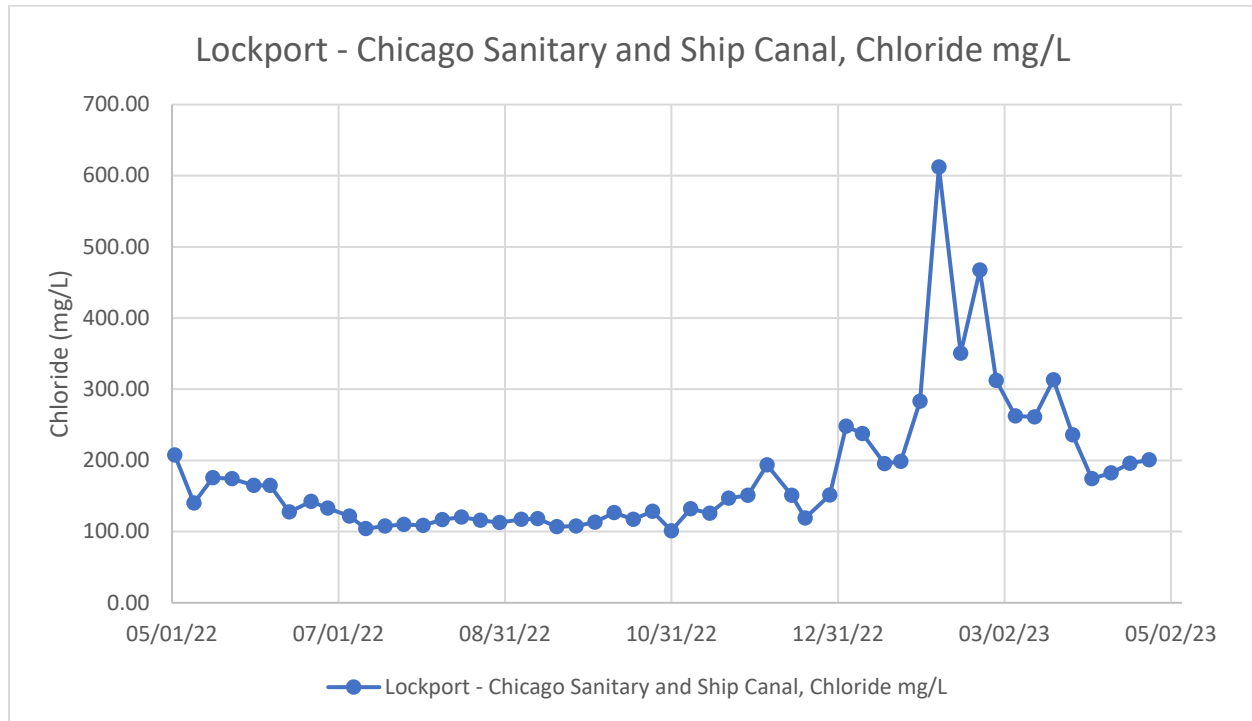
Route 83, Calumet-Sal Channel



Stephen Street, Chicago Ship & Sanitary Canal

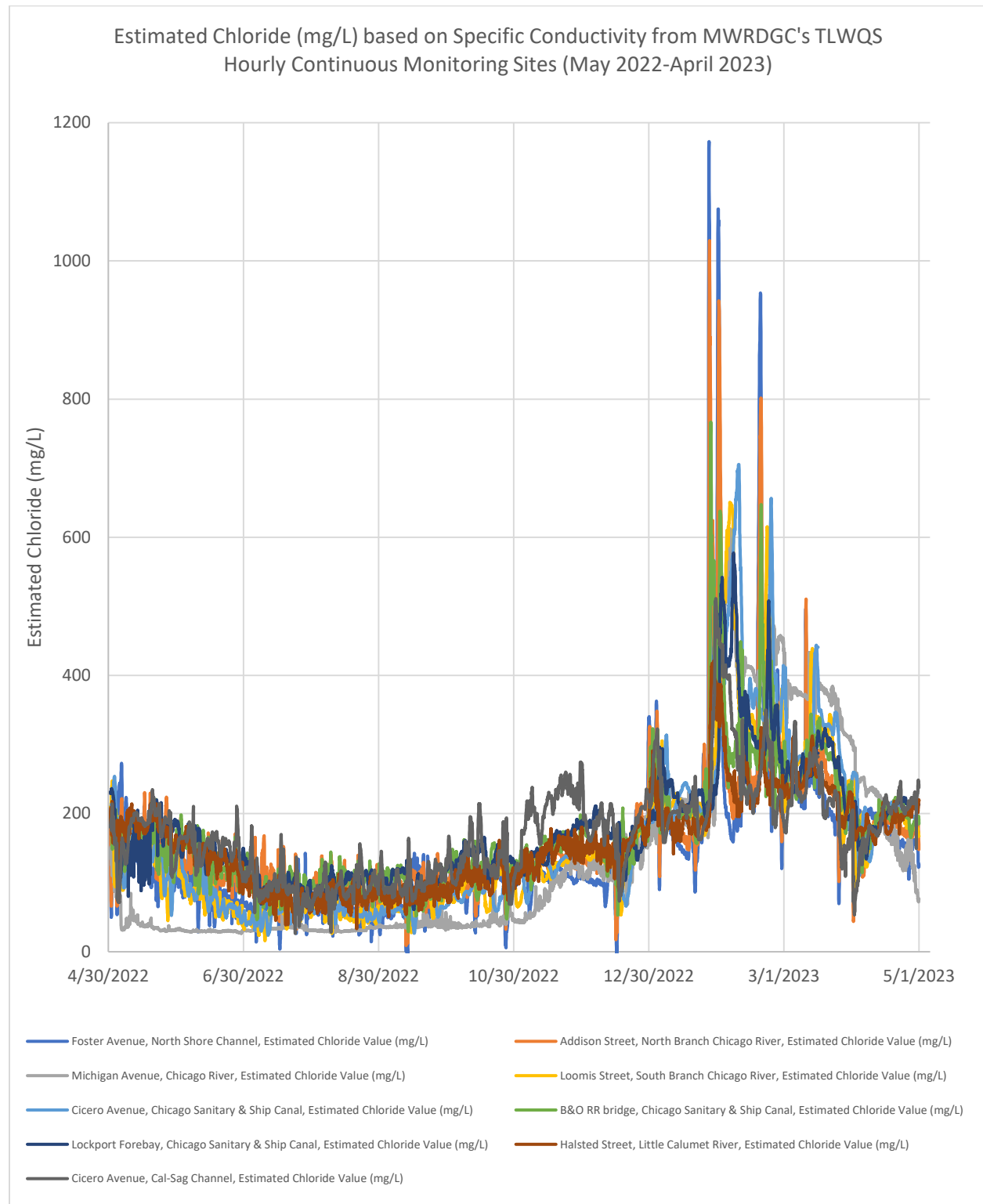


Lockport, Chicago Ship & Sanitary Canal

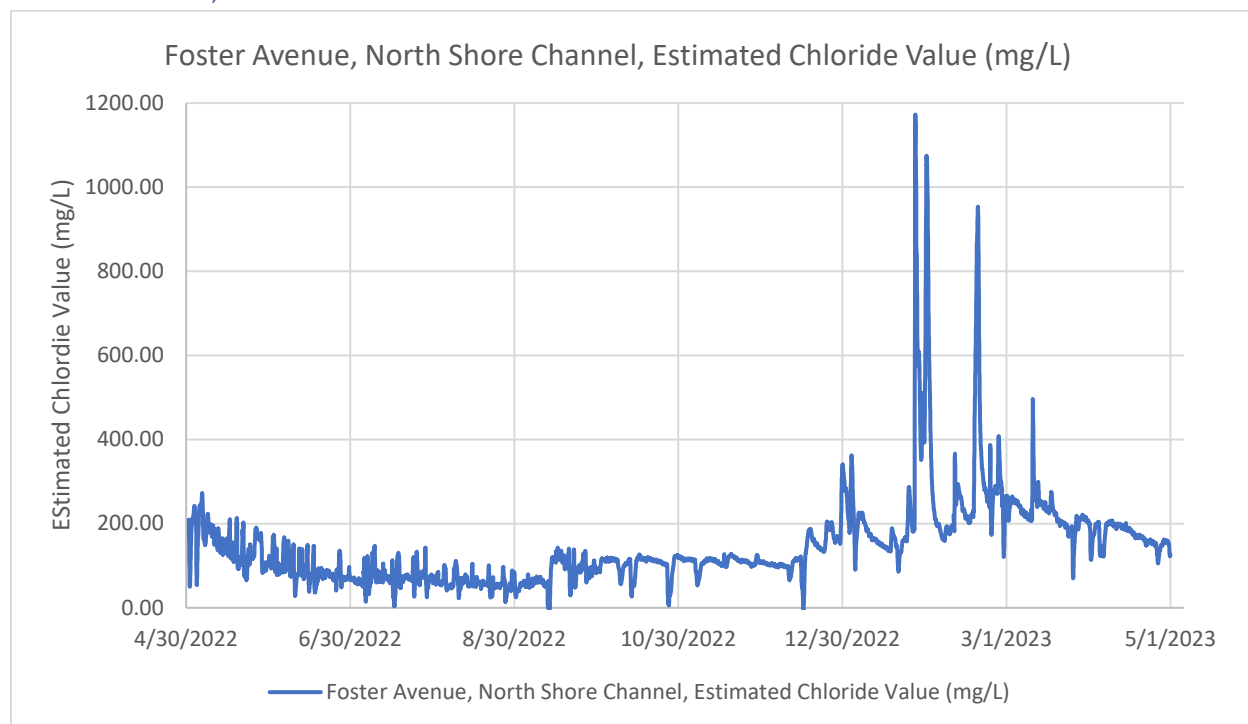


Graphs for MWRDGC's Continuous Monitoring Sites

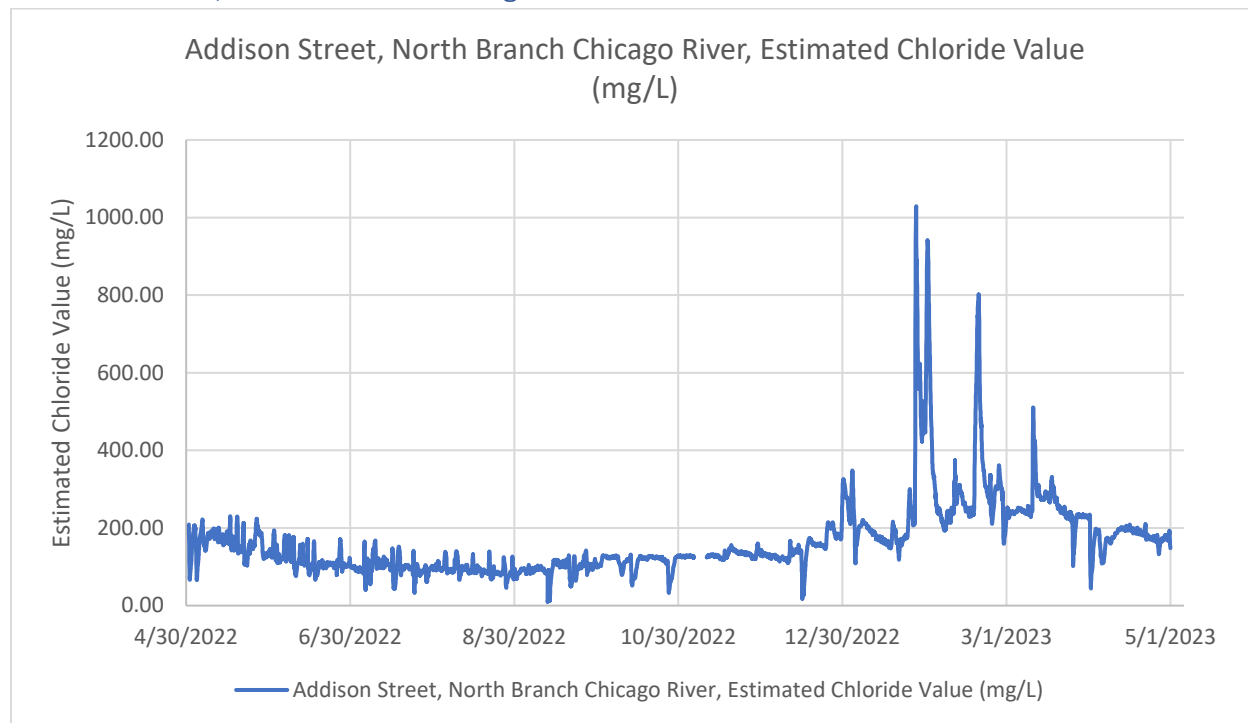
All Sites



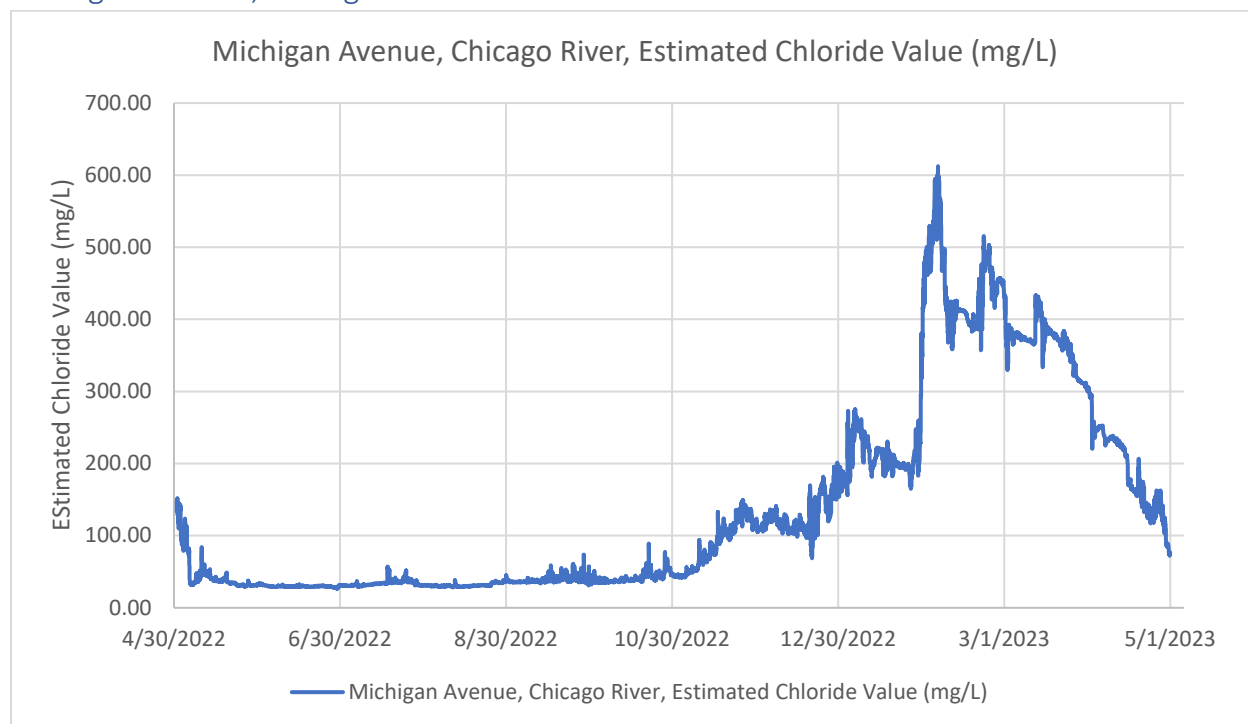
Foster Avenue, North Shore Channel



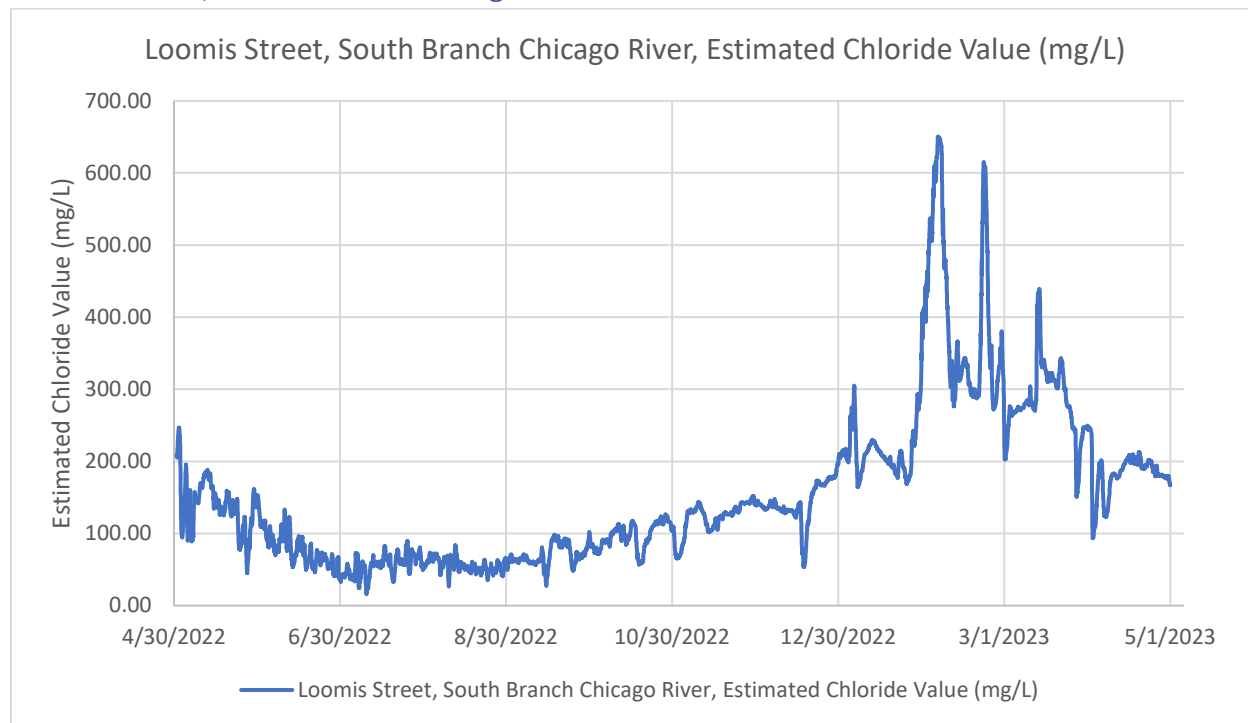
Addison Street, North Branch Chicago River



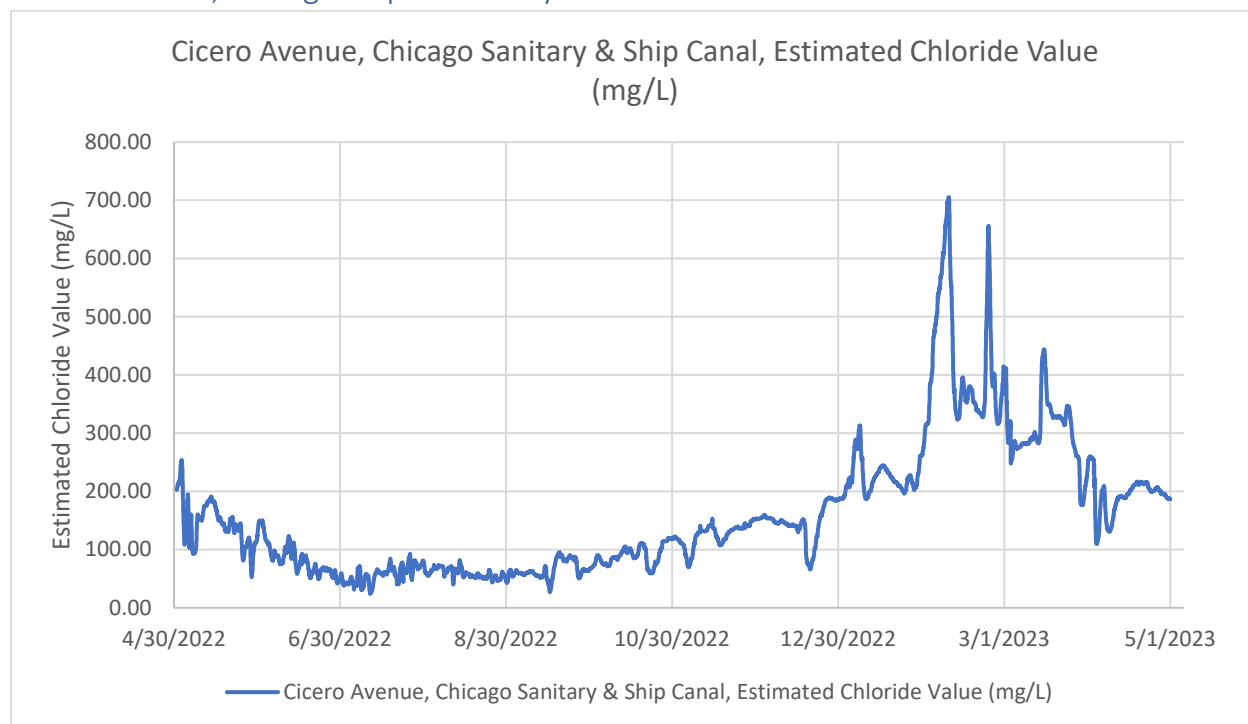
Michigan Avenue, Chicago River



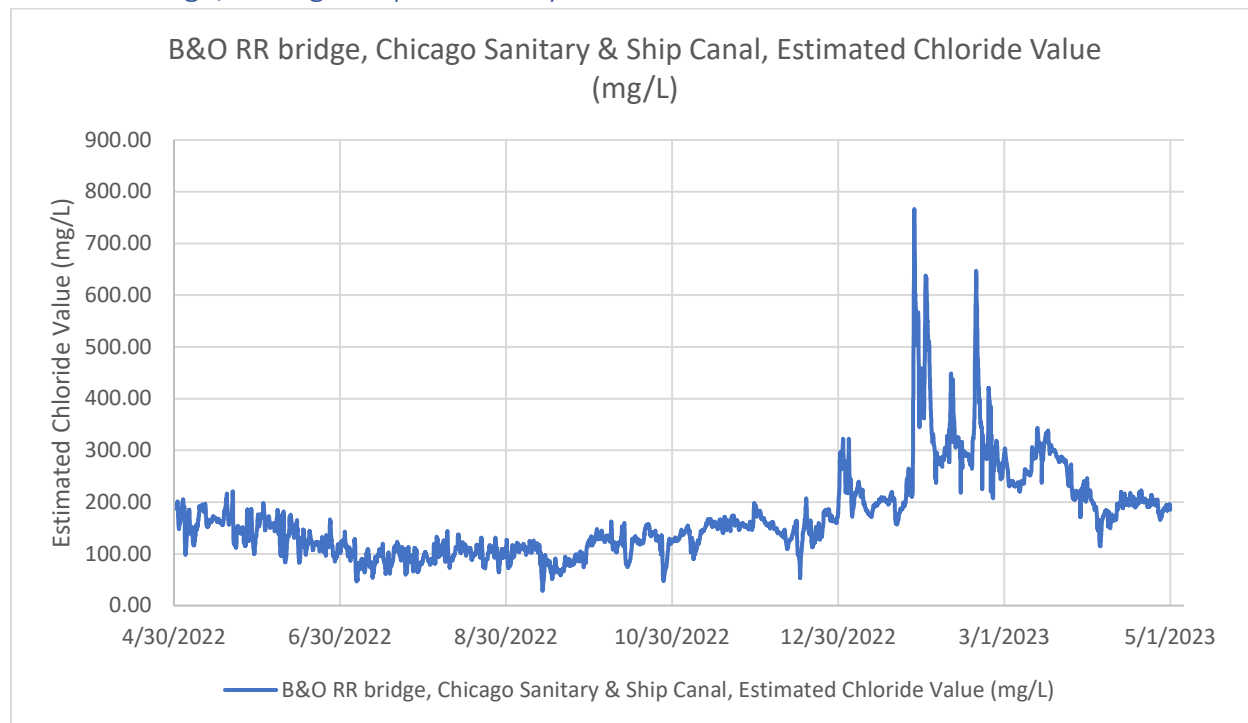
Loomis Street, South Branch Chicago River



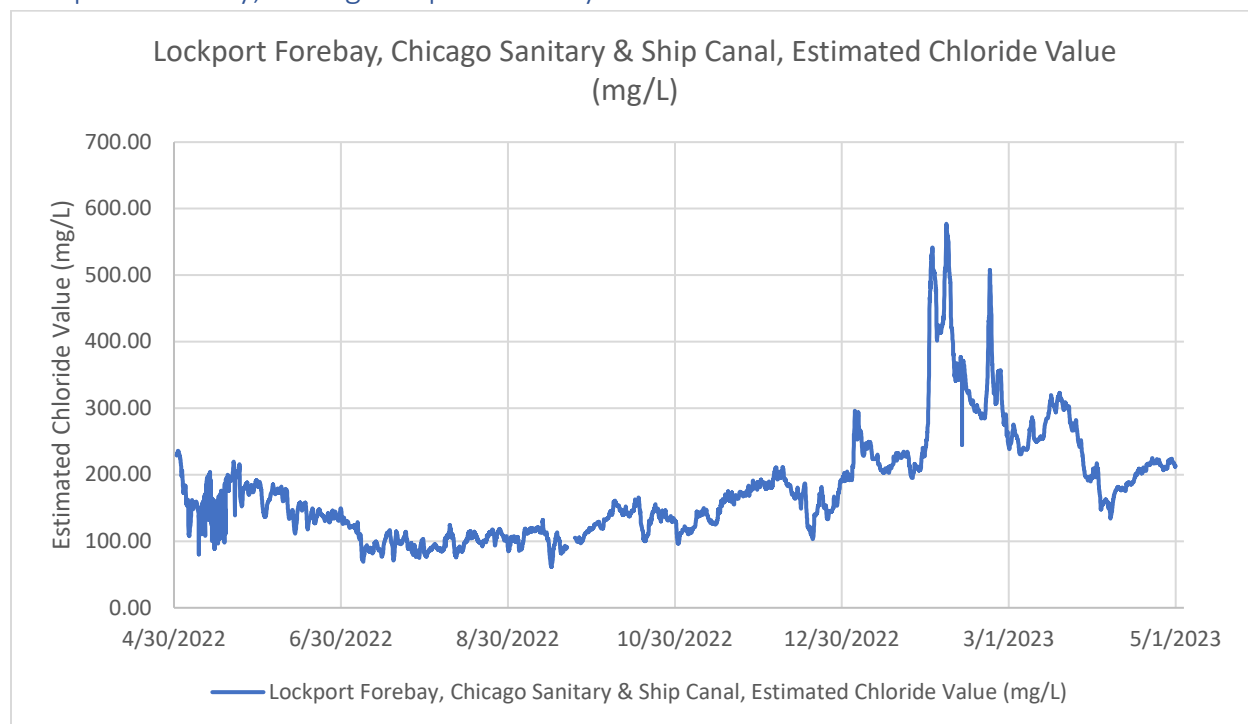
Cicero Avenue, Chicago Ship & Sanitary Canal



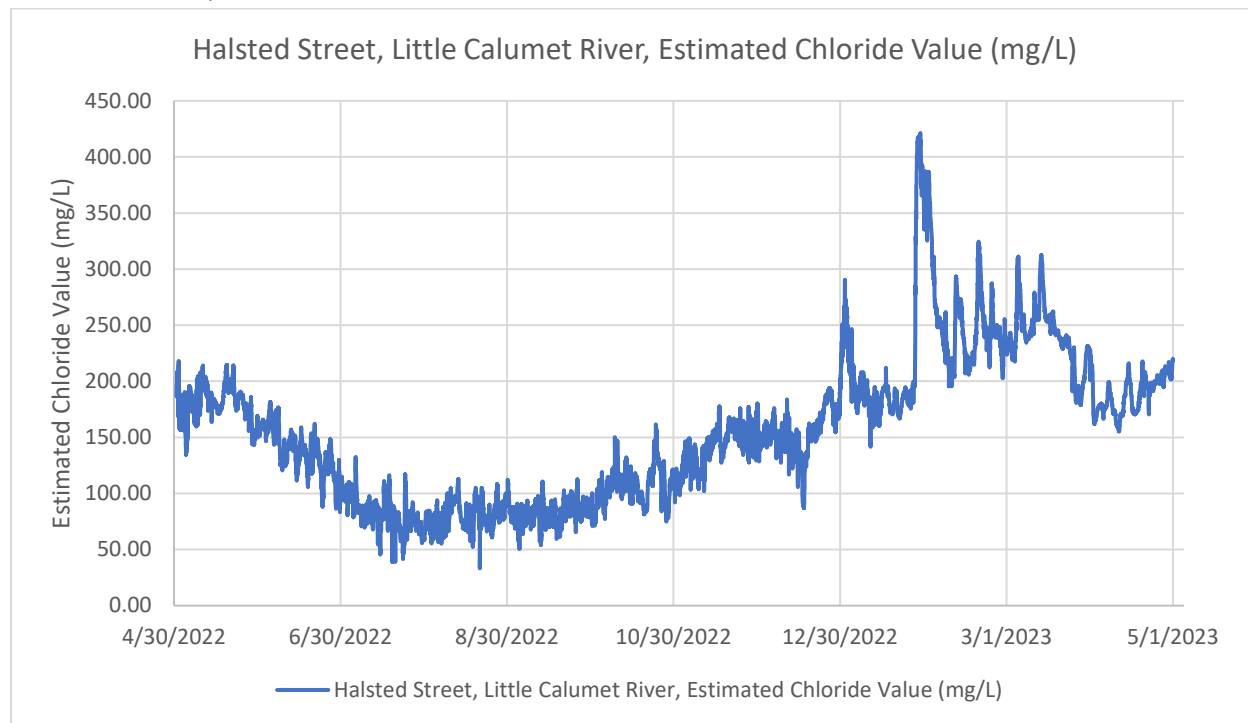
B&O RR Bridge, Chicago Ship & Sanitary Canal



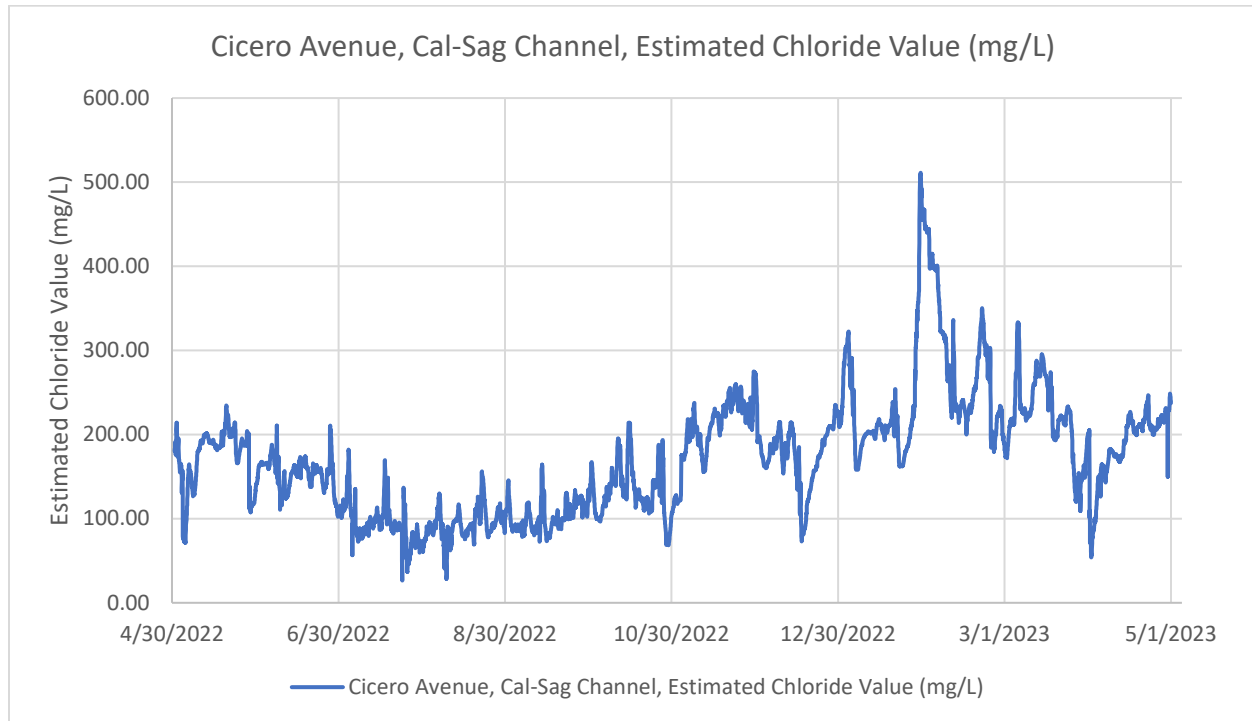
Lockport Forebay, Chicago Ship & Sanitary Canal



Halsted Street, Little Calumet River



Cicero Avenue, Cal-Sag Channel



Graph for USGS Station at the Base of TLWQS Watershed

Lower Des Plaines River at Channahon, USGS Station, Continuous Monitoring

